1R - 334

REPORTS

DATE:

2/04 - CLOSURE

Duke Energy Field Services

NMG-148C Release Site

Soil Remediation Status
and
Closure Proposal

UL-N SE¼ of the SW¼, Section 16, T19S, R37E
Latitude 32°39'21.32"N - Longitude 103°15'32.90"W
~2.25 miles north northeast of Monument
Lea County, New Mexico

January 2004

PREPARED BY

Environmental Plus, Inc.
2100 Avenue O
P.O. Box 1558
Eunice, New Mexico

Table of Contents

1.0 SUMMARY

In February 2003, Environmental Plus, Inc., (EPI) with direction and supervision from Duke Energy Field Services, implemented the Duke NMG-148 C-Line Site Characterization and Soil Remediation Proposal, January 2003. The site characterization information and soil remediation strategies presented in the document should be referenced as a part of this closure proposal. The January 2003 remediation proposal was approved on February 4, 2003 by Mr. William C. Olson, New Mexico Oil Conservation Division (NMOCD) Environmental Bureau Hydrologist with the following stipulations;

1. Duke shall take final soil confirmation samples from the bottom and sidewalls of the excavated area for laboratory analysis upon completion of the excavation activities. The samples will be obtained and analyzed for concentrations of benzene, toluene, ethylbenzene and xylene (BTEX) and total petroleum hydrocarbons (TPH) using EPA approved methods and quality assurance/quality control (QA/QC) procedures.

2. Duke shall take final soil confirmation samples for laboratory analysis from every 200 yards of landfarmed soils returned to the excavated area to verify that the soils meet the proposed remediation levels. The samples will be obtained and analyzed for concentrations of BTEX and TPH using EPA approved methods and QA/QC procedures. A field soil vapor headspace measurement of less than 100 ppm may be substituted for a laboratory analysis of BTEX for the purposes of compliance with the proposed BTEX soil remediation limits.

3. Duke shall submit a soil remediation report upon completion of the remedial activities. The report shall be submitted to the OCD Santa Fe Office with a copy provided to the OCD Hobbs District Office and shall include:

    a. A description of the investigation and remediation activities which occurred including conclusions and recommendations.

    b. Maps showing the locations of all pipelines, excavated areas, landfarmed areas, sample locations and release areas as well as any other pertinent features.

    c. Summary tables of all soil sampling results and copies of all laboratory analytical data sheets and associated QA/QC data.

    d. Photographs of the various phases of the remedial activities.

    e. The disposition of all wastes generated.

    f. Any other relevant information generated during implementation of the work plans.

4. Duke shall notify the OCD at least 48 hours in advance of all scheduled activities such that the OCD has the opportunity to witness the events and split samples.

2.0 Soil Remediation Status

Approximately 18,156 cubic yards (yd^3) of soil has been excavated, shredded, i.e., rock and soil separated, and aerated. The volatility of the hydrocarbon source term, breezy days, and the warm daytime temperatures during the project contributed to the attenuation of the soil to acceptable levels and is being stored in a landspread area east of excavation with the segregated soil and rock stored to the north. A 4-wire barbed wire fence with lockable entrance gate secures the site. Photographs are attached.

2.1 Landspread Soil

With approval from the NMOCD, a landspread area, i.e., 350' x 100', for the more contaminated soil, was established east of the excavation inside of the secured area boundary fence. Approximately 1,500 yd^3 of soil was spread and disked at 2 week intervals until attenuated to below the NMOCD remedial goals.

2.2 Soil and Rock Stockpiles

The remaining shredded soil and rock are currently stored in segregated stockpiles north of the excavation. Testing before and after the shredding process indicated the soil had been adequately remediated and did not require landspreading.

3.0 Closure Proposal

Consistent with the conditions set forth by the NMOCD in February 2003, Duke proposes to obtain laboratory samples of the excavation to confirm achievement of the NMOCD remedial goals for Total Petroleum Hydrocarbon method 8015M (TPH^{8015m}), Benzene, and BTEX, i.e., the mass sum of Benzene, Toluene, Ethylbenzene, and total Xylenes. All sampling will be conducted in accordance with the EPI Standard Operating Procedures and Quality Assurance/Quality Control Plan. The results of the excavation sampling will be provided to the NMOCD along with a request to backfill the excavation with the on-site remediated soil. The backfilling process will monitor soil Volatile Organic Constituents Headspace (VOCH) as it is being emplaced, requesting however, that only 10% or every 10^{th} soil sample be required to undergo laboratory Total Petroleum Hydrocarbon method 8015M (TPH^{8015m}) analysis.

3.1 Sidewall Confirmatory Sampling

It is proposed to collect 5-point composite samples from each sidewall in the 28 foot deep excavation. The 5 points will be collected from the following vertical locations;

- Center of the sidewall at approximately 14 feet below ground surface ('bgs)
- Lower left quadrant at approximately 20'bgs
- Lower right quadrant at approximately 20'bgs
- Upper left quadrant at approximately 8'bgs
- Upper right quadrant at approximately 8'bgs

The 5 point samples will be collected into a clean Ziplock® bag, gently blended and the laboratory sample jarred and refrigerated. The remaining bagged sample will be allowed to equilibrate to approximately 70°F and the VOCH measured and recorded.

3.2 Bottom Hole Confirmatory Sampling

Sampling is not feasible due to the ground water being exposed in the excavation.

3.3 Backfill Monitoring and Sampling

A discrete sample of each 200 yd^3 batch of soil will be collected, allowed to equilibrate to approximately 70°F, and the VOCH measured and recorded. The VOCH will be submitted to the NMOCD "in-lieu" of laboratory BTEX analyses.

3.3.1 VOCH >100 ppm

If the VOCH is >100 ppm, the batch will be segregated and sampled for laboratory TPH^{8015m} and BTEX analyses. If the laboratory results are above the site specific NMOCD remedial guidelines, it will be spread and disked for further attenuation and ultimately tested again for acceptability. Subsequently, if the laboratory results are acceptable, the soil will be emplaced in the excavation with no further testing or monitoring.

3.3.2 VOCH <100 ppm

Soil monitored to be <100 ppm VOCH will be emplaced in the excavation.

3.3.3 Laboratory Analyses

The hydrocarbon source term at this site is an extremely volatile condensate with only nominal detections of TPH^{8015m} and BTEX in laboratory analyses during site characterization activities, i.e., the volatility of the soil samples compromise sample quality and therefore laboratory analytical results. Given this difficulty and the expense involved, it is proposed and requested that laboratory TPH^{8015m} analyses be required of only 10% or every 10^{th} soil batch sample.

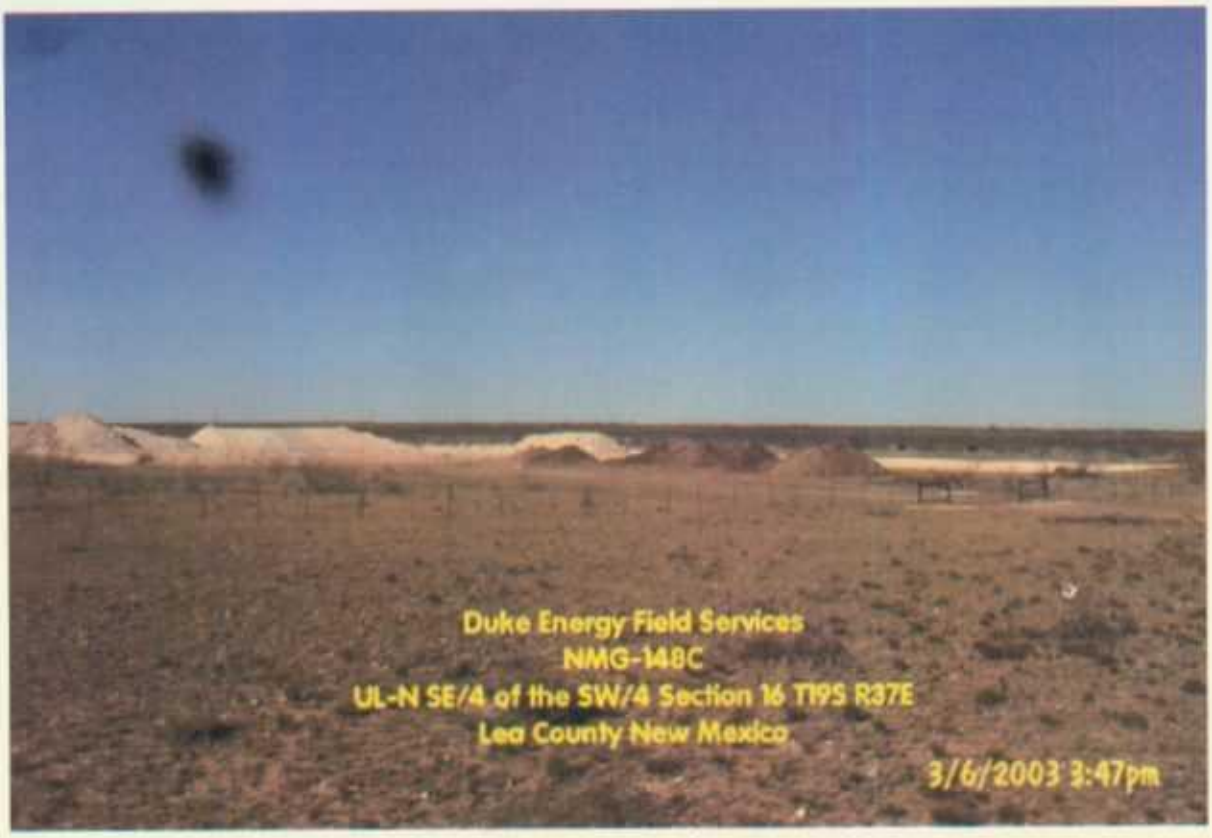
3.4 Emplacement and Compaction Process

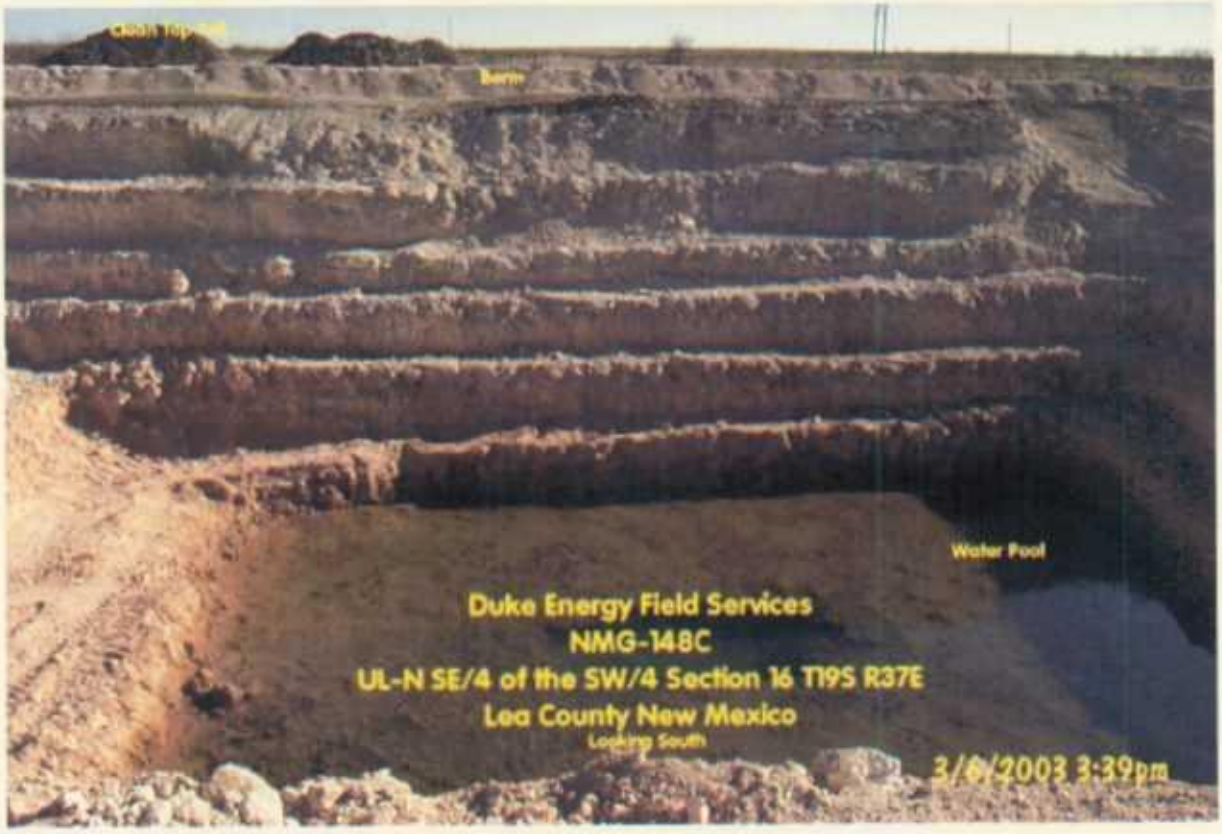
It is proposed to place the rock in the bottom of the excavation and overlay it with the soil matrix. The front-end loaders will adequately compact the matrix during the process. After the excavation has been backfilled, the clean topsoil stockpiled on site will be spread over the area and contoured to grade. Additional clean soil may have to be brought in to bring the excavation up to grade to compensate for the 1,140 yd^3 of contaminated soil disposed of during the initial response to the release.

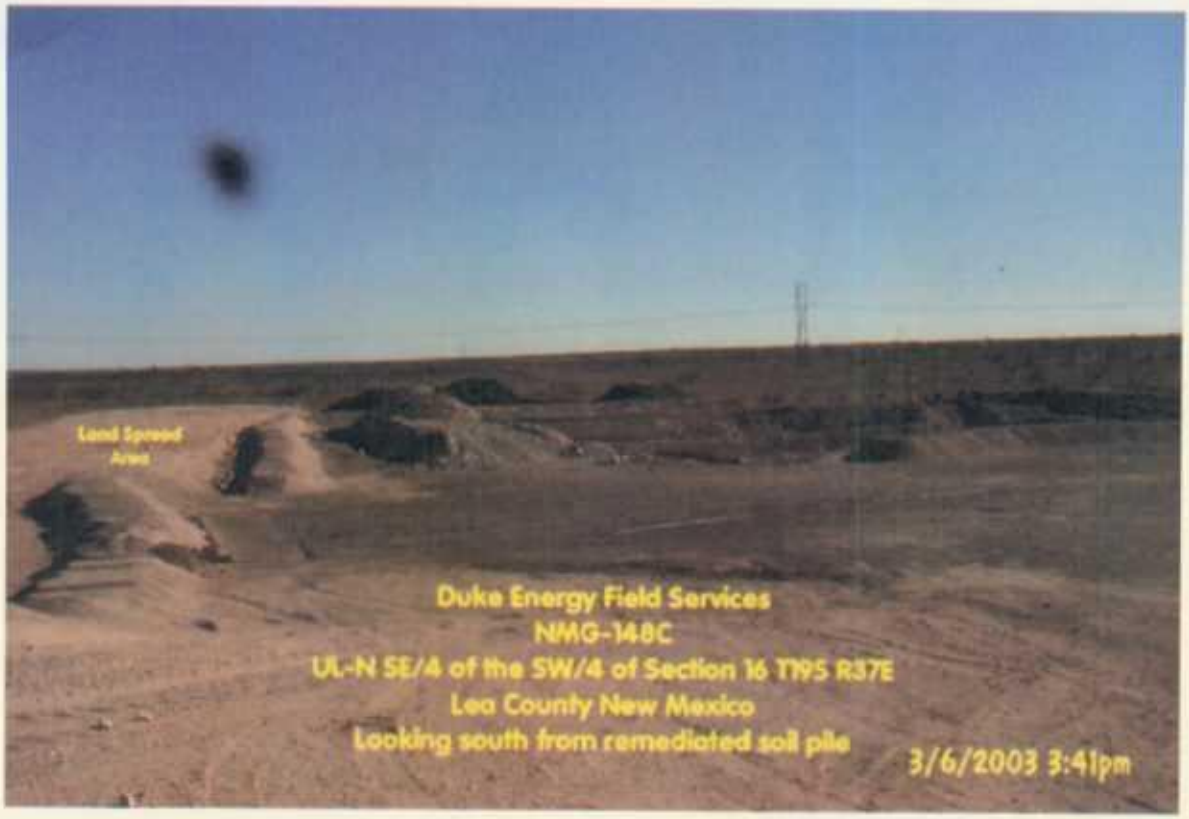
4.0 Reporting and Notification

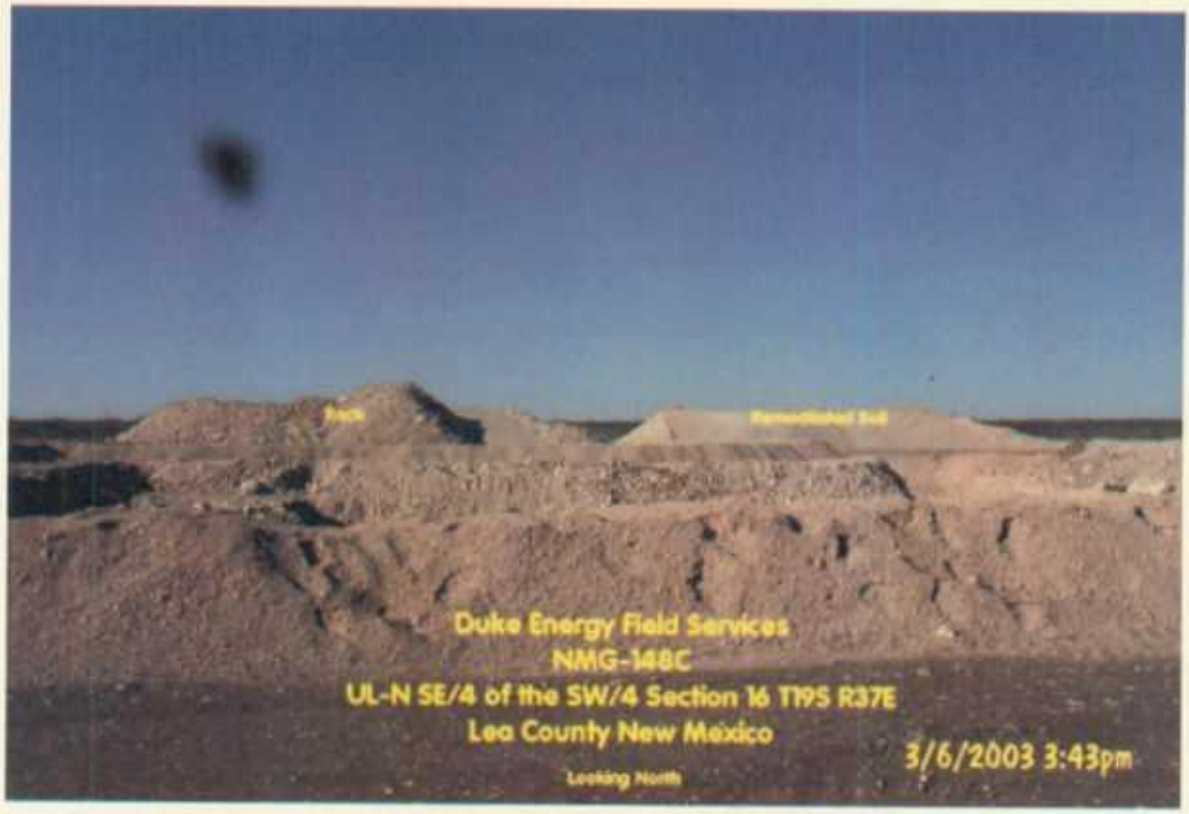
Duke will ensure that all site sampling events or other significant events are preceded by a 48 hour notice to the NMOCD Hobbs field office personnel. Implementation of this Closure Proposal will be documented and summarized in a closure report consistent with the conditions set forth by the NMOCD in February 2003.

Photographs


Duke Energy Field Services
NMG-148C
UL-N SE/4 of the SW/4 Section 16 T19S R37E
Lea County New Mexico
3/6/2003 3:47pm


Berm
Water Pool
Duke Energy Field Services
NMG-148C
UL-N SE/4 of the SW/4 Section 16 T19S R37E
Lea County New Mexico
Looking South
3/6/2003 3:39pm


Land Spread Area
Duke Energy Field Services
NMG-148C
UL-N SE/4 of the SW/4 of Section 16 T19S R37E
Lea County New Mexico
Looking south from remediated soil pile
3/6/2003 3:41pm


Duke Energy Field Services
NMG-148C
UL-N SE/4 of the SW/4 Section 16 T19S R37E
Lea County New Mexico
Looking North
3/6/2003 3:43pm

Duke NMG-148C Release

Quarterly Groundwater Monitoring Review
December 2003

Remediacon Incorporated
Geological and Engineering Services
mstewart@remediacon.com

PO Box 302, Evergreen, Colorado 80437
Telephone: 303.674.4370
Facsimile: 720.528.8132

February 16, 2004

Mr. Stephen Weathers
Duke Energy Field Services, LP
370 17th Street, Suite 2500
Denver, CO 80202

Re: December 2003 Quarterly Groundwater Monitoring Review of the NMG-148C Release, Lea County New Mexico (Unit N, Section 16, Township 19 South Range 37 East)

Dear Mr. Weathers:

This letter summarizes the results of the sampling of the water in the excavation at the NMG-148C release on New Mexico state lands in Lea County New Mexico. The results of the December 2003 quarterly groundwater monitoring episode are also reviewed.

The NMG-148C release is located approximate 2 miles north and 0.75 miles east of Monument in Lea County (Figure 1). The affected source materials at this location were removed by Environmental Plus Incorporated (EPI) in January and February 2003. The excavation remains open to permit aeration of the affected groundwater. The excavation is fenced.

A system to aerate the water in the excavation was installed in August 2003. The system ran continuously through the first week in January 2004 when it was shut off to evaluate potential hydrocarbon rebound.

There are three monitoring wells on the site (Figure 2). Well NMG MW-3 is upgradient (north) of the affected area. Well NMG MW-2 is located in the drainage south of the excavation. Well NMG MW-4 is located directly beneath a leak that was located in the NMG-148C pipeline in January 2003. Well NMG MW-1 was destroyed during the site remediation activities. The pipeline has since been removed.

EXCAVATION WATER SAMPLING

The water in the excavation was sampled on October 31, 2003 and December 15, 2003 to evaluate the effectiveness of continued aeration. Samples were collected from the northeast and southwest corners and submitted for analysis for benzene, toluene, ethylbenzene and xylenes (BTEX). The results, summarized in Table 2, indicated that continued aeration had not decreased the benzene concentrations to below detection limits.

Aeration was discontinued based upon the above information on January 8, 2004 to evaluate the potential for hydrocarbon rebound in the absence of an enhanced oxygen source. Samples were collected on January 13, 2004 and January 23, 2004. The hydrocarbon concentrations did not exhibit an appreciable increase as shown in Table 2. Based upon these results, Remediacon concludes that the hydrocarbon concentrations should not exhibit substantial rebound and that further aeration is not necessary.

WELL GAUGING, DEVELOPMENT AND SAMPLING

Wells NMG MW-2, NMG MW-3 and NMG MW-4 were initially purged and sampled on December 15, 2003. Sampling was completed in the following fashion:

1. The depth to water in the three wells was measured;
2. The saturated water column data was used to calculate each well's casing volume;
3. The wells were then purged using disposable bailers for a minimum of three casing volumes and until the field parameters of temperature, pH and conductivity equilibrated;
4. Samples were collected upon equilibration using the disposable bailer; and
5. The samples were placed in an ice-filled cooler immediately after collection.
6. The samples remained in the cooler until they were delivered directly to Environmental Labs of Texas in Midland Texas.
7. A duplicate sample was collected from well NMG MW-2.

The samples were submitted for analyses for BTEX. The well development forms and laboratory report are included as Attachment A. The analytical results are summarized on Table 2.

The water-table elevations that were derived from the gauging data are summarized in Table 3 along with all preceding measurements. Hydrographs for the three wells are included in Figure 3. The hydrographs indicate a slight decline in all three water table elevations since measurements began in February 2003. The hydrographs also show that groundwater has a southerly flow component at a consistent gradient within the area monitored.

The benzene concentrations shown in Table 2 for MW-2 and MW-4 were anomalous when compared to their historic values. In addition, the duplicate sample from MW-2 had no detectable benzene. Remediacon contacted the lab, and it reran the two samples. Neither of the reanalyzed samples had detectable benzene; however, the holding times were exceeded for both samples.

All three wells and the excavation were resampled on January 23, 2004. The methods discussed above were used to collect the samples. The sampling logs and laboratory analytical results are included in Attachement B. None of the three monitoring wells (NMG-MW-2, NMG-MW-3, NMG-MW-4) samples contained detectable BTEX

constituents, confirming that a sampling or analytical error resulted in the elevated benzene concentrations from the December 2003 episode.

DEFS would like to complete closure of this site. Based upon the historic data collected, Remediacon concludes that further active aeration in the excavation will not result in substantial decreases in the BTEX concentrations. Remediacon does recommend adding an appropriate quantity of oxygen release compound (ORC) to the excavation prior to closure to enhance bioremediation during and after closure. An additional well should also be installed to the southeast based upon knowledge of the regional groundwater gradient. Finally, Well NMG MW-4 should be abandoned since it has not exhibited groundwater impacts over four quarters of groundwater monitoring.

Quarterly monitoring should continue through December 2004. The data will be provided to the OCD after the completion of each episode. The four sets of 2004 results will then be evaluated to assess if the sampling frequency can be decreased.

Thank you for allowing me to complete this work. Do not hesitate to contact me if you have any questions or comments on this work plan.

Respectfully Submitted,
REMEDIACON INCORPORATED

Michael H. Stewart

Michael H. Stewart, P.E.
Principal Engineer

TABLES

Table 1 – NMG-148C Well Completion Information

Well	Date Installed	Total Depth	Screened Interval	Sand Interval	Bentonite Interval
NMG MW-2	12/16/02	35	20-35	18-35	3-18
NMG MW-3	2/5/03	37	17-37	15-37	3-15
NMG MW-4	2/5/03	37	17-37	15-37	3-15

All units are feet
MW-1 destroyed during remediation in Jan/Feb 2003

Table 2 – Summary of Organic Data from The NMG-148 Study Area Wells

Well	Sampling Date	Benzene	Toluene	Ethylbenzene	Total Xylenes
Excavation	2/14/03	4.25	3.15	1.63	0.463
Excavation (dup)	2/14/03	4.46	3.01	1.54	0.436
Excavation (north)	4/17/03	0.055	0.043	<0.002	0.003
Excavation (south)	4/17/03	0.048	0.038	<0.002	0.003
Excavation (sw corner)	6/2/03	0.154	0.260	0.039	1.25
Excavation (sw corner)	9/23/03	0.013	0.014	0.001	0.003
Excavation (sw corner)	10/31/03	0.025	0.026	0.002	0.007
Excavation (sw corner)	12/15/03	0.041	0.032	0.002	0.008
Excavation (ne corner)	12/15/03	0.055	0.034	0.002	0.008
Excavation (sw corner)	1/13/04	0.0395	0.0393	0.00146	0.00809
Excavation (ne corner)	1/13/04	0.0347	0.0361	0.00140	0.00766
Excavation (sw corner)	1/23/04	0.0531	0.0487	0.00184	0.00854
Excavation (ne corner)	1/23/04	0.0301	0.0291	0.00121	0.00627
NMG MW-2	12/17/02	<0.001	<0.001	<0.001	<0.001
NMG MW-2	6/2/03	<0.001	<0.001	<0.001	<0.001
NMG MW-2	9/23/03	<0.001	<0.001	<0.001	<0.001
NMG MW-2	12/15/03	0.034	<0.001	<0.001	<0.001
NMG MW-2 (dup)	12/15/03	<0.001	<0.001	<0.001	<0.001
NMG MW-2	1/23/04	<0.001	<0.001	<0.001	<0.001
NMG MW-3	2/7/03	<0.001	<0.001	<0.001	<0.001
NMG MW-3	6/2/03	<0.001	<0.001	<0.001	<0.001
NMG MW-3	9/23/03	<0.001	<0.001	<0.001	<0.001
NMG MW-3	12/15/03	0.002	<0.001	<0.001	<0.001
NMG MW-3	1/23/04	<0.001	<0.001	<0.001	<0.001
NMG MW-4	2/7/03	<0.001	<0.001	<0.001	<0.001
NMG MW-4	6/2/03	<0.001	<0.001	<0.001	0.001
NMG MW-4	9/23/03	<0.001	<0.001	<0.001	<0.001
NMG MW-4	12/15/03	0.038	<0.001	<0.001	<0.001
NMG MW-4	1/23/04	<0.001	<0.001	<0.001	<0.001

All units mg/l

TPH as GRO and DRO measured at <1 mg/l in NMG MW-2, MW-3 and MW-4 on 12/17/02

Table 3 – Measured Groundwater Elevations in The NMG-148C Wells

Well	2/7/03	6/2/03	9/23/03	12/15/03
NMG MW-2	3,617.05	3,617.00	3,616.93	3616.89
NMG MW-3	3,620.02	3,619.99	3,619.94	3619.94
NMG MW-4	3,615.77	3,615.71	3,615.64	3615.57

All units are feet

FIGURES

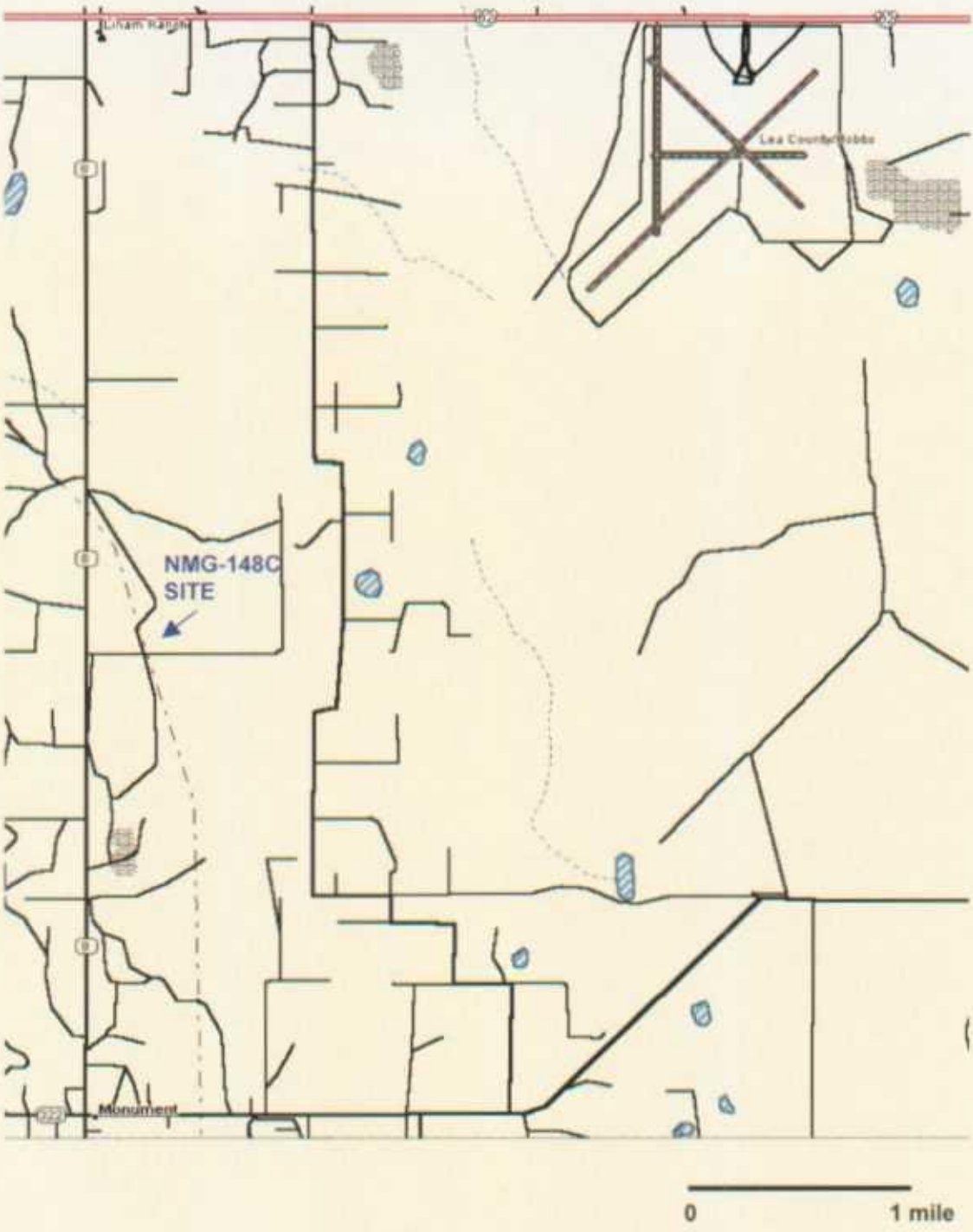


Figure 1 – Site Location Map
NMG-148C RELEASE SITE

Duke Energy Field Services

DRAWN BY: MHS
REVISED:
DATE: 10/03

Figure 2 – NMG-148 Release Site Layout and Well Locations

NMG-148C RELEASE SITE

Duke Energy Field Services.

DRAWN BY: MHS

DATE: 10/03

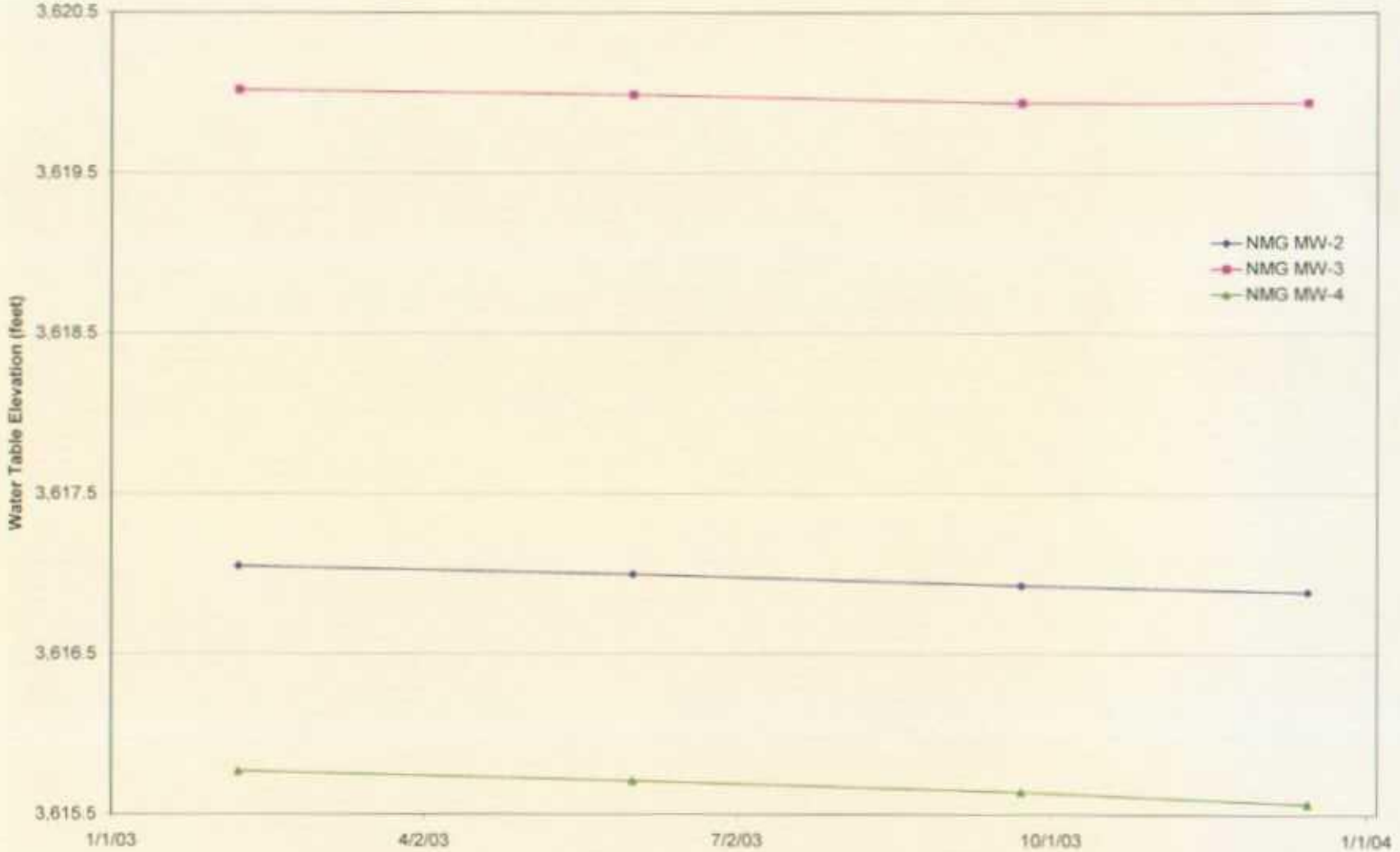


Figure 3 – Monitoring Well Hydrographs

NMG-148C RELEASE SITE

Duke Energy Field Services.

DRAWN BY: MHS

DATE: 10/03

ATTACHMENT A

DECEMBER 2003 SAMPLING FORMS AND ANALYTICAL RESULTS

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **MW-2**
SITE NAME: NMG 148C (4" Line)
DATE: 12/15/2003
PROJECT NO. F-109
SAMPLER: Littlejohn / Fergerson

PURGING METHOD: ☑ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☑ Disposal Facility

TOTAL DEPTH OF WELL: 37.75 Feet
DEPTH TO WATER: 30.01 Feet
HEIGHT OF WATER COLUMN: 7.74 Feet
WELL DIAMETER: 2.0 Inch

3.8 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °F	COND. *m* S/cm	pH	DO ppm	Turb	PHYSICAL APPEARANCE AND REMARKS
8:19	0	-	-	-	-	-	Began Hand Bailing!
8:22	2	17.7	0.51	7.46	6.8	-	
8:28	4	18.5	0.52	7.44	6.8	-	
8:33	6	18.7	0.52	7.48	6.9	-	
8:36	7	18.7	0.52	7.5	6.8	-	

0:17 :Total Time (hr:min) | **7** :Total Vol (gal) | **0.41** :Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 031215 0840

ANALYSES: BTEX (8021-B), Chlorides

COMMENTS: Collected Duplicate "A" Sample No.: 0312152000 for BTEX (8021-B)

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **MW-3**
SITE NAME: NMG 148C (4" Line)
DATE: 12/15/2003
PROJECT NO. F-109
SAMPLER: Littlejohn/Fergerson

PURGING METHOD: ☑ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☑ Disposal Facility

TOTAL DEPTH OF WELL: 39.40 Feet
DEPTH TO WATER: 29.86 Feet
HEIGHT OF WATER COLUMN: 9.54 Feet
WELL DIAMETER: 2.0 Inch

4.7 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °C	COND. *m* S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
7:12	0	-	-	-	-	-	Begin Hand Bailing
7:18	2	17.4	0.72	7.47	7.5	-	
7:22	4	17.5	0.59	7.47	7.9	-	
7:28	6	17.6	0.60	7.45	7.8	-	
7:31	7	17.6	0.61	7.46	7.8	-	
0:19	:Total Time (hr:min)		**7**	:Total Vol (gal)		**0.37**	:Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 031215 0735

ANALYSES: BTEX (8021-B), Chlorides

COMMENTS: _____

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **MW-4**
SITE NAME: NMG 148C (4" Line)
DATE: 12/15/2003
PROJECT NO. F-109
SAMPLER: Littlejohn/Fergerson

PURGING METHOD: ☑ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☑ Disposal Facility

TOTAL DEPTH OF WELL: 37.92 Feet
DEPTH TO WATER: 30.51 Feet
HEIGHT OF WATER COLUMN: 7.41 Feet
WELL DIAMETER: 2.0 Inch

3.6 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °C	COND. *m*S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
8:45	-	-	-	-	-	-	Begin Hand Bailing
8:55	2	18.6	0.60	7.50	6.5	-	
9:00	4	18.9	0.60	7.50	6.6	-	
9:03	6	19.0	0.61	7.50	6.4	-	
0:18	:Total Time (hr:min)		**6**	:Total Vol (gal)		**0.33**	:Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 031215 0905

ANALYSES: BTEX (8021-B), Chlorides

COMMENTS: _____

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **NEC-Excavation**
SITE NAME: NMG 148C (4" Line)
DATE: 12/15/2003
PROJECT NO. F-109
SAMPLER: Littlejohn / Fergerson

PURGING METHOD: ☐ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☐ Disposal Facility

TOTAL DEPTH OF WELL: _____ Feet
DEPTH TO WATER: _____ Feet
HEIGHT OF WATER COLUMN: 0.00 Feet
WELL DIAMETER: 2.0 Inch

0.0 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °C	COND. *m* S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
8:05	0	6.1	0.57	8.31	7.9	-	
0:00 :Total Time (hr:min)			**0** :Total Vol (gal)			**#DIV/0!**	:Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 031215 0805
ANALYSES: BTEX (8021-B), Chlorides
COMMENTS: Grab Groundwater Sample Collected from NE Corner of Excavation

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **SWC-Excavation**
SITE NAME: NMG 148C (4" Line)
DATE: 12/15/2003
PROJECT NO. F-109
SAMPLER: Littlejohn / Fergerson

PURGING METHOD: ☐ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☐ Disposal Facility

TOTAL DEPTH OF WELL: _____ Feet
DEPTH TO WATER: _____ Feet
HEIGHT OF WATER COLUMN: 0.00 Feet
WELL DIAMETER: 2.0 Inch

0.0 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °C	COND. *m* S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
7:48	0	7.4	0.57	8.23	7.8	-	
0:00 :Total Time (hr:min)			**0** :Total Vol (gal)			**#DIV/0!** :Flow Rate (gal/min)	

SAMPLE NO.: Collected Sample No.: 031215 0748
ANALYSES: BTEX (8021-B), Chlorides
COMMENTS: Grab Groundwater Sample Collected from NE Corner of Excavation

CASE NARRATIVE

ENVIRONMENTAL LAB OF TEXAS

Prepared for:

REMEDIACON
P.O. BOX 302
EVERGREEN, CO 80437

Order#: G0308191

Project: Duke Energy Field Services

The following samples were received as indicated below and on the attached Chain of Custody record. All analyses were performed within the holding time and with acceptable quality control results unless otherwise noted.

SAMPLE ID	LAB ID	MATRIX	Date Collected	Date Received
MW-3 (0312150735)	0308191-01	WATER	12/15/2003	12/16/2003
Excavation SW	0308191-02	WATER	12/15/2003	12/16/2003
Excavation NE	0308191-03	WATER	12/15/2003	12/16/2003
MW-2 (0312150840)	0308191-04	WATER	12/15/2003	12/16/2003
MW-4 (0312150905)	0308191-05	WATER	12/15/2003	12/16/2003
Duplicate "A"	0308191-06	WATER	12/15/2003	12/16/2003

Surrogate recoveries on the 8021B BTEX are outside control limits due to matrix interference. (G0308191-02,03)

The enclosed results of analyses are representative of the samples as received by the laboratory. Environmental Lab of Texas makes no representations or certifications as to the methods of sample collection, sample identification, or transportation handling procedures used prior to our receipt of samples. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved By: Date:

Environmental Lab of Texas I, Ltd.

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

MICHAEL STEWART
REMEDIACON
P.O. BOX 302
EVERGREEN, CO 80437

Order#: G0308191
Project:
Project Name: Duke Energy Field Services
Location: NMG-148C

Lab ID: 0308191-01
Sample ID: MW-3 (0312150735)

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007790-02		12/20/03	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	**0.002**	0.001
Toluene	**<0.001**	0.001
Ethylbenzene	**<0.001**	0.001
p/m-Xylene	**<0.001**	0.001
o-Xylene	**<0.001**	0.001

Surrogates	% Recovered	QC Limits	
aaa-Toluene	**90%**	**80**	**120**
Bromofluorobenzene	**84%**	**80**	**120**

Lab ID: 0308191-02
Sample ID: Excavation SW (0312150755)

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007790-02		12/20/03	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	**0.041**	0.001
Toluene	**0.032**	0.001
Ethylbenzene	**0.002**	0.001
p/m-Xylene	**0.006**	0.001
o-Xylene	**0.002**	0.001

Surrogates	% Recovered	QC Limits	
aaa-Toluene	**122%**	**80**	**120**
Bromofluorobenzene	**91%**	**80**	**120**

DL = Diluted N/A = Not RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

MICHAEL STEWART
REMEDIACON
P.O. BOX 302
EVERGREEN, CO 80437

Order#: G0308191
Project:
Project Name: Duke Energy Field Services
Location: NMG-148C

Lab ID: 0308191-03
Sample ID: Excavation NE (0312150805)

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007790-02		12/20/03	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	**0.055**	0.001
Toluene	**0.034**	0.001
Ethylbenzene	**0.002**	0.001
p/m-Xylene	**0.006**	0.001
o-Xylene	**0.002**	0.001

Surrogates	% Recovered	QC Limits	
aaa-Toluene	**125%**	**80**	**120**
Bromofluorobenzene	**95%**	**80**	**120**

Lab ID: 0308191-04
Sample ID: MW-2 (0312150840)

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007790-02		12/20/03	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	**0.034**	0.001
Toluene	**<0.001**	0.001
Ethylbenzene	**<0.001**	0.001
p/m-Xylene	**<0.001**	0.001
o-Xylene	**<0.001**	0.001

Surrogates	% Recovered	QC Limits	
aaa-Toluene	**91%**	**80**	**120**
Bromofluorobenzene	**92%**	**80**	**120**

DL = Diluted N/A = Not RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

MICHAEL STEWART
REMEDIACON
P.O. BOX 302
EVERGREEN, CO 80437

Order#: G0308191
Project:
Project Name: Duke Energy Field Services
Location: NMG-148C

Lab ID: 0308191-05
Sample ID: MW-4 (0312150905)

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007790-02		12/20/03	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	**0.038**	0.001
Toluene	**<0.001**	0.001
Ethylbenzene	**<0.001**	0.001
p/m-Xylene	**<0.001**	0.001
o-Xylene	**<0.001**	0.001

Surrogates	% Recovered	QC Limits	
aaa-Toluene	85%	80	120
Bromofluorobenzene	87%	80	120

Lab ID: 0308191-06
Sample ID: Duplicate "A" (0312152000)

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007790-02		12/20/03	1	1	CK	8021B

Parameter	Result mg/L	RL
Benzene	**0.001**	0.001
Toluene	**<0.001**	0.001
Ethylbenzene	**<0.001**	0.001
p/m-Xylene	**<0.001**	0.001
o-Xylene	**<0.001**	0.001

Surrogates	% Recovered	QC Limits	
aaa-Toluene	94%	80	120
Bromofluorobenzene	88%	80	120

DL = Diluted N/A = Not RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

MICHAEL STEWART
REMEDIACON
P.O. BOX 302
EVERGREEN, CO 80437

Order#: G0308191
Project:
Project Name: Duke Energy Field Services
Location: NMG-148C

Approval:
Raland K. Tuttle, Lab Director, QA Officer — Date
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

DL = Diluted N/A = Not RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8021B/5030 BTEX

Order#: G0308191

BLANK Recovery	WATER Pct (%) WATER	LAB-ID # RPD	Concentr.	Sample .	Concentr	Spike	QC Test	Result
Benzene-mg/L		0007790-02			<0.001			
Toluene-mg/L		0007790-02			<0.001			
Ethylbenzene-mg/L		0007790-02			<0.001			
p/m-Xylene-mg/L		0007790-02			<0.001			
o-Xylene-mg/L		0007790-02			<0.001			
MS Recovery	WATER Pct (%) WATER	LAB-ID # RPD	Concentr.	Sample .	Concentr	Spike	QC Test	Result
Benzene-mg/L		0308191-01	0.002	0.1	0.091	89.%		
Toluene-mg/L		0308191-01	0	0.1	0.097	97.%		
Ethylbenzene-mg/L		0308191-01	0	0.1	0.096	96.%		
p/m-Xylene-mg/L		0308191-01	0	0.2	0.195	97.5%		
o-Xylene-mg/L		0308191-01	0	0.1	0.098	98.%		
MSD Recovery	WATER Pct (%) WATER	LAB-ID # RPD	Concentr.	Sample .	Concentr	Spike	QC Test	Result
Benzene-mg/L		0308191-01	0.002	0.1	0.092	90.%	1.1%	
Toluene-mg/L		0308191-01	0	0.1	0.099	99.%	2.%	
Ethylbenzene-mg/L		0308191-01	0	0.1	0.098	98.%	2.1%	
p/m-Xylene-mg/L		0308191-01	0	0.2	0.201	100.5%	3.%	
o-Xylene-mg/L		0308191-01	0	0.1	0.100	100.%	2.%	
SRM Recovery	WATER Pct (%) WATER	LAB-ID # RPD	Concentr.	Sample .	Concentr	Spike	QC Test	Result
Benzene-mg/L		0007790-05		0.1	0.104	104.%		
Toluene-mg/L		0007790-05		0.1	0.090	90.%		
Ethylbenzene-mg/L		0007790-05		0.1	0.086	86.%		
p/m-Xylene-mg/L		0007790-05		0.2	0.172	86.%		
o-Xylene-mg/L		0007790-05		0.1	0.085	85.%		

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Test Parameters

Order#: G0308191

BLANK	WATER	**LAB-ID #**	**Concentr.**	**Sample**	**Concentr**	**Spike**	**QC Test**	**Result**
Recovery	**Pct (%)**	**RPD**						
	WATER							
Chloride-mg/L		0007757-01			<5.00			
MS	WATER	**LAB-ID #**	**Concentr.**	**Sample**	**Concentr**	**Spike**	**QC Test**	**Result**
Recovery	**Pct (%)**	**RPD**						
	WATER							
Chloride-mg/L		0308190-01	74.4	200	273	99.3%		
MSD	WATER	**LAB-ID #**	**Concentr.**	**Sample**	**Concentr**	**Spike**	**QC Test**	**Result**
Recovery	**Pct (%)**	**RPD**						
	WATER							
Chloride-mg/L		0308190-01	74.4	200	269	97.3%	1.5%	
SRM	WATER	**LAB-ID #**	**Concentr.**	**Sample**	**Concentr**	**Spike**	**QC Test**	**Result**
Recovery	**Pct (%)**	**RPD**						
	WATER							
Chloride-mg/L		0007757-04		5000	4960	99.2%		

ATTACHMENT B

JANUARY 2004 SAMPLING FORMS AND ANALYTICAL RESULTS

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **NEC-Excavation**
SITE NAME: NMG 148C (4" Line)
DATE: 1/13/2004
PROJECT NO. F-109
SAMPLER: Littlejohn / Fergerson

PURGING METHOD: ☐ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☐ Disposal Facility

TOTAL DEPTH OF WELL: _____ Feet
DEPTH TO WATER: _____ Feet
HEIGHT OF WATER COLUMN: 0.00 Feet
WELL DIAMETER: 2.0 Inch

0.0 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °C	COND. *m*S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
16:00	0	11.1	0.76	7.86	10.3	-	
0:00 :Total Time (hr:min)			**0** :Total Vol (gal)			**#DIV/0!**	:Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 040113 1600
ANALYSES: BTEX (8021-B),
COMMENTS: Grab Groundwater Sample Collected from NE Corner of Excavation

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **SWC-Excavation**
SITE NAME: NMG 148C (4" Line)
DATE: 1/13/2004
PROJECT NO. F-109
SAMPLER: Littlejohn / Fergerson

PURGING METHOD: ☐ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☐ Disposal Facility

TOTAL DEPTH OF WELL: _____ Feet
DEPTH TO WATER: _____ Feet
HEIGHT OF WATER COLUMN: 0.00 Feet
WELL DIAMETER: 2.0 Inch

0.0 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °C	COND. *m* S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
15:40	0	11.4	0.75	7.66	9.6	-	
0:00 :Total Time (hr:min)			**0** :Total Vol (gal)			**#DIV/0!**	:Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 040113 1540
ANALYSES: BTEX (8021-B),
COMMENTS: Grab Groundwater Sample Collected from NE Corner of Excavation

Analytical Report

Prepared for:

Michael Stewart
REMEDIACON
P.O. Box 302
Evergreen, CO 80437

Project: Duke Energy Field Services
Project Number: None Given
Lab Order Number: 4A15006

Report Date: 01/16/04

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

REMEDIACON	Project: Duke Energy Field Services	720-528-8132
P.O. Box 302	Project Number: None Given	**Reported:**
REMEDIACON	Project Manager: Michael Stewart	01/16/04 10:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW Corner (0401131540)	4A15006-01	Water	01/13/04 15:40	01/15/04 09:28
NE Corner (0401131600)	4A15006-02	Water	01/13/04 16:00	01/15/04 09:28

Raland Tuttle, Laboratory Director

REMEDIACON	Project: Duke Energy Field Services	720-528-8132
P.O. Box 302	Project Number: None Given	**Reported:**
REMEDIACON	Project Manager: Michael Stewart	01/16/04 10:37

Halogenated and Volatile Organics by EPA Method 8021B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SW Corner (0401131540) (4A15006-01) Water Sampled: 01/13/04 15:40 Received: 01/15/04 09:28									
Surrogate: a,a,a-Trifluorotoluene		*305 %*	*80-120*		*EA41608*	*01/15/04*	*01/15/04*	*EPA 8021B*	*S-04*
Surrogate: 4-Bromofluorobenzene		*108 %*	*80-120*		"	"	"	"	
Benzene	**0.0395**	0.00100	mg/L	"	"	"	"	"	
Toluene	**0.0393**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.00146**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00594**	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.00215**	0.00100	"	"	"	"	"	"	
NE Corner (0401131600) (4A15006-02) Water Sampled: 01/13/04 16:00 Received: 01/15/04 09:28									
Surrogate: a,a,a-Trifluorotoluene		*292 %*	*80-120*		*EA41608*	*01/15/04*	*01/15/04*	*EPA 8021B*	*S-04*
Surrogate: 4-Bromofluorobenzene		*100 %*	*80-120*		"	"	"	"	
Benzene	**0.0347**	0.00100	mg/L	"	"	"	"	"	
Toluene	**0.0361**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.00140**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00553**	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.00213**	0.00100	"	"	"	"	"	"	

Raland Tuttle, Laboratory Director

REMEDIACON	Project: Duke Energy Field Services	720-528-8132
P.O. Box 302	Project Number: None Given	**Reported:**
REMEDIACON	Project Manager: Michael Stewart	01/16/04 10:37

Halogenated and Volatile Organics by EPA Method 8021B - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA41608 - EPA 5030C (GC)										
Blank (EA41608-BLK1)				Prepared & Analyzed: 01/15/04						
Surrogate: a,a,a-Trifluorotoluene	*23.6*		*ug/l*	*20.0*		*118*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*18.7*		*"*	*20.0*		*93.5*	*80-120*			
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
LCS (EA41608-BS1)				Prepared & Analyzed: 01/15/04						
Surrogate: a,a,a-Trifluorotoluene	*18.9*		*ug/l*	*20.0*		*94.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*19.7*		*"*	*20.0*		*98.5*	*80-120*			
Benzene	100		"	100		100	80-120			
Toluene	107		"	100		107	80-120			
Ethylbenzene	105		"	100		105	80-120			
Xylene (p/m)	219		"	200		110	80-120			
Xylene (o)	109		"	100		109	80-120			
Calibration Check (EA41608-CCV1)				Prepared: 01/15/04 Analyzed: 01/16/04						
Surrogate: a,a,a-Trifluorotoluene	*18.5*		*ug/l*	*20.0*		*92.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*21.4*		*"*	*20.0*		*107*	*80-120*			
Benzene	104		"	100		104	80-120			
Toluene	112		"	100		112	80-120			
Ethylbenzene	110		"	100		110	80-120			
Xylene (p/m)	228		"	200		114	80-120			
Xylene (o)	112		"	100		112	80-120			
Duplicate (EA41608-DUP1)		**Source: 4A15005-01**		Prepared & Analyzed: 01/15/04						
Surrogate: a,a,a-Trifluorotoluene	*17.7*		*ug/l*	*20.0*		*88.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*17.4*		*"*	*20.0*		*87.0*	*80-120*			
Benzene	0.135	0.00100	mg/L		0.147			8.51	20	
Toluene	ND	0.00100	"		ND				20	
Ethylbenzene	J [0.000607]	0.00100	"		0.000798			27.2	20	J
Xylene (p/m)	ND	0.00100	"		0.000680				20	
Xylene (o)	ND	0.00100	"		ND				20	

Raland Tuttle, Laboratory Director

REMEDIACON	Project: Duke Energy Field Services	720-528-8132
P.O. Box 302	Project Number: None Given	**Reported:**
REMEDIACON	Project Manager: Michael Stewart	01/16/04 10:37

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Mike Stewart
Company Name: Remediacon, Inc.
Company Address: P.O. Box 302
City/State/Zip: Evergreen, CO 80437
Telephone No: 303-674-4370 Fax No: 720-528-8132
Sampler Signature: Dale Littlejohn

Project Name: Duke Energy Field Services
Project #:
Project Loc: NMG-148C (Excavatio
PO #:

4A15006

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TCLP: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	NORM	Cl	RUSH TAT (Pre-Schedule)	Standard TAT
01	SW Corner (0401131540)	1-13-04	1540	3	✓		✓					✓											✓			✓	
02	NE Corner (0401131600)	"	1600	3	✓		✓					✓											✓				✓

Special Instructions:
Send original report and invoice to Steve Weathers, Denver, CO.

Sample Containers Intact? Y N
Temperature Upon Receipt:
Laboratory Comments:
RUSH TAT

Relinquished by:	Date	Time	Received by:	Date	Time
Dale Littlejohn	1-15-04	0928			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Rudy Ochoa	1-15-04	0928

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **MW-2**
SITE NAME: NMG 148C (4" Line)
DATE: 1/23/2004
PROJECT NO. F-109
SAMPLER: Littlejohn / Fergerson

PURGING METHOD: ☑ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☑ Disposal Facility

TOTAL DEPTH OF WELL: 37.75 Feet
DEPTH TO WATER: 30.11 Feet
HEIGHT OF WATER COLUMN: 7.64 Feet
WELL DIAMETER: 2.0 Inch

3.7 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °F	COND. *m*S/cm	pH	DO ppm	Turb	PHYSICAL APPEARANCE AND REMARKS
8:29	0	-	-	-	-	-	
8:34	2	63.6	0.60	7.14	7.4	-	
8:40	4	60.6	0.62	7.10	7.4	-	
8:46	6	61.2	0.61	7.10	7.3	-	
0:17	:Total Time (hr:min)		**6**	:Total Vol (gal)		**0.35**	:Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 040123 0850

ANALYSES: _____

COMMENTS: _____

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **MW-3**
SITE NAME: NMG 148C (4" Line)
DATE: 1/23/2004
PROJECT NO. F-109
SAMPLER: Littlejohn/Fergerson

PURGING METHOD: ☑ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☑ Disposal Facility

TOTAL DEPTH OF WELL: 39.40 Feet
DEPTH TO WATER: 29.96 Feet
HEIGHT OF WATER COLUMN: 9.44 Feet
WELL DIAMETER: 2.0 Inch

4.6 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °F	COND. *m*S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
9:21	0	-	-	-	-	-	
9:26	2	63.5	0.73	7.03	7.7	-	
9:32	4	60.7	0.73	7.03	7.8	-	
9:39	6	60.3	0.72	7.04	7.9	-	
0:18 :Total Time (hr:min)			**6** :Total Vol (gal)			**0.33** :Flow Rate (gal/min)	

SAMPLE NO.: Collected Sample No.: 040123 0945

ANALYSES: _____

COMMENTS: _____

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **MW-4**
SITE NAME: NMG 148C (4" Line)
DATE: 1/23/2004
PROJECT NO. F-109
SAMPLER: Littlejohn/Fergerson

PURGING METHOD: ☑ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☑ Disposal Facility

TOTAL DEPTH OF WELL: 37.92 Feet
DEPTH TO WATER: 30.59 Feet
HEIGHT OF WATER COLUMN: 7.33 Feet
WELL DIAMETER: 2.0 Inch

3.6 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °F	COND. *m* S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
10:05	-	-	-	-	-	-	
10:11	2	64.7	0.72	7.15	6.9	-	
10:17	4	64.5	0.72	7.13	6.8	-	
10:23	6	63.7	0.68	7.14	7.1	-	
10:28	7	62.9	0.70	7.17	7.1	-	
0:23 :Total Time (hr:min)			**7** :Total Vol (gal)			**0.30** :Flow Rate (gal/min)	

SAMPLE NO.: Collected Sample No.: 040123 1030

ANALYSES: _____

COMMENTS: _____

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **NEC-Excavation**
SITE NAME: NMG 148C (4" Line)
DATE: 1/23/2004
PROJECT NO. F-109
SAMPLER: Littlejohn / Fergerson

PURGING METHOD: ☐ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☐ Disposal Facility

TOTAL DEPTH OF WELL: _____ Feet
DEPTH TO WATER: _____ Feet
HEIGHT OF WATER COLUMN: 0.00 Feet
WELL DIAMETER: 2.0 Inch

0.0 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °F	COND. *m*S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
8:00	0	45.8	0.82	7.90	9.5	-	
0:00 :Total Time (hr:min)			**0** :Total Vol (gal)			**#DIV/0!** :Flow Rate (gal/min)	

SAMPLE NO.: Collected Sample No.: 040123 0800
ANALYSES: BTEX (8021-B),
COMMENTS: Grab Groundwater Sample Collected from NE Corner of Excavation

WELL PURGE & SAMPLE DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **SWC-Excavation**
SITE NAME: NMG 148C (4" Line)
DATE: 1/23/2004
PROJECT NO. F-109
SAMPLER: Littlejohn / Fergerson

PURGING METHOD: ☐ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE PURGING & SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☐ Disposal Facility

TOTAL DEPTH OF WELL: _____ Feet
DEPTH TO WATER: _____ Feet
HEIGHT OF WATER COLUMN: 0.00 Feet
WELL DIAMETER: 2.0 Inch

0.0 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °F	COND. *m* S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
7:45	0	45.9	0.83	7.32	9.0	-	
0:00 :Total Time (hr:min)			**0** :Total Vol (gal)			**#DIV/0!** :Flow Rate (gal/min)	

SAMPLE NO.: Collected Sample No.: 040123 0745

ANALYSES: BTEX (8021-B),

COMMENTS: _____

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Michael Stewart
REMEDIACON
P.O. Box 302
Evergreen, CO 80437

Project: Duke Energy Field Services
Project Number: NMG-148C
Location: Lea Co. NM

Lab Order Number: 4A23007

Report Date: 01/28/04

REMEDIACON	Project: Duke Energy Field Services	720-528-8132
P.O. Box 302	Project Number: NMG-148C	**Reported:**
REMEDIACON	Project Manager: Michael Stewart	01/29/04 09:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW Corner Pit (0401230745)	4A23007-01	Water	01/23/04 07:45	01/23/04 16:05
NE Corner Pit (0401230800)	4A23007-02	Water	01/23/04 08:00	01/23/04 16:05
MW-2 (0401230850)	4A23007-03	Water	01/23/04 08:50	01/23/04 16:05
MW-3 (0401230945)	4A23007-04	Water	01/23/04 09:45	01/23/04 16:05
MW-4 (0401231030)	4A23007-05	Water	01/23/04 10:30	01/23/04 16:05
Trip Blank	4A23007-06	Water	01/23/04 00:00	01/23/04 16:05

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

REMEDIACON	Project: Duke Energy Field Services	720-528-8132
P.O. Box 302	Project Number: NMG-148C	**Reported:**
REMEDIACON	Project Manager: Michael Stewart	01/28/04 15:11

Halogenated and Volatile Organics by EPA Method 8021B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SW Corner Pit (0401230745) (4A23007-01) Water Sampled: 01/23/04 07:45 Received: 01/23/04 16:05									
Benzene	**0.0531**	0.00100	mg/L	1	EA42808	01/26/04	01/26/04	EPA 8021B	
Toluene	**0.0487**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.00184**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00695**	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.00259**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*295 %*	*80-120*		"	"	"	"	*S-04*
Surrogate: 4-Bromofluorobenzene		*104 %*	*80-120*		"	"	"	"	
NE Corner Pit (0401230800) (4A23007-02) Water Sampled: 01/23/04 08:00 Received: 01/23/04 16:05									
Benzene	**0.0301**	0.00100	mg/L	1	EA42808	01/26/04	01/26/04	EPA 8021B	
Toluene	**0.0291**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.00121**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00415**	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.00212**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*224 %*	*80-120*		"	"	"	"	*S-04*
Surrogate: 4-Bromofluorobenzene		*99.0 %*	*80-120*		"	"	"	"	
MW-2 (0401230850) (4A23007-03) Water Sampled: 01/23/04 08:50 Received: 01/23/04 16:05									
Benzene	ND	0.00100	mg/L	1	EA42808	01/26/04	01/26/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*82.5 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*82.5 %*	*80-120*		"	"	"	"	

Raland Tuttle, Laboratory Director

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

REMEDIACON	Project: Duke Energy Field Services	720-528-8132
P.O. Box 302	Project Number: NMG-148C	**Reported:**
REMEDIACON	Project Manager: Michael Stewart	01/29/04 09:47

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3 (0401230945) (4A23007-04) Water Sampled: 01/23/04 09:45 Received: 01/23/04 16:05									
Benzene	ND	0.00100	mg/L	1	EA42808	01/26/04	01/26/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*102 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*91.0 %*	*80-120*		"	"	"	"	
MW-4 (0401231030) (4A23007-05) Water Sampled: 01/23/04 10:30 Received: 01/23/04 16:05									
Benzene	ND	0.00100	mg/L	1	EA42808	01/26/04	01/28/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*110 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*93.5 %*	*80-120*		"	"	"	"	
Trip Blank (4A23007-06) Water Sampled: 01/23/04 00:00 Received: 01/23/04 16:05									
Benzene	ND	0.00100	mg/L	1	EA42808	01/26/04	01/26/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*102 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*93.0 %*	*80-120*		"	"	"	"	

Raland Tuttle, Laboratory Director

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

REMEDIACON	Project: Duke Energy Field Services	720-528-8132
P.O. Box 302	Project Number: NMG-148C	**Reported:**
REMEDIACON	Project Manager: Michael Stewart	01/28/04 15:11

Halogenated and Volatile Organics by EPA Method 8021B - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA42808 - EPA 5030C (GC)										
Blank (EA42808-BLK1)				Prepared: 01/26/04 Analyzed: 01/28/04						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*16.5*		*ug/l*	*20.0*		*82.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*16.2*		*"*	*20.0*		*81.0*	*80-120*			
LCS (EA42808-BS1)				Prepared: 01/26/04 Analyzed: 01/28/04						
Benzene	87.9		ug/l	100		87.9	80-120			
Toluene	94.8		"	100		94.8	80-120			
Ethylbenzene	93.9		"	100		93.9	80-120			
Xylene (p/m)	196		"	200		98.0	80-120			
Xylene (o)	97.7		"	100		97.7	80-120			
Surrogate: a,a,a-Trifluorotoluene	*17.5*		*"*	*20.0*		*87.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*17.0*		*"*	*20.0*		*85.0*	*80-120*			
Calibration Check (EA42808-CCV1)				Prepared & Analyzed: 01/26/04						
Benzene	87.9		ug/l	100		87.9	80-120			
Toluene	93.6		"	100		93.6	80-120			
Ethylbenzene	95.9		"	100		95.9	80-120			
Xylene (p/m)	187		"	200		93.5	80-120			
Xylene (o)	97.1		"	100		97.1	80-120			
Surrogate: a,a,a-Trifluorotoluene	*16.0*		*"*	*20.0*		*80.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*17.6*		*"*	*20.0*		*88.0*	*80-120*			
Duplicate (EA42808-DUP1)			**Source: 4A23007-06**	Prepared & Analyzed: 01/26/04						
Benzene	ND	0.00100	mg/L		ND				20	
Toluene	ND	0.00100	"		ND				20	
Ethylbenzene	ND	0.00100	"		ND				20	
Xylene (p/m)	ND	0.00100	"		ND				20	
Xylene (o)	ND	0.00100	"		ND				20	
Surrogate: a,a,a-Trifluorotoluene	*19.2*		*ug/l*	*20.0*		*96.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*17.8*		*"*	*20.0*		*89.0*	*80-120*			

REMEDIACON	Project: Duke Energy Field Services	720-528-8132
P.O. Box 302	Project Number: NMG-148C	**Reported:**
REMEDIACON	Project Manager: Michael Stewart	01/28/04 15:11

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Mike Stewart
Company Name: Remediacon, Inc.
Company Address: P.O. Box 302
City/State/Zip: Evergreen, CO 80437
Telephone No: 303-674-4370 Fax No: 720-528-8132
Sampler Signature: Dale Littlejohn

Project Name: Duke Energy Field Services
Project #: NMG-148C
Project Loc: Lea Co, NM
PO #:

4A23007

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TCLP: TPH: 418.1 / 8015M	1005	1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO_4, CO_3, HCO_3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	TOTAL: BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	RUSH TAT (Pre-Schedule)	Standard TAT
01	SW Corner Pit (0401230745)	1/23/04	0745	2	✓		✓					✓												✓				✓
02	NE Corner Pit (0401230800)	"	0800	2	✓		✓					✓												✓				✓
03	MW-2 (0401230850)	"	0850	2	✓		✓					✓												✓				✓
04	MW-3 (0401230945)	"	0945	2	✓		✓					✓												✓				✓
05	MW-4 (0401231030)	"	1030	2	✓		✓					✓												✓				✓
06	Trip Blank	—	—	2								✓												✓				✓

Special Instructions: Send original & invoice to Steve Weathers, DEFS, Denver CO

Sample Containers Intact? (Y) N
Temperature Upon Receipt:
Laboratory Comments:
0.0 °C
4 oz. VOA

Relinquished by:	Date	Time	Received by:	Date	Time
Dale Littlejohn	1/23/04	4:05 PM			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Tami Anderson	1/23/04	1605