1R - 426 - 05

# WORKPLANS

# Date: 10-11-13

# Rice Environmental Consulting & Safety

P.O. Box 2948, Hobbs, NM 88241 Phone 575.393.2967 FEOSIVED COD

20 OT 15 P 1:53

CERTIFIED MAIL RETURN RECEIPT NO. 7007 2560 0000 4569 8272

October 11<sup>th</sup>, 2013

#### Mr. Edward Hansen

New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87505

#### RE: Investigation and Characterization Plan (ICP) Rice Operating Company – BD SWD System BD I-8 (1R426-05): UL/I sec. 8 T22S R37E

#### Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site in the BD Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the BD SWD System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

For all such environmental projects, ROC will choose the path forward that:

- Protects public health,
- Provides the greatest net environmental benefit,
- Complies with NMOCD Rules, and
- Is supported by good science.

Each site shall generally have three submissions:

- 1. This <u>Investigation and Characterization Plan</u> (ICP) is proposed for gathering data and site characterization and assessment.
- 2. Upon evaluating the data and results from the ICP, a recommended remedy will be submitted in a <u>Corrective Action Plan</u> (CAP), if warranted.
- 3. Finally, after implementing the remedy, a <u>Termination Request</u> with final documentation will be submitted.

#### **Background and Previous Work**

,

The site is located approximately 5 miles south of Eunice, New Mexico at UL/I sec. 8 T22S R37E as shown on the Site Location Map and Geographical Location Map (Figure

1 & 2). An updated groundwater study of NM OSE records, conducted in 2013, indicate that groundwater will likely be encountered at a depth of approximately 74 + - feet.

In 2003, ROC initiated work on the former BD I-8 junction box. The site was delineated using a backhoe to form a 25 ft x 30 ft x 16 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. From the excavation, the four-wall composite and the bottom composite were taken to a commercial laboratory for analysis. Laboratory tests of the four-wall composite showed a chloride reading of 2,140 mg/kg, and the bottom composite showed a chloride reading of 5,850 mg/kg. Gasoline range organics (GRO) readings, diesel range organics (DRO) readings and BTEX readings for both the four-wall composite and bottom composite showed non-detect. The excavated soil was blended on site and a sample was taken to a commercial laboratory for analysis. The laboratory chloride reading returned a result of 1,310 mg/kg and GRO, DRO and BTEX readings of non-detect. At the base of the 16 ft excavation, a 3 foot thick clay layer was installed and compacted. The excavation was then backfilled with the blended soil and contoured to the surrounding location.

A new watertight junction box was installed at the site and has since been eliminated. The area surrounding the new junction box was seeded with a blend of native vegetation. NMOCD was notified of potential groundwater impact on April 1<sup>st</sup>, 2003 and a junction box disclosure report (Appendix A) was submitted to NMOCD with all the 2003 junction box closures and disclosures.

ROC proposes additional investigative work at the site to determine if there is potential for groundwater degradation from residual chlorides at the site.

#### **Proposed Work Elements**

- 1. Conduct vertical and lateral delineation of residual chlorides and hydrocarbons from samples taken using a drill rig, hand augur and/or backhoe (see Appendix B for Quality Procedures).
  - a. Vertical sampling will be conducted until of the following criteria are met in the field.
    - i. Three samples in which the chloride concentration decreases and the third sample has a chloride concentration of  $\leq 250$  ppm; and,
    - ii. Three samples in which PID readings decrease and the third sample has a PID reading of  $\leq 100$  ppm; or,
    - iii. The sampling reaches the capillary fringe.
  - b. Lateral sampling will be conducted until the following criteria are met in the field.
    - i. A decrease is observed in chloride concentrations between lateral bores at similar depths; and,
    - ii. A chloride concentration of  $\leq 250$  ppm is observed in a lateral surface sample; or,
    - iii. Safety concerns impede further lateral delineation
- 2. If warranted, install a monitor well to provide direct measurement of the potential groundwater impact at the site. (All monitor wells will be installed by EPA, NMOCD, and industry standards.)

3. Evaluate the risk of groundwater impact based on the information obtained.

If the evaluation of the site shows no threat to groundwater from residual chlorides, then only a vadose zone remedy will be undertaken. However, if groundwater shows impact from residual chlorides, a CAP will be developed to address these concerns.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

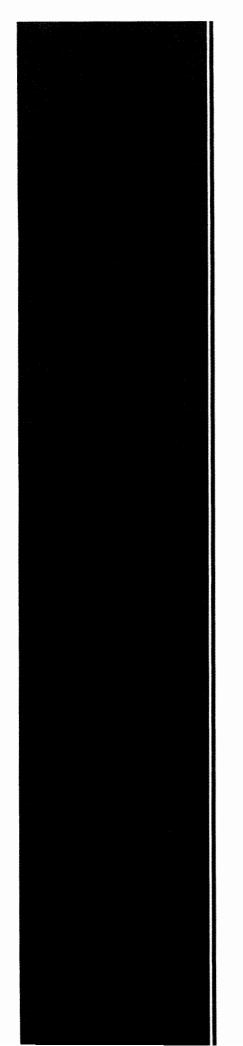
Sincerely,

ACW

Lara Weinheimer Project Scientist RECS (575) 441-0431

Attachments:

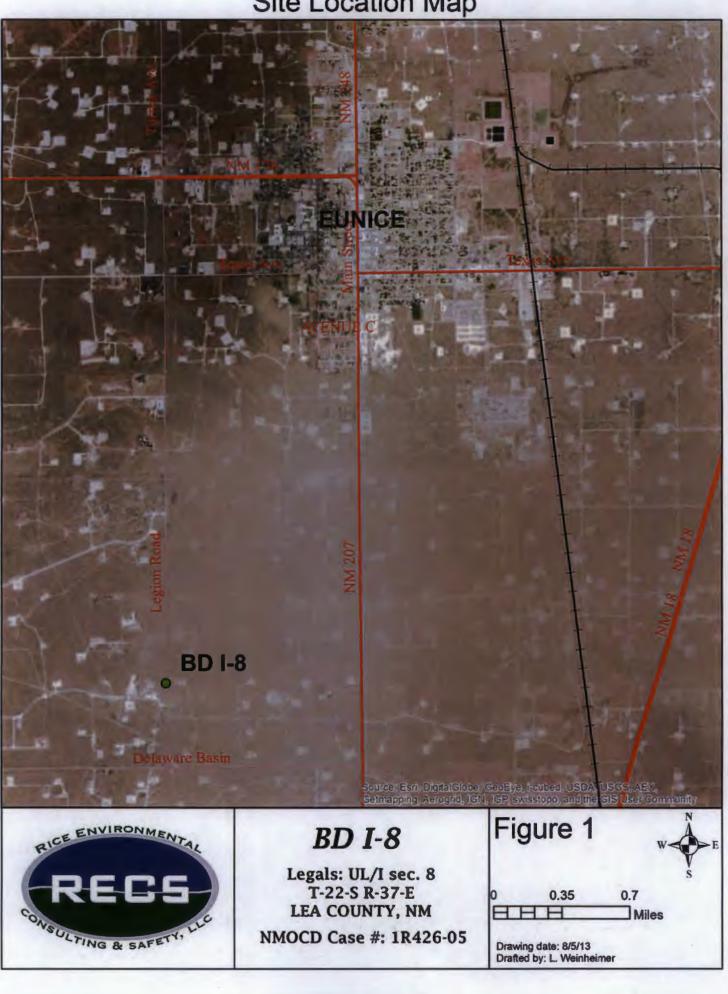
Figure 1 – Site Location Map Figure 2 – Geographical Location Map Appendix A – Junction Box Disclosure Report Appendix B – Quality Procedures



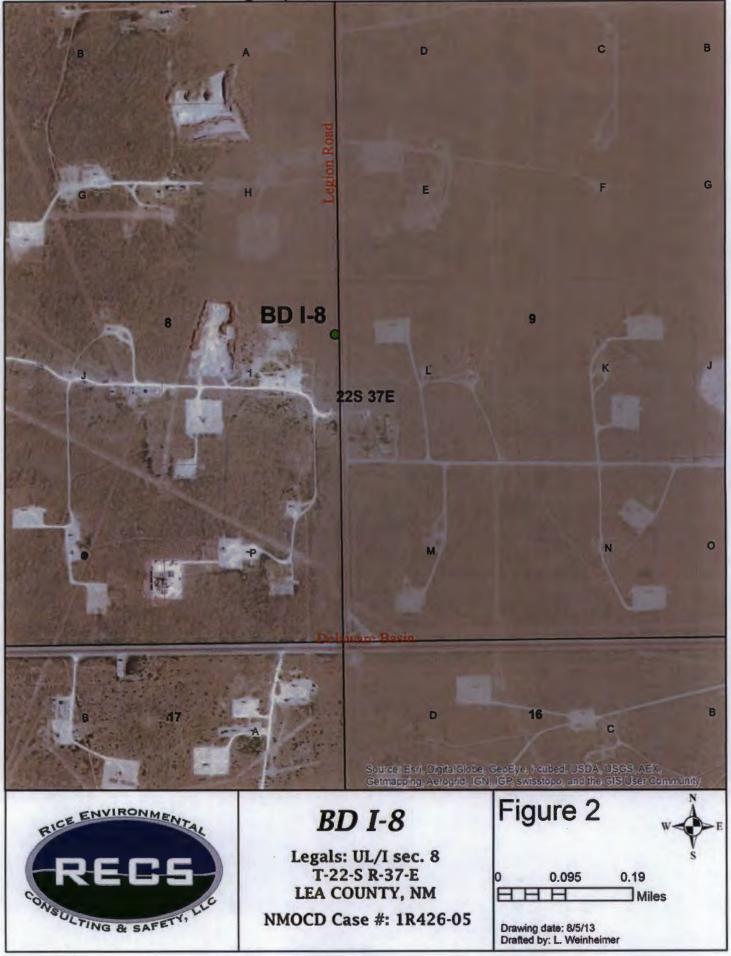
# Figures

RICE Environmental Consulting and Safety (RECS) P.O. Box 2948, Hobbs, NM 88241 Phone 575.393.2967

# Site Location Map



# **Geographical Location Map**



# Appendix A Junction Box Disclosure Report

RICE Environmental Consulting and Safety (RECS) P.O. Box 2948 Hobbs, NM 88241 Phone 575.393.2967

1

#### RICE OPERATING COMPANY JUNCTION BOX DISCLOSURE\* REPORT

				BOX LOC	ATION					
SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX D	IMENSIONS	- FEET	
					07.5		Length	Width	Depth	
Blinebry-Drinkard	1-8	L I	8	22 S	37 F	Lea	5	5	10	7
LAND TYPE: E Depth to Grour Date Started	ndwater	STATE 71 /2003	feet			y Flowers ESSMENT f	OTHER RANKING SC Vitness		10 No	
Soil Excavated Soil Disposed		cubic yar		cavation Le	ngth 25 Sund	Width	30 Location	Depth	16 nice, NM	teet

> Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene ma/ka	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chlondes mg/kg
SIDEWALLS	< 0.025	<0.025	<0.025	<0.025	<10.0	<10.0	2140
BOTTOM	<0.025	< 0.025	<0.025	<0.025	<10.0	<10.0	5850
REMEDIATED	<0.025	<0.025	<0.025	<0.025	<10.0	<10.0	1310

#### General Description of Remedial Action: The junction box location was delineated

#### CHLORIDE FIELD TESTS

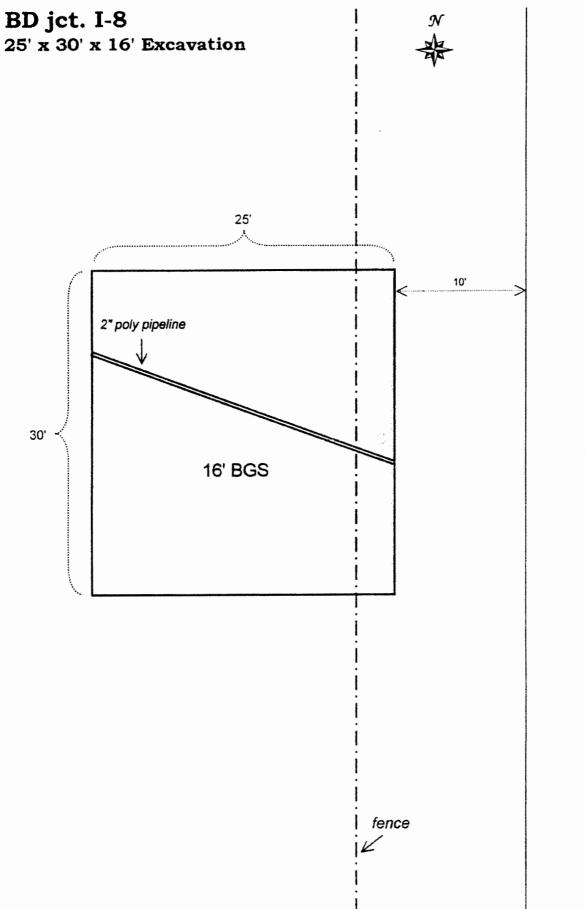
belev. NICCD guidelines, while oblacide concentrations did not exhibit a vertical decline	LOCATION
below NMOCD guidelines, while chlonde concentrations did not exhibit a vertical decline.	
Chloride impact decreased laterally so a 3' compacted clay layer was installed at the bottom of	Vertical
the excavation at 16' bgs to inhibit vertical migration of chloride impact. The hole was then	
backfilled with the excavated soil that was landfarmed onsite. A new watertight junction box has	
been built at this location. The disturbed area has been re-seeded with native vegetation and will	
be monitored for growth.	N Wall
	S Wall
	E Wall
	W Wall
	bottom comp
cc: ; diagram, lab results, photos, disposal tickets	wall comp.

LOCATION	DEPTH (ff)	ppm
Vertical	6	4397
	10	4450
	14	670 <b>0</b>
	16	7450
N Wall	Composite	1350
S Wall		1900
E Wall	55	3800
W Wall	"	1400
bottom comp.	16	4550
wall comp.	n/a	1800

# I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE	6/2/2003	PRINTED NAME	Kristin Farris
SIGNATURE	Kaistin Sanis	TITLE	Projects Scientist

\* This site is a "DISCLOSURE," It will be placed on a prioritized list of similar sites for further consideration.



LEGION ROAD

# BD jct. I-8



# Impact Excavation



# BD jct. I-8



Construction of New Junction Box With Poly Liner



Completed New Junction Box



# BD jct. I-8 SEEDING



	Sundance Services, In P.O. Des 1137 4 Basilon, NAL 88241 15057 J44 2011		64795
LEASE OPERATORIS	HIPPER/COMPANY:		A
LEASE NAME BOT	(WB78	·····	
TRANSPORTER COM	PANY: Wallow	TIME:	AM/PN
		DRIVER NO .:	
CHARGE TO: Pre			
	TYPE OF MATERIAL	JAC 87	TESRTE 2-Dird
f ] Production Water [ ] Tank Boltania ] Other Mitmink Descriptions	( ) Drilling Polds ( ) Continuingtind ant ( ) #96/9 Contautir	] Completion 7   ] Col (7 Had,	the set
ICH FICHET, FIPRRATORISE	NDANCE SERVICES, THE 'S ACCEPTANCE OF TH INVER REPRESENTS AND WARRANTS THAT TH	IN WANTE MATERIA	LEHPPED
AS & CONDITION TO SUR RUM INCRET, EPERATORIES NURWITH REALITIONS & AMENDED FROM TIME TO AND RESPERTING TO PROVIDENT PHODUCED WATERS AND	IDANCE SERVICES, INC 'S ACCEPTANCE OF TH	IE MATERIALS SHIP) IE WATE MATERIA N AND RECOVERY A 10 AND SAF CODE I (APPORTED DRILL RATION, DEVELOP	L ISHIPPED LET OF HVIA AS 1 364.001, el sca
AS A CONDITION TO SUM SOB FICKET, REPRATORIS INDER TO A CONTRACTOR AND RESULTATIONS HILL PRODUCTION OF CRUDE O PRODUCTION OF CRUDE O ALSO AS A CONDITION J THIS JOB TECKET, TRANSP	NDANCE SERVICES, ERC 2 ACCEPTANCE OF TH REPER REPRESENTS AND WARRANTS THAT TH REPER REPRESENTS AND WARRANTS THAT TH RELATE FROM THE RESOURCE, CONSERVATION THES, AN U.S.C. & 4901, et am, THE MAR BALLY THE STREET, BALLY AND AND AND AND AND AND THE STREET, BALLY AND	IE MATERIALS SHIP IR WATE MASEINA MAND RECOVERY A WAND SAF CODE I AFFORMED DRILL IRATION, DEVELOPS DY OF THE MATERIALS VLY TOE MATERIALS	L BHIPPED ACT OP ANG, AS 1367-001, et sou NG FLUUSS, AGN1 CH SANNYED WYTH PELLYENED BY
AS A CONDITION TO SUM SOM FICKET, REPRATOKAS INERGET, REPRATOKAS INERGET, REPARTINAL E AMERICAL RECORDER STATE PRODUCTION OF CRUDE O ALSO AS A CONDITION J THIR AGE TECKET, TRANSME FACILLY SOR DISPUEAL. THIS WILL CERTIFY S Surveyou is the above sh	IDANCE SERVICES, INC 'S ACCEPTANCE OF TH INFREE REPRESENTS AND WARRANCE THAT IN REMER REPRESENTS AND WARRANCE THAT IN REMER FROM THE RESOURCE, CONSERVATION THIS, ON U.S.C. & GEOT, I AND THE INA BALT TO THERE IS, D. Y. VINSIE, OF THE EXCENTION OF THE RESENTS AND WARRANTE . BREEK (S NIMLANCE SERVICE, ORC, Y ACCEPTANCE OFTER RESENTING AND WARRANTE INAS ON	IE GATERIALS SHIP IE WASTE MASSEILA MARD RECOVERY A MARD RACOVERY A MARD SAF COOVERY A AFFORMED DRILL MATION, DEVELOPM DY CE THE MATERIALS WEY THE MATERIALS RETHE TO SUNDANCE MER REPRESENTED by by the above effects	L BENDERG LET OD ING AS JELODI, el SSI NG FRUUDS. PENI ON SOMPED VETSI DELIVENED BY E BORWICH, ONC. 3 LAS TRANSPORTE LAS TRANSPORTE
АЗ А СОНОВТНОМ ТО БИН АЗ В СОНОВТНОМ ТО БИН АМИ ГСКЕТ, ПРЯВАТОЙЛЯ ИНАНИТИ НЕ ВЛАТТИМА Е АМИ ВЕЗИКАТИМИ ТИМИ ТО АМО ВЕЗИКАТИМИ ТИМИ ТИМИ РИССИСТВИИ ОБ СЛИВЕ О АЛАО АЗ А СОНОВТНОМ Д ТИМИ АСС ТОМИ ОБ СЛИВЕ ОРВОИТОЛЛЯНИРИЕ ТУ ТИ ГАСИИ У ЭОН ОБОЗИВАТ. ТНИЗ WTLL, СЕПТИТ И Заяневни за the above sh БИ селије вни на shalling	NDANCE SERVICES, INC 'S ACCEPTANCE OF TH REPER MERASSENTS AND WARRANTS THAT IT REPER MERASSENTS AND WARRANTS THAT IT REART FROM THE RESOURCE, CONSERVATION THESE, AUGUST, BY VIENTING OF THE RESERVATION OTHER WASTE ASSOCIATED WITH THE REPERTION OTHER WASTE ASSOCIATED WITH THE REPERTION OF THE RESERVES AND AND WARRANTS THAT WOR DETTER RESERVES AND AND WARRANTS THAT ON AND THE SERVES INTERVESSION TRANSPOSE DETER RESERVESTING AND VORBANTS THAT ON AND THE RESERVESTING AND VORBANTS THAT ON THE RESERVESSION TRANSPOSED WARDENER IS NOW DEDUCED BY TRANSPOSE THAT WAS THE RESERVESTING AND HIS TO THE SERVESSION AND THE RESERVESTING AND THAT THE SERVESSION OF THE RESERVESTING AND THE SERVESSION OF THE SER	IE GATERIALS SHIP IE WASTE MASSEILA MARD RECOVERY A MARD RACOVERY A MARD SAF COOVERY A AFFORMED DRILL MATION, DEVELOPM DY CE THE MATERIALS WEY THE MATERIALS RETHE TO SUNDANCE MER REPRESENTED by by the above effects	L BENDERG LET OD ING AS JELODI, el SSI NG FRUUDS. PENI ON SOMPED VETSI DELIVENED BY E BORWICH, ONC. 3 LAS TRANSPORTE LAS TRANSPORTE
АЗ А СОНИВТНОМ ТО БИН ВОВ ГСКЕТ, ПРЯКАТОКАВ НЕНИМТИ НЕ ВЛАТТИМА Е АМЕНОНО РООМ ТИМ ТО ИНИНИТИ НЕ ВЛАТТИМА Е АМО ВЕЗИКАТИСКИ ИНАТ РИССИСТВОМ ОТ СКИРЕ О АСОО АЗ А СОНИВТИМ З ТИКЗ КОТА, СОНИВТИМ З ТИКЗ КОТА, СЕКТИРТ И ЗАИЧИНИ И ВТСКЕТ, ТААКИМ ОРИЕКТОКАНИЧЕК ТИ ТЕ БАСИНИ У БОГ ОБЕРЦЕАТ. ТИКЗ КОТА, СЕКТИРТ И ЗАИЧИНИ И ВИТИКА.	NDANCE SERVICES, BRC 3 ACCEPTANCE OF TH MREEN HERMESENTS AND WARRANCE THAT TO REART HERMESENTS AND WARRANCE THAT TO REART FROM THE RESOURCE. CONSERVATION THIS, WILL SC & 6001, et al., THE BASE BEALT REART FROM THE RESOURCES OF THE BASE BEALT OF THEREFORE, BY VITTLE OF THE BEALT OF THE REFORMED AND WARRANTS HERE CONTRER REFORMERS, AND WARRANTS THAT OF ANALYSICER IS HOW DESIVERED BY GRAPHIC has the above Transporter loaded by GRAPHICS has the above Transporter loaded by GRAPHICS and Indefinite serve model to disk load, and MANNESS	IE GATERIALS SHIP IE WASTE MASSEILA MARD RECOVERY A MARD RACOVERY A MARD SAF COOVERY A AFFORMED DRILL MATION, DEVELOPM DY CE THE MATERIALS WEY THE MATERIALS RETHE TO SUNDANCE MER REPRESENTED by by the above effects	L BENDERG LET OD ING AS JELODI, el SSI NG FRUUDS. PENI ON SOMPED VETSI DELIVENED BY E BORWICH, ONC. 3 LAS TRANSPORTE LAS TRANSPORTE

an a	Sundance Services P.O. Doc 1707 & Binty No (585) 394-3511	s, Inc.	64788
LEASE OPERATOR/SHI	PPER/COMPANY: 1/18	Ł	
LEASE NAME: BD	Swd -7-8-	and a second	and a second sec
THANSPORTER COMPA	wy watten	TIME:	AM/PM
DATE 3/29/03	VEHICLE NO .: 1178	DRIVER NO.:	
CHARGE TO: 1211	90		
/1.	TYPE OF MATER	ALSEC 8 Tas	1 1375
Observeries Weter     Tunk Bottoms     Ottoms     Ottoms     Ottoms	() Drilling Flatda () Contemported soll () 066W Contentr () 006W Contentr	11 Completion System B.D Her I-B-	
AS A CONDITION TO SERVICE AND TRUET OF GRATOR SHIP NEEDENTI IS SALTIPILAS. LEIG ANTENDED PICAN STATE TO TH AND REGULATIONS RELATED TO PRODUCTION WATFILS, AND OT	(1 BBLS,	HAT THE WASTE MATERI VATION AND RECOVERY HEALTH AND SAV, STOR PTICO APPORTED DRIFT EXPLORATION, DISVELOR	AL-SHIPPUD AET OF 1976, AS 1 361,001, st mp., 1NG FLENNS,
AS A CONNETTION TO SERIEDA MILETACINET, OFFINATORISHIM INTERCENTI & STAATPISAS, ETG ANTERIOLULATIONE REALATED PECDUCETION OF COUNTY OF RECOUCETION OF COUNTY OF RECOUCETION OF COUNTY OF ALTO AS A CONNETTION OF ALTO AS A CONNETTION TO SERIES	MITE REPAILES, INC.'S ACTRITANTS FER REPAILES, INC.'S ACTRITANTS MIR ADVISION THE RESOURCE CONSTR MIR AD U.S.C. J. 4701, 19 KM, THE MM THERETO, BY YIETUE OF THE RATE THERETO, BY YIETUE OF THE RATE	OF THE MATERIALS SIM MAT THE WASTE MATERN VATEN AND RECOVERY NAALTI AND EAU, SUM WITCH AND EAU, SUM EXPLORATION, DEVILION ENERGY. ISANCE OF THE MATERIAL	WED WILLS FITS AL SHIPTOD ACT OF 1976, AS 194,001, as man- ING FLORER, ANDIT OR S SDIMMED WITH
AS A COMMENTION TO SEMBLA ONE TXCKFP, OFGRATORISHIP INTEREMENT IS DIATEDRA, FLG ANDERDOR PICKWITHS TO TA ANDERDOR PICKWITHS TO TA PECDUCTED WATFIG, AND OT PRODUCTION OF CHUCH OL: ALED AD A COMMENTION TO I THIS BUT VICKEP, ATAMSHOT OFFERTORISHIPPER SU TRUM FACILITY TOK DESPOSAL THIS WILL CERTIFY shall Summent at the above des-	MATE REPARCES, INC.'S ACTEVTANT 653, REPARSENTS AND WARRANTS T MIT FROM THE RESOURCE. CONSER MR, 40 U.S.C. 5 4400, w 463, THE MA 7 TIGMETO, 65 V VISTUR OF THE RAFE THE WASTE ASSOCIATED WIGHT THE CRI MATHRAL, GAS OR OF OTHER ARE SUPERANTS SOURCES, BET.'S ACCEPT THE REPRESENTS AND WARRANTS T	OF THE MATERIALS SIM MAT THE WASTE MATERIA NATEN AME DESCRIPTION ARTON AME ENCIVENT MALTI AND AND ENCIVENT MALTI AND ANY STREAM STRON APPROVED DERIL EXPLORATION ADDITION SIMPON ENTROP NAMES OF THE MATERIAL MATERIAL TRANSPORTER TO SUMPARE INMERICAL TRAPSORTAGE INMERICAL TRADSOCTION INMERICAL TRADSOCTION INVERSIONAL TRADSOCTION INVERSIONAL TRADSOCTION INVERSIONAL TRADSOCTION INVERSIONAL TRADSOCTION INVERSIONAL TRADSOCTIONAL TRADOCTIONAL TRADSOCTIONAL TRADSOCTIONAL TRADSOCTIONAL TRADSOCTI	WED WILTS THIS ACT OF 1976. ACT OF 1976. AS 1 361.001. st may. Niki Hennes. ANNET GR S SUMPED WITTS C. OFLIVINGED WITTS C. OFLIVINGED WITTS S SERVICES. MIC. J AND Transporters Wood Subsect. This
NOR TACKET, OFFIRATORSHIM INTEREMITI IS NATERIAL EUG AMERICO PROMITIA ETA TA AMERICO PROMITIA ETA TA AMERICO PROMITIA ETA TA MECOLOCITION OF CUUDA OLI INCOLOCITION OF CUUDA OLI AUTO AN A COMMITION TO S TMAS RAIL VICKET, TRANSPORT OFFIRATORISHIPHIA EU TRAN FACILITY TON OSSPORAL THIS WILL CERTIFY shal Summeria at the above desi- tion excitify that so oddition	MACE REPAICES, INC.'S ACCEPTANE POLY REPAIRSENTS AND WARRANES AND PERMITSERIESTS AND WARRANES AND PERMITSERIESTONECE CONSIST AND PERMITSERIESTONECE CONSIST AND PERMITSERIESTONE OF THE REAL THERE NOT AND ASSOCIATED WITH THE CON MATHRAN, GAS ON CHEOTHERMAN SUMDANCE SERVICES, BAC, S ACCEPT THE REPAIRSENTS AND WARRANES TO SUMDANCE SERVICES, BAC, S ACCEPT THE REPAIRSENTS AND WARRANES OF THE ACCEPTION OF TRANSPORTS SOUTH AND AND A DESCRIPTION, AND THE USE IN A DESCRIPTION OF TRANSPORTS SOUTH AND AND A DESCRIPTION, AND THE USE IN A DESCRIPTION OF TRANSPORTS SOUTH AND AND A DESCRIPTION OF TRANSPORTS SOUTH AND AND AND A DESCRIPTION OF TRANSPORTS SOUTH AND AND AND AND A DESCRIPTION OF TRANSPORTS SOUTH AND	OF THE MATERIALS SIM MAT THE WASTE MATERN VATURE WASTE MATERN VATION AME BECOVERY MAALTH AND SAN, SUMM STROM APPORTED DERIC EXPLORATION, DEVILLIM BINEROY. INANCE OF THE MATERIAL ANDPORTER TO SUMMARY MEMORY BY THE MATERIAL MEMORY BY THE MATERIAL MEMORY BY THE MATERIAL MEMORY BY THE MATERIAL	WED WILTS THIS ACT OF 1976. ACT OF 1976. AS 1 361.001. st may. Niki Hennes. ANNET GR S SUMPED WITTS C. OFLIVINGED WITTS C. OFLIVINGED WITTS S SERVICES. MIC. J AND Transporters Wood Subsect. This

Ψ.

Sundance Services P.O. Ion 1231 & Partie, Paul 1989 JUL2511	Tuc. No	64807
LEASE OPERATOR/SHIPPER/COMPANY: Rest		
LEASE NAME: B. P. SLID		
THANSPORTER COMPANY: We Har	THAE:	AM/PM
DATE: 3-26 03 VEHICLE NO. 428	DRIVER NO.:	
CHARGE TO: Rice		
TYPE OF MATERI	AL JET	1923R31E
§ Production Weter   } Tonk Boltoma   { Chinamitatic   } Biblis Certant;	I Completiti	B
	YARD _22:	11
AS A, INHORITORI TO MUMDANCE SERVICES, INC.'S ACCEPTANCE NON TECKET, OPERATOR/SHIPPER REPRESENTS AND WARRANTS TO ULTERVITIE BEMATERIAL EXEMPT HERM THIS REPAIRINCE, CONSIDU ADENDED FROM TIME TO THE 40 U.S.C. § 600, as MD. THE MAN AND REGREATIONS RELATED THERITO, BY VIRTURE OF THE EXEM RODUCED WAITERS, AND OTHER WASTE ASSOCIATED WITH THE	of the materials b at the water hate ation and becover baith and saf, cto pton appring d dri opplication, devel	REAL SAMPLED BY ALT OF HOM, AS DE \$ SELEND, or ma, LLEND FLUNDS.
	OF THE MATERIALS B AT THE WATERIALS B AT THE WASTE MATE ATHON AND BECOVER EATTH AND SAF, CO PIED AFFORMED DIG ROPERSTON, DEVEL BREET, INCE OF THE MATERI AT ONLY THE MATERI	REAL SHIPPED VY ACY OF HOL AS DE STOLEDI, IT BUL ALLENG FLUIDS, ALLENG FLUIDS, ALLE SUBWPED & I DT MA, DELLIVERED BY
AS A INMOTION TO NUMDANCE SERVICES. INC.'S ACCEPTANCE! NOT TICKET, OBERATOR SIMPLER REPRESENTS AND WARRANTS IN HEREWITH IS MATERIAL EXCMPT HEAD THE REPRESENTS AND WARRANTS IN HEREWITH IS MATERIAL EXCMPT HEAD THE REPRESENTS AND WARRANTS IN ADVE SERVICE AND ATTERNAL EXCMPT HEAD THE REPRESENT AND REFRICT ATTERNAL TO THERE AU U.S.C. & GOOL, as any, THE MAN HAD REFRICT ATTERNAL TO THERE AND US.C. & GOOL, as any, THE MAN HAD REFRICT ATTERNAL TO THERE AND US.C. & GOOL, as any, THE MAN HAD REFRICT ATTERNAL TO THERE AND US.C. & GOOL AND REFRICT ATTERNAL TO THERE AND UT.S.C. & GOOL PRODUCED WATERNAL AND OTHERE WAS A SOCIATED WITH THE I PRODUCTION OF CRUDE OIL OR NATIONAL DAS OR DESTRIBUTION ATSO AS A COMMITTEN TO SUMMARY SERVICES, INC.'S ACCHERT THE FOR THERE TO THERE AND UTHER AND WARRANT TH	OF THE MATERIALS H AT THE WASTE MATE ATTACK AND RECOVER EASTH AND RECOVER EASTH AND SECONED DRITCH AND SAF, CT PTICH AND SAF, CT PTICH AND SAF, CT PTICH AND RECOVER EASTH AT COLLY THE MATERIA AT COLLY THE MATERIA ASSOCIATED THE MATERIA ASSOCIATED THE MATERIA ASSOCIATED THE MATERIA ASSOCIATED THE MATERIA ASSOCIATED THE ASSOCIATED ASSOCIATED THE ASSOCIATED ASSOCIATED ASSOCIATED THE ASSOCIATED ASSOCIATA ASSOCIATED ASSOCIATED ASSOCIATED ASSOCIATED ASS	ВИЛ. Былред СГ АСТ ОГ 1921, АЗ Р 5 УМ.200, к онд. К. ОРО FL (1915, СОРАНИИ Г. (1915), СОРАНИИ Г. (1915), СОРАНИИ Г. (1915), СС 2500000000000000000000000000000000000
AS A, INMOITION TO NUMDANCE SERVICES, INC.'S ACCEPTANCEM ON TICKEY, OPERATOR SIMPLER REPRESENTS AND WARRANTS IN UREWITH IS NATURAL EXEMPLE REPRESENTS AND WARRANTS IN UREWITH IS NATURAL EXEMPLE AU U.S.C. & GOU, IS AN INFRIDED FRON THE TO THE AU U.S.C. & GOU, IS AN INFRIDED FRON THE TO THE AU U.S.C. & GOU, IS AN INFRIDED FRON THE TO THE AU U.S.C. & GOU, IS AN INFRIDED FRON THE TO THE AU U.S.C. & GOU, IS AN INFRIDED FRON THE TO THE AU U.S.C. & GOU, IS AN INFRIDED FRON THE TO THE AU U.S.C. & GOU, IS AN INFO RESULT AUTONS AND OTHER WASTE ASSOCIATED WITH THE ALSO AS A COMMITTON TO SANDANCE SERVICES, INC.'S ACCHETY INFRATOR SCHIPER TO TRANSPORTER IS NOW DELIVERED BY TRA- ACCELITY FOR DESIGNAL. THIS WILL CERTIFY for the where Transporter fooded we al Nonument of the above checking fooded in the inter- Statement of the above checking for were added as the local INFORMATION IN AN INFRINCTION IN THE INSTITUTE IN THE INTERNAL INFORMATION IN THE AUTON IN THE AUTON IN THE INFORMATION IN THE ALSO AS A COMMITMENT IN TRANSPORTER IN NOW DELIVERED BY TRA- ACCELITY FOR DESIGNAL.	OF THE MATERIALS H AT THE WASTE MATE ATTACK AND RECOVER EASTH AND RECOVER EASTH AND SECONED DRITCH AND SAF, CT PTICH AND SAF, CT PTICH AND SAF, CT PTICH AND RECOVER EASTH AT COLLY THE MATERIA AT COLLY THE MATERIA ASSOCIATED THE MATERIA ASSOCIATED THE MATERIA ASSOCIATED THE MATERIA ASSOCIATED THE MATERIA ASSOCIATED THE ASSOCIATED ASSOCIATED THE ASSOCIATED ASSOCIATED ASSOCIATED THE ASSOCIATED ASSOCIATA ASSOCIATED ASSOCIATED ASSOCIATED ASSOCIATED ASS	ВИЛ. Былред СГ АСТ ОГ 1921, АЗ Р 5 УМ.200, к онд. К. ОРО FL (1915, СОРАНИИ Г. (1915), СОРАНИИ Г. (1915), СОРАНИИ Г. (1915), СС 2500000000000000000000000000000000000

	Sundance Services, In PAL Bin 1737 St Ender, No. 18231 (1949) 594-2511		64806
LEASE OPERAJOR/SHIP	PERICOMPANY: Rev		
LEASE HAME S.L	2 540		
THANSPORTER COMPAN	M: Wallsch Cours	TIME	AM/PN
DATE: 3-27-01	VEHICLE NO.2" 10	DRIVER NO.:	
CHARGE TO: Rive		and the second	
	TYPE OF MATERIAL		7. 51 00
Productions Water   Tank Battorns   Other Material: Description: Migratic	1 3 Online Ehide 1 Contaminated soll 1 258W Content:	E & Completin E & Constitution E & Constitution	ore (Flaider
JUN TICKET, DIGRAPORISEPP	ACT SERVICES, INC. 3 ACCEPTANCE OF TH THE ATAMESIENTS AND WARRANTS HIAT TH	INC. WASTE MATS	SINAL (FRIPPSI)
AS A CONVITURE TO SUBBAU Jup TREAST, LORGA PORTSBURY INERCYTHIS (S. NATURAL, SCH AMENDED FROM TIME TO THE AMENDED FROM TIME TO THE AND REGULATIONS RELATED	ACS SERVICES, INC 'S ACCEPTANCE OF TH BER INVESSIONTS AND WARRANTS HAT TH BY FROM THE RESOLUCE, CONSERVATIO (5. 40 U.S.C. 5. 400), a seq. THE DESTROYO THERINO, MY INTUG OF THE DESTRINO	HE MATERIALS & HE WASTE MAT IN AND RECOVE IN AND SAF, CO N AMORDED DR	CHINYED WITH BRIES BRUAL, DEMPEDID BY ALT OF 1990, AS DE 1 JUI DDJ, 11 HOG. M JUNG PL (1905;
AS A CONTITUENT TO EUROPA JUD TICKET, LOFRA-FORJEDIT HEREWITH IS MATHRAL BRIN AMENDED FROM THEE TO THE AND REGULATIONS RELATED PRODUCED WATERS, AND THE	ACT SERVICES, INC. 3 ACCEPTANCE OF THE REPRESENTS AND WARRANTS HAT THE REPUBLIER, CONSERVATION FROM THE REPUBLICE, CONSERVATIONS AND FEAST	HE MATEMALLS INC. WASTE MAT INC. WASTE MAT IN AND RECOVER IN AND SAF, CO NAME OF COMPANY OR ATOM: DEVE	CHINYED WITH BRIES BRUAL, DEMPEDID BY ALT OF 1990, AS DE 1 JUI DDJ, 11 HOG. M JUNG PL (1905;
AS A CONTITUENT TO SURBAN JUD TICKET, LATER AFUR SUBP HEREVITH IS NITHER A LEAD ANEMOLD FROM THEE TO THE AND REGULATION RELATED PROMINENT WATER, AND OTH PROMINENT WATER, AND OTH PROMINENT AND A CONDITION TO ST ALSO AS A CONDITION TO ST ALSO AS A CONDITION TO ST	ACE SUBVICES, INC. 3 ACCEPTANCE OF TH BER ADDRESSINTS AND WARRANTS STATT INF FROM THE RESOLUTE, CONSERVATIO ALL OUTS C. 5 (90), or son, THE NA BIRGO THERITO, BY WRITE OF THE EXEMPTION REAL WASTE ASSOCIATED WITH THE EXPLO	HE MATEMALL & INC WASTE MATE IN AND RECOVE IN AND SAF, CD N ANGRED DR ORATION, DEVE OT. EIN THE MATEMALE NLL YIE MATEMALE	CHARTED WITT DARS BURL, GENTRO BY ALT OF 1976, AS INE (101 DD1, 61 A01, MI, 200 PC, 101, 61 A01, LORALEY, 101, BALLY BOOPPED WITH MAL, OR: FRENCO BY
AS A CONTINUES TO EUROPAI Jup TICKET, DYEATUR SHIP HEREWITH IS NATURAL SEE AND REGULATIONS RELATED PROMINED WATERS, JAN OT PROMINED WATERS, JAN OT ALSO AS A CONDITION TO S THES AND TICKET, TRANSPORT OPERATORISHIPTER TO THAN ACULTY FOR DISPOSAL THES WITC CERTIFY dua Statistication of the Day Masse	ACE SERVICES, ENC 'S ACCEPTANCE OF TH ACE SERVICES, ENC 'S ACCEPTANCE OF TH ENT FROM THE RESOLUCE, CONSERVATION ENT FROM THE RESOLUCE, CONSERVATION ENT FROM THE RESOLUCE, CONSERVATION REF WASTE ASSOCIATED WITH THE ESTIM- THERETO, WY VIRTUE OF THE EDENTTION REF WASTE ASSOCIATED WITH THE ESTIM- ENT MALE CAS OR OBSIDIATED WITH THE ESTIMATED OBSIDIATED ENT ENT MALE CAS OR OBSIDIATED BY (RANNO COMPACT ENTROPOLY OBSIDIATED BY (RANNO COMPACT ENTROPOLY ENT MALE THE ESTIMATED OBSIDIATED BY ESTIMATED OBSIDIATED OBSIDIATED BY (RANNO COMPACT ENTROPOLY OBSIDIATED BY (RANNO	HE MATEINALL'S IIIC WASTIG MAT RE AND RECTORE PARTY AND SAF, CD A AN-ORDED DR ORATION, DRV H GY. HI THP ATAYER HLA' VILL MATEI REVEN TO SUMO inf represented by the rever at	HINTED WITTI DIBA BURLI, GENTED BY ALT OF NYA, AS DE & JEJ DDJ, 61 NG. AS AND AN AND AN AND ALL SHOPPED WITH MAL DAS FREND BY ANCE SHAVELES, MAC." by ANS TROUSDANSE carthod shipper. Th
AS A CONTINUES TO EUROPAI Jup TICKET, DYEATUR SHIP HEREWITH IS NATURAL SEE AND REGULATIONS RELATED PROMINED WATERS, JAN OT PROMINED WATERS, JAN OT ALSO AS A CONDITION TO S THES AND TICKET, TRANSPORT OPERATORISHIPTER TO THAN ACULTY FOR DISPOSAL THES WITC CERTIFY dua Statistication of the Day Masse	ACS SERVICES, INC 'S ACCEPTANCE OF TH BER REPRESENTS AND WARRANTS HAT TH BY FROM THE REPOURCE, CONSERVATIO (E. 40 U.S.C. \$ 400), a usp, this instruc- tracture, may by the top of the defermance of matter services with the expl of matter services. UNC 's ACCEPTANCE is represents and warrants that of security is how orlivered by France the oboy Thereposter localist the mater	HE MATEINALL'S IIIC WASTIG MAT RE AND RECTORE PARTY AND SAF, CD A AN-ORDED DR ORATION, DRV H GY. HI THP ATAYER HLA' VILL MATEI REVEN TO SUMO inf represented by the rever at	HINTED WITTI DIBA BURLI, GENTED BY ALT OF NYA, AS DE & JEJ DDJ, 61 NG. AS AND AN AND AN AND ALL SHOPPED WITH MAL DAS FREND BY ANCE SHAVELES, MAC." by ANS TROUSDANSE carthod shipper. Th
АЗ А СООМПТИНН ТО БUNDAL Jup TICKK, DYKA HUR SHIP HERENTII IS NIATIKAL SKIP AMENDED FROM THE TO THE AND REGULATION RELATED PROMISED WATERS, AND UTP PROMISED WATERS, AND UTP AND UTP FOR DISPASSION SILVENEM IN THE ADDRESS.	ACE SERVICES, ENC 'S ACCEPTANCE OF TH ACE SERVICES, ENC 'S ACCEPTANCE OF TH ENT FROM THE RESOLUCE, CONSERVATION ENT FROM THE RESOLUCE, CONSERVATION ENT FROM THE RESOLUCE, CONSERVATION REF WASTE ASSOCIATED WITH THE ESTIM- THERETO, WY VIRTUE OF THE EDENTTION REF WASTE ASSOCIATED WITH THE ESTIM- ENT MALE CAS OR OBSIDIATED WITH THE ESTIMATED OBSIDIATED ENT ENT MALE CAS OR OBSIDIATED BY (RANNO COMPACT ENTROPOLY OBSIDIATED BY (RANNO COMPACT ENTROPOLY ENT MALE THE ESTIMATED OBSIDIATED BY ESTIMATED OBSIDIATED OBSIDIATED BY (RANNO COMPACT ENTROPOLY OBSIDIATED BY (RANNO	HE MATEINALL'S IIIC WASTIG MAT RE AND RECTORE PARTY AND SAF, CD A AN-ORDED DR ORATION, DRV H GY. HI THP ATAYER HLA' VILL MATEI REVEN TO SUMO inf represented by the rever at	HINTED WITTI DIBA BURLI, GENTED BY ALT OF NYA, AS DE & JEJ DDJ, 61 NG. AS AND AN AND AN AND ALL SHOPPED WITH MAL DAS FREND BY ANCE SHAVELES, MAC." by ANS TROUSDANSE carthod shipper. Th
AS A CONTITURE TO SURRAY Jup TICKET, DYRAFTRALE SUP HEREWITH IS NATURAL SCHEM HEREWITH IS NATURAL SCHEM AND REQULATIONS RELATED PROMINED ROOM INDER RATED PROMINED WATERS, JAM OTH PROMINED WATERS, JAM OTH PROMINED WATERS, JAM OTH PROMINED ROOM OF AN ANTI- COMPACTION OF A CONSTITUTION TO S THIS SUB TICKET, TRANSPORT OPERATORISSINFUER TO HARM HACHITY FOR DISPOSAL THIS SWITC CERTIFY dua Statement of the Doper State without Orchigin without Orchigin.	ACE SERVICES, ENC 'S ACCEPTANCE OF TH ACE SERVICES, ENC 'S ACCEPTANCE OF TH ENT FROM THE RESOLUCE, CONSERVATION ENT FROM THE RESOLUCE, CONSERVATION ENT FROM THE RESOLUCE, CONSERVATION REF WASTE ASSOCIATED WITH THE ESTIM- THERETO, WY VIRTUE OF THE EDENTTION REF WASTE ASSOCIATED WITH THE ESTIM- ENT MALE CAS OR OBSIDIATED WITH THE ESTIMATED OBSIDIATED ENT ENT MALE CAS OR OBSIDIATED BY (RANNO COMPACT ENTROPOLY OBSIDIATED BY (RANNO COMPACT ENTROPOLY ENT MALE THE ESTIMATED OBSIDIATED BY ESTIMATED OBSIDIATED OBSIDIATED BY (RANNO COMPACT ENTROPOLY OBSIDIATED BY (RANNO	HE MATEINALL'S IIIC WASTIG MAT RE AND RECTORE PARTY AND SAF, CD A AN-ORDED DR ORATION, DRV H GY. HI THP ATAYER HLA' VILL MATEI REVEN TO SUMO inf represented by the rever at	HINTED WITTI DIBA BURLI, GENTED BY ALT OF NYA, AS DE & JEJ DDJ, 61 NG. AS AND AN AND AN AND ALL SHOPPED WITH MAL DAS FREND BY ANCE SHAVELES, MAC." by ANS TROUSDANSE carthod shipper. Th

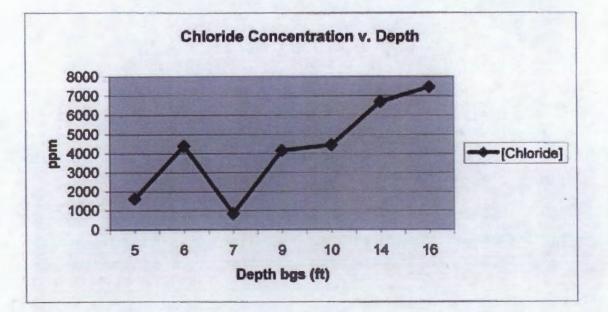
#### CHLORIDE CONCENTRATION CURVE

#### RICE Operating Company

#### BD jet. I-8 T22S, R37E

Depth bgs (ft)	[Cl-] ppm
5	1617
6	4397
7	837
9	4157
10	4450
14	6700
16	7450

Groundwater = 71 ft



# ANALYTICAL REPORT

# **Prepared for:**

CAROLYN HAYNES RICE OPERATING CORP. 122 WEST TAYLOR HOBBS, NM 88240

 Project:
 I-8

 PO#:
 G0306119

**Report Date: 04/02/2003** 

<u>Certificates</u> US EPA Laboratory Code TX00158

# ENVIRONMENTAL LAB OF TEXAS SAMPLE WORK LIST

RICE OPERATING CORP. 122 WEST TAYLOR HOBBS, NM 88240 505-397-1471 Order#: G0306119 Project: Project Name: 1-8 Location: BD

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

			Date / Time	Date / Time		
Lab ID:	Sample :	Matrix:	Collected	Received	Container	Preservative
0306119-01	Rem. Backfill Pile	SOIL	3/28/03 16:00	3/28/03 19:55	4 oz glass	Ice
Lat	b Testing:	Rejected: No	Temp	): 2 C		
	8015M 8021B/5030 BTEX					
	Chloride					
						, its space to be an even of

# ENVIRONMENTAL LAB OF TEXAS

# ANALYTICAL REPORT

CAROLYN HAY RICE OPERAT 122 WEST TAY HOBBS, NM 88	ING CORP. LOR			Order#: Project: Project Nam Location:	G030 ie: I-8 BD	6119	
Lab ID: Sample ID:	0306119-01 Rem. Backfill Pil	le					
				8015M			
	Method <u>Blank</u>	Date Prepared	Date <u>Analyzed</u>	Sample <u>Amount</u>	Dilution <u>Factor</u>	Analyst	Method
			4/1/03	1	1	WL	8015M
		Parameter		Resul mg/kg		RL.	
		GRO, C6-C12		<10.0		10.0	
		DRO, >C12-C35		<10.0	)	10.0	
		TOTAL, C6-C35		<10.0	)	10.0	
		Surrog	ates	% Recovered	QC Lim	its (%)	
		1-Chlorooct		104%	70	130	
		1-Chlorooct	ladecane	104%	70	130	
			<i>80211</i>	B/5030 BTEX			
	Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
	0005116-02		4/1/03 19:43	1	25	СК	8021B
		Parameter		Resul mg/kg		RL	
		Benzene		<0.02	5	0.025	
		Toluene		< 0.02	5	0.025	

Toluene	< 0.025	0.025
Ethylbenzene	<0.025	0.025
p/m-Xylene	<0.025	0.025
o-Xylene	< 0.025	0.025

Surrogates	% Recovered	QC L	imits (%)
aaa-Toluene	80%	80	120
Bromofluorobenzene	109%	80	120

4/02/03 MULU

Approval: <u>Ulup</u>.<u>Muth</u> Raland K. Tuttle, Lab Director, QA Officer Celey D. Keene, Org. Tech. Director Jeanne McMurrey, Inorg. Tech. Director Sandra Biezugbe, Lab Tech. Sara Molina, Lab Tech.

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

Page 1 of 1

# **ENVIRONMENTAL LAB OF TEXAS**

# ANALYTICAL REPORT

CAROLYN HA RICE OPERAT 122 WEST TAY HOBBS, NM 8	ING CORP. LOR		Order: Projec Projec Locati	t: t Name:	G0306119 I-8 BD			
Lab ID: Sample 1D:	0306119-01 Rem. Backfill Pile							
Test Paran Parameter	neters	Result	Units	Dilutio <u>Facto</u>		Method	Date Analyzed	<u>Analyst</u>
Chloride		1310	mg/kg	1	20	9253	3/31/03	СК
				Celey D Jeanne I Sandra I	K. Tuttle, Lab I ). Keene, Org. 1	rg. Tech. Director Tech.		log/13 Date

RL = Reporting Limit N/A = Not Applicable

# ENVIRONMENTAL LAB OF TEXAS QUALITY CONTROL REPORT

8015M

BLANK	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0005102-02			<10.0		
MS	SOIL	LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0306116-01	0	952	898	94.3%	
MSD	SOIL	LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0306116-01	0	952	923	97.%	2.7%
SRM	SOIL	LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0005102-05		1000	907	90.7%	

# ENVIRONMENTAL LAB OF TEXAS QUALITY CONTROL REPORT 8021B/5030 BTEX or

BLANK	IL LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/kg	0005116-02			<0.025		
Toluene-mg/kg	0005116-02			<0.025		
Ethylbenzene-mg/kg	0005116-02			<0.025		
p/m-Xylene-mg/kg	0005116-02			<0.025		-
o-Xylene-mg/kg	0005116-02		2	<0.025		
MS so	ILAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pet (%) Recovery	RPD
Benzene-mg/kg	0306119-01	0	0.1	0.089	89.%	
Toluene-mg/kg	0306119-01	Ø	0,1	0.092	92.%	
Ethylbenzene-mg/kg	0306119-01	0	0.1	0.100	100.%	# 1687-1 87
p/m-Xylene-mg/kg	0306119-01	0	0.2	0.209	104.5%	
o-Xylene-mg/kg	0306119-01	0	0.1	0.107	107.%	
MSD so	I. LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/kg	0306119-01	0	0.1	0.086	86.%	3.4%
Toluene-mg/kg	0306119-01	0	0.1	0.089	89.%	3.3%
Ethylbenzene-mg/kg	0306119-01	0	0.1	0.097	97.%	3.%
p/m-Xylene-mg/kg	0306119-01	0	0.2	0.204	102.%	2.4%
o-Xylene-mg/kg	0306119-01	0	0.1	0,103	103.%	3.8%
SRM so	L LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/kg	0005116-05	1	0.1	0.085	85.%	
Toluene-mg/kg	0005116-05	-	0.1	0.089	89.%	
Ethylbenzene-mg/kg	0005116-05	An earl from an applying prior of constraints and on the second second second second second second second second	0.1	0,095	95.%	
p/m-Xylene-mg/kg	0005116-05		0.2	0.199	99.5%	
o-Xylene-mg/kg	0005116-05		0.1	0.099	99.%	

# ENVIRONMENTAL LAB OF TEXAS QUALITY CONTROL REPORT

### **Test Parameters**

BLANK	SOIL	LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0005095-01			<20.0		
MS	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0306109-02	0	500	532	106.4%	
MSD	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0306109-02	0	500	517	103.4%	2.9%
SRM	SOIL	LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0005095-04		5000	4960	99.2%	

Environm 2600 West I-20 East Odessa, Tekas 79763		Phone: 1 Fix: 1	915-563 915-563	-1800										CH		OFC									YSIS.	RE	QUE.	ST		
Project Mar	ager:	Loga	n K	for der	Som								_			Proje	ecti	Nam	18:		E	<u>نجير</u>	8	F	-			(		
Company	Name	Rice														1	Pro	ject												
Company Ad	dress:															Pr	ojec	et Le	oc:		R	2								
City/Sta	le/Zip:																		#:.		-									
Telepho	ne No:					Fax No	:																							
Sampler Sign	nature:	20	en		yn Samellan ar fellan	under eller ver distanten er d			-																					
	Based in State				,								interna-diffe	propatijnis		F			-	in.		Ana	alyze	For	r:	-			-	
101.0																-			TOT	LP:	+	+	+	-	1				1	
							1	F	F	Prese	ervatin	ve 1		A	Aatrio	-	8				8								1	Г
03000119 LAB # (lab use only)		FIELD CO	DE		Date Sempled	Time Sampled	Np. of Cortainers	ke	HNO <sub>5</sub>	HCI	NaOH H-SO.	Nave	Other ( Specify)	Walter	Sol	on (spec	TPH: 418,1 (8015) 1006 1006	Cations (Ca, Mg, Na, K)	Anians CLSO4, CO3, HCO3)	SAR / ESP / CEC	Melais: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivoletijes	BTEX 80218/5030	RCI	r, u. k.m. Fotal Gemma			RUSH TAT (Pre-Schedule)	Standard TAT
101	Rem.	Backfill	P	le	3-28-03	4:00 10	1	X	1						2	5	x	•	X					X						
1-1-2-1												1			1			1	1						_	-	-	4	+	1
							-	+	-			-	-		+	-	-	-	-					-	-	+	-			+
Sec. 1								+	-			+	-	$\left  \right $	-		-	+	+	-		$\square$	-	-	-	+	+	++	+	+
March 1							-	+	+	-		+	+		+	+	+	+	+	-	-		$\vdash$	$\vdash$		+	+	++	+	+
Har and the state							+	+	+	-	++	+			+	+	+	+	+	-	-	$\vdash$	H			+		++	+	+
	-						-	+	+	-		+	+		+	+	+	+	+	-	+-	-	-	-		+	+	++	+	+
	11							+	+	-		+	+	H	+	+	+	+	+	+		+	$\square$		$\vdash$	+	+	++	+	+
tora Karra								+	+	+	++	-	+		+	-	+	+	+	+	-	+		-	$\left  + \right $	+	+	++	+	+
Special Instructions					I		1	1	1	1	1_1				1				L	bor	ator	ry Ci	omn	n Rei nent	celpt	1. 1.			N	-
Relinquished by:		3	Date 28-03	1											ate			me	-		ly	20	24	1	- TORY	-	100	н.		0
Relinquished by:			Date	Time	Received by E	LOR d.	K.	7-	S	)			1	3-2	3	ai	19	me S	5			9		ž.						

# ANALYTICAL REPORT

# **Prepared for:**

CAROLYN HAYNES RICE OPERATING CORP. 122 WEST TAYLOR HOBBS, NM 88240

Project: I-8 PO#:

**Order#:** G0306116

**Report Date:** 04/02/2003

<u>Certificates</u> US EPA Laboratory Code TX00158

# ENVIRONMENTAL LAB OF TEXAS SAMPLE WORK LIST

RICE OPERATING CORP. 122 WEST TAYLOR HOBBS, NM 88240 505-397-1471 Order#: G0306116 Project: Project Name: I-8 Location: BD

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

<u>Lab ID:</u> 0306116-01	Sample : Wall Composite	<u>Matrix:</u> SOIL		Date / Time <u>Collected</u> 3/27/03 14:00	100	te / Time teceived 3/28/03 19:55	Container 4 oz glæss	Preservative Ice
Lo	a <u>b Testing:</u> 8015M 8021B/5030 BTEX Chloride	Rejected:	No	Te	mb:	30		
0306116-02	5 pt Bottom Comp @ 16	SOIL		3/27/03 14:00		3/28/03	4 oz giass	loe
14	8015M 8021B/5030 BTEX Chloride	Rejected:	No	Te	árb:	3C		

# ENVIRONMENTAL LAB OF TEXAS ANALYTICAL REPORT

CAROLYN HAYNES RICE OPERATING COR 122 WEST TAYLOR HOBBS, NM 88240	tP.			Order#: Project: Project Nam Location:		306116	
Lab ID: 0306	116-01						
Sample ID: Wall	Composite						
				8015M			
	Method	Date	Date	Sample	Dilutio		
	Blank	Prepared	Analyzed	Amount	Factor		Method
			4/1/03	1	1	WL	8015M
		Parameter		Resul		RL.	
		GRO. C6-C12		mg/kg <10.0		10.0	
		DRO, >C12-C35	anda mumbanna ana anagina atauta dani 1749 - Antarasa atau	<10.0		10.0	
		TOTAL, C6-C35		<10.0		10.0	
		Surroga	ites	% Recovered	QC Lir	nits (%)	
		1-Chlorooct		106%	70	130	
		1-Chlorooct		100%	70	130	
	Method	Date	80211 Date	B/5030 BTEX Sample	Dilutio		
	Blank	Prepared	Analyzed	Amount	Factor		Method
	0005116-02		4/1/03 17:43	1	25	СК	8021B
		Parameter		Result mg/kg	1	RL	
		Benzene		<0.025	5	0.025	
		Toluene		<0.025		0.025	
		Ethylbenzene		<0.025		0.025	
		p/m-Xylene		<0.025		0.025	
		o-Xylene		<0.025	;	0.025	
		Surroga	tes	% Recovered	QC Lim	iits (%)	
		aaa-Toluene		88%	80	120	
		Bromofluoro	·	120%	80	120	

# **ENVIRONMENTAL LAB OF TEXAS**

# ANALYTICAL REPORT

CAR	ROLYN HAYNES	Order#:	G0306116
RIC	E OPERATING CORP.	Project:	
122 1	WEST TAYLOR	Project Name:	1-8
HOE	3BS, NM 88240	Location:	BD

Lab ID:

0306116-02 Sample ID: 5 pt Bottom Comp @ 16'

			8015M			
Method <u>Blank</u>	Date <u>Prepared</u>	Date <u>Analvzeti</u> 4/1/03	Sample <u>Amount</u> 1	Dilution <u>Factor</u> I	<u>Anaiyst</u> WL	Method 8015M
	Parameter	an ann ann an	Resu mg/k	ılt	RL	
ī	GRO, C6-C12		<10.	0	10.0	
Г	DRO, >C12-C35		<10.	0	10.0	

<10.0

Surrogates	% Recovered	QC Li	mits (%)
1-Chlorooctane	103%	70	130
1-Chlorooctadecane	101%	70	130

TOTAL, C6-C35

#### 8021B/5030 BTEX

Method <u>Blank</u>	Date <u>Prepared</u>	Date Analyzed	Sample <u>Amount</u>	Dilution <u>Factor</u>	Analyst	Method
0005116-02		4/1/03 18:03	I	25	СК	8021B

Parameter	Result mg/kg	RL
Benzene	<0.025	0.025
Toluene	<0.025	0.025
Ethylbenzene	<0.025	0.025
p/m-Xylene	<0.025	0.025
o-Xylene	<0.025	0.025

Surrogates	% Recovered	QC Limits (%)								
aaa-Toluene	83%	80	k k	120						
Bromofluorobenzene	115%	80		120	1					

Officiales Date

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

10.0

Page 2 of 2

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

12600 West I-20 East, Odessa, TX 79765 Ph: 915-563-1800 ENVIRONMENTAL LAB OF TEXAS I, LTD.

# ENVIRONMENTAL LAB OF TEXAS ANALYTICAL REPORT

CAROLYN HAYNES RICE OPERATING CORP. 122 WEST TAYLOR HOBBS, NM 88240			Òrder Projec Projec Locati	t: t Name: 1	G0306116 I-8 BD			
Lab ID: Sample ID:	0306116-01 Wall Composite							
Test Parameters		Result	Units	Dilution Factor		Method	Date Analyzed	Analyst
Chloride	and a second	2140	mg/kg	1	20	9253	3/31/03	CK
Lab ID:	0306116-02			1449-00-00-00-00-00-00-00-00-00-00-00-00-00	Andrew Strate Strate	na an a	and an and the second	Land Internet
Sample ID:	5 pt Bottom Comp @ 16'							
Test Paran	neters			Dilution			Date	
Parameter		Result	Units	Factor		Method	Analyzed	Analyst
Chloride		5850	mg/kg	1	20	9253	3/31/03	CK

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

RE=Reporting Limit N/A=Not Applicable

Date

ENVIRONMENTAL LAB OF TEXAS I, LTD.

AS I, LTD. 12600 West I-20 East, Odessa, TX 79765 Ph; 915-563-1800

# ENVIRONMENTAL LAB OF TEXAS QUALITY CONTROL REPORT

8015M

BLANK	SOIL	LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0005102-02			<10.0	-	
MS	SOIL	LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0306116-01	0	952	898	94.3%	
MSD	SOIL	LAB-ID#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0306116-01	0	952	923	97.%	2.7%
SRM	SOIL	LAB-IŅ#	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0005102-05		1000	907	90.7%	

# **ENVIRONMENTAL LAB OF TEXAS** QUALITY CONTROL REPORT 8021B/5030 BTEX

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/kg	0005116-02			<0.025		
Toluene-mg/kg	0005116-02			<0.025		
Ethylbenzenc-mg/kg	0005116-02			<0.025		
p/m-Xylene-mg/kg	0005116-02			<0.025		
o-Xylene-mg/kg	0005116-02			<0.025		
MS SOIL	LAB-ID #	Sample Spike Concentr. Concentr.		QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/kg	0306119-01	0	0.1	0.089	89.%	
Toluene-mg/kg	0306119-01	0	0.1	0.092	92.%	
Ethylbenzene-mg/kg	0306119-01	0	0.1	0.100	100.%	
p/m-Xylene-mg/kg	0306119-01	0	0.2	0.209	104.5%	
o-Xylene-mg/kg	0306119-01	0	0.1	0.107	107.%	-
MSD SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/kg	0306119-01	0	0.1	0.086	86.%	3.4%
Toluene-mg/kg	0306119-01	0	0.1	0.089	89.%	3.3%
Ethylbenzene-mg/kg	0306119-01	0	0.1	0.097	97.%	3.%
p/m-Xylene-mg/kg	0306119-01	0	0.2	0,204	102.%	2.4%
o-Xylene-mg/kg	0306119-01	0	0.1	0.103	103.%	.3.8%
SRM SQIL	LAB-ID #	Sample Concentr,	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/kg	0005116-05	1	0.1	0.085	.85.%	
Toluene-mg/kg	0005116-05		0.1	0.089	89.%	
Ethylbenzene-mg/kg	0005116-05	1	0.1	0.095	95.%	-
p/m-Xylene-mg/kg	0005116-05		0.2	0.199	99.5%	
o-Xylene-mg/kg	0005116-05	-	1,0	0.099	99.%	

# ENVIRONMENTAL LAB OF TEXAS

# QUALITY CONTROL REPORT

#### **Test Parameters**

BLANK	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0005095-01			<20.0		
MS	SOIL	LAB-1D #	Sample Concentr.			Pct (%) Recovery	RPD
Chloride-mg/kg		0306109-02	0	500	532	106.4%	
MSD	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0306109-02	0	500	517	103.4%	2.9%
SRM	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	······································	0005095-04		5000	4960	99.2%	

Environmental Lab of Texas I, 12600 West I-20 East Odessa, Texas 79763 Phone: 915-563-1800 Fax: 915-563-1713	Phone: 915-563-1800 CH. Fax: 915-563-1713						HAII	N OF	cus	TOE	Y RE	co	RD /	ANE	) AN	VAL	YSIS	REC	QUES	T					
Project Manager: Ligan Anderson Company Namo Rice									*****		Proj	ject	Nam	e:		Ŀ	_	8							
Company Namo Rice														#:									A. (2.4)		
Company Address:											P	roje	ct Lo	ic:		ß	Ĺ	)							
City/State/Zip:														"·							-4				
Telephone No:		Fax No:		***	****																				
Sampler Signature:												<u> </u>					Anal	lyze	For					٦	
$\mathcal{C}$														TOTA	_			Ŧ	-	1		Π			
	e		[		Pres	ervali	ve			Matr	ix	-			- -				-						
030 (6) (16 LAB # (lab use only) FIELD CODE	Date Sampled	Tine Sampled	No. of Containers	lca HNO,	нсі	NaCH MacH	Nore Nore	Othor ( Specify)	Water	Sludge	Soit Other (specify):	TPH: 418.1 8015M X035 1006	Cations (Ca, Mg. Na, K)	Anions (CL) 604. CO3, HCO3)	SAR/ESP/CEC	Và ca ca ci ru nă	Volatiles	Semivolatiles DTCV 8031846020	3TEX 80218/5020	RCI N.O.R.M	l otal Gamma			RUSH TAT (Pre-Schedule)	Standard TAT
ol Wall Composite	3-27-03	1	T	×						· · · · · ·	$\mathbf{x}$	X		X		-	-		$\overline{\chi}$	÷ fé	-			- -	-
01 Wall Composite 02 Spt. Bottom Comp @16'	3-27-03	and the state of t	)	x							X	X	1	X				ľ	X						
						<u> </u>  .									_			_	_					_ _	
												_ _			_	_	_	_	_				- -		
													+	$\left  - \right $			-		_		_			-	
						╉╾╂			+			+	-			-			_					+	
	-		1				$\uparrow$																		
														_											
Relinquished by: Jello 7-27:03 3:00 /	Received by:								[	Date		Ti	me	Ter Lai	npel vora	ratur to <b>ry</b>	re U y Co	ners Ipon omm 3	Rec nont	ceipt: is:		Y	ţ	Ν	
Relinquished by: Date Time	Recaive	LOT. C	K	2	Ę	2			36	Date 2. P	21		me 55	-											

# Appendix B Quality Procedures

RICE Environmental Consulting and Safety (RECS) P.O. Box 2948 Hobbs, NM 88241 Phone 575.393.2967

## **Rice Environmental Consulting and Safety**

#### **Quality Procedures**

**Table of Contents** 

- QP-1 Soil Samples for Transportation to a Laboratory
- QP-2 Chloride Titration Using 0.282 Normal Silver Nitrate Solution
- QP-3 Development of Cased Water-Monitoring Wells
- QP-4 Sampling of Cased Water-Monitoring Well
- QP-5 Composite Sampling of Excavation Sidewalls and Bottoms for TPH and Chloride Analysis
- QP-6 Sampling and Testing Protocol for VOC in soil
- QP-7 Composite Sampling of Excavation Sidewalls and Bottoms for BTEX
- QP-8 Procedure for Plugging and Abandonment of Cased Water-Monitoring wells

#### **Rice Environmental Consulting and Safety**

# Quality Procedure Soil Samples for Transportation to a Laboratory

#### 1.0 Purpose

This procedure outlines the methods to be employed when obtaining soil samples to be taken to a laboratory for analysis.

#### 2.0 Scope

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory.

#### 3.0 Preliminary

- 3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the soil.
- 3.2 If collecting TPH, BTEX, RCRA 8 metals, cation /anions or O&G, the sample jar may be a clear 4 oz. container with Teflon lid. If collecting PAH's, use an amber 4 oz. container.

#### 4.0 Chain of Custody

- 4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.
- 4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.
- 4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label.) Affix the labels to the jars.

#### **5.0 Sampling Procedure**

- 5.1 Do not touch the soil with your bare hands. Use new nitrile gloves to help minimize any contamination.
- 5.2 Go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to obtain the soil.

- 5.3 Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label.
- 5.4 Place the sample directly on ice for transport to the laboratory if required.
- 5.5 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

#### **6.0 Documentation**

- 6.1 The testing laboratory shall provide the following minimum information:
  - a. Project and sample name.
  - b. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
  - c. Results of the requested analyses
  - d. Test Methods employed
  - e. Quality Control methods and results

# QUALITY PROCEDURE Chloride Titration Using 0.282 Normal Silver Nitrate Solution

### 1.0 Purpose

This procedure is to be used to determine the concentration of chloride in soil.

# 2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride concentrations.

# 3.0 Sample Collection and Preparation

- 3.1 Collect at least 80 grams of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample for soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).
- 3.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools or sample processing equipment.
- 3.3 The sealed sample bag should be massaged to break up any clods.

### 4.0 Sample Preparation

- 4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.
- 4.2 Add at least 20 grams of reverse osmosis water to the soil sample and shake well.
- 4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.

### 5.0 Titration Procedure

- 5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.
- 5.2 Add 2-3 drops potassium chromate ( $K_2CrO_4$ ) to mixture if necessary.

- 5.3 Using a 1 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.
- 5.4 Record the ml of silver nitrate used.

#### **6.0** Calculation

To obtain the chloride concentration, insert measured data into the following formula:

<u>.282 X 35,450 X ml AgNO3</u>	Х	grams of water in mixture
ml water extract		grams of soil in mixture

Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on the delineation form.

Quality Procedure Development of Cased Water-Monitoring Wells

#### 1.0 Purpose

This procedure outlines the methods to be employed to develop cased monitoring wells.

#### 2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

### 3.0 Sample Collection and Preparation

- 3.1 Prior to development, the static water level and height of the water column within the well casing will be measured with the use of an electric D.C. probe.
- 3.2 All measurements will be recorded within a field log notebook.
- 3.3 All equipment used to measure the static water level will be decontaminated after each use by means of Liquinox, a phosphate free laboratory detergent, and water to reduce the possibility of crosscontamination. The volume of water in each well casing will be calculated.

#### 4.0 Purging

- 4.1 Wells will be purged by using a 2" decontaminated submersible pump or dedicated one liter Teflon bailer. Wells should be purged until the pH and conductivity are stabilized and the turbidity has been reduced to the greatest extent possible.
- 4.2 If a submersible is used the pump will be decontaminated prior to use by scrubbing the outside surface of tubing and wiring with a Liquinox water mixture, pumping a Liquinox-water mixture through the pump, and a final flush with fresh water.

#### 5.0 Water Disposal

5.1 All purge and decontamination water will be temporarily stored within a portable tank to be later disposed of in an appropriate manner.

#### 6.0 Records

6.1 Rice Environmental Consulting and Safety will record the amount of water removed from the well during development procedures. The purge volume will be reported to the appropriate regulatory authority when filing the closure report.

# Quality Procedure Sampling of Cased Water-Monitoring Well

# 1.0 Purpose

This procedure outlines the methods to be employed in obtaining water samples from cased monitoring wells.

### 2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

## 3.0 Preliminary

- 3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the water.
- 3.2 The following table shall be used to select the appropriate sampling container, preservative method and holding times for the various elements and compounds to be analyzed.

Compound to be Analyzed	Sample Container Size	Sample Container Description	Cap Requirements	Preservative	Maximum Hold Time
BTEX	40 ml	VOA Container	Teflon Lined	HCL	14 days
TPH (8015 Extended)	40 ounces	(2) 40ml VOA vials	Teflon Lined	HCL and Ice	14 days
PAH	1 liter	amber glass	Teflon Lined	Ice	7 days
Cation/Anion	1 liter	HD polyethylene	Any Plastic	None	48 Hrs
Metals	1 liter	HD polyethylene	Any Plastic	Ice/HNO <sub>3</sub>	28 Days
TDS	300 ml	clear glass or 250 ml HD polyethylene	Any Plastic	Ice	7 Days
Cl-	500 ml	HD polyethylene	Any Plastic	None	28 Days

# 4.0 Chain of Custody

- 4.1 Prepare a Sample Plan. The plan will list the well identification and the individual tests to be performed at that location. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.
- 4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.
- 4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label). Affix the labels to the jars.

# 5.0 Bailing Procedure

- 5.1 Identify the well from the sites schematics. Place pre-labeled jar(s) next to the well. Remove the plastic cap from the well bore by first lifting the metal lever and then unscrewing the entire assembly.
- 5.2 Using a dedicated one liter Teflon bailer or submersible pump, purge a minimum of three well volumes. Place the water in storage container for transport to a ROC disposal facility.
- 5.3 If using a bailer, take care to insure that the bailing device and string does not become cross-contaminated. A clean pair of nitrile gloves should be used when handling either the retrieval string or bailer. The retrieval string should not be allowed to come into contact with the ground.

## 6.0 Sampling Procedure

- 6.1 Once the well has been bailed in accordance with 5.2 of this procedure, a sample may be decanted into the appropriate sample collection jar directly from the bailer or submersible pump.
- 6.2 Note the time of collection on the sample jar with a fine Sharpie.
- 6.3 Place the sample directly on ice for transport to the laboratory. The preceding table shows the maximum hold times between collection and testing for the various analyses.

6.4 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

# 7.0 Documentation

- 7.1 The testing laboratory shall provide the following minimum information:
  - A. Project and sample name.
  - B. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
  - C. Results of the requested analyses
  - D. Test Methods employed
  - E. Quality Control methods and results

# Calculation for Determining the Minimum Bailing Volume for Monitor Wells Formula V= (πr<sup>2</sup>h) 2" well [V/231=gal] X 3 = Purge Volume

V=Volume
π=pi
r=inside radius of the well bore
h=maximum height of well bore in water table

Example:

π	r <sup>2</sup>	h(in)	V(cu.in)	V(gal)	X 3 Volumes	Actual
3.1416	1	180	565.488	2.448	7.34 gal	>10 gal

Quality Procedure Composite Sampling of Excavation Sidewalls and Bottoms For TPH and Chloride Analysis

# 1.0 Purpose

This procedure outlines the methods to be employed when obtaining final composite soil samples for TPH and Chloride analysis.

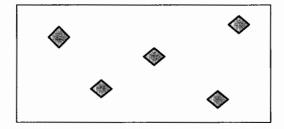
#### 2.0 Scope

This procedure is to be used in conjunction with *Quality Procedure – 02:* Soil Samples for Transportation to a Laboratory and will be inserted at subparagraph 5.2 of Section 5.0: Sampling Procedure.

#### **3.0 Sampling Procedure**

Follow *Quality Procedure – 02: Soil Samples for Transportation to a Laboratory* for all Sections and subparagraphs until subparagraph 5.2 of Section 5.0: Sampling Procedure. Instead of 5.2 instructions, perform the composite sample collection procedure as follows:

- 3.1 Go to the excavation with a new plastic baggie. If not analyzing for ions or metals, use a trowel to obtain the soil. If the excavation is deeper than 6' BGS, do not enter the pit, but use a backhoe to assist in procurement of the sample. (If a backhoe is used, the backhoe will obtain an amount of soil from each composite point; bring the purchase to the surface staging area where a sample-portion of soil will be extracted from the backhoe purchase. The remainder of the backhoe purchase will be staged on the surface with other staged soils.)
- 3.2 Sidewall samples
  - 3.2.1 On each sidewall, procure a 5oz sample from each of five distinct points on the sidewall with distinct points resembling the "W" pattern:



- 3.2.2 Thoroughly blend these five samples in a labeled baggie.
- 3.2.3 Repeat steps 3.2.1 through 3.2.4 for each remaining sidewall.
- 3.2.4 From each labeled baggie, procure a 5 oz portion and pour into a baggie labeled "Sidewall Composite". Blend this soil mixture completely.
- 3.2.5 Obtain proper laboratory sample container for "Sidewall Composite" and continue with subparagraph 5.3 of QP 01.
- 3.3 Bottom Sample
  - 3.3.1 From bottom of excavation, procure a 5oz sample from each of five distinct points with distinct points resembling the "W" pattern as illustrated above.
  - 3.3.2 Thoroughly blend these five samples in a clean baggie.
  - 3.3.3 Obtain proper laboratory sample container for "Bottom Composite" and continue with subparagraph 5.3 of QP 01.

# QUALITY PROCEDURE Sampling and Testing Protocol for VOC in Soil

#### 1.0 Purpose

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

#### 2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

#### 3.0 Procedure

- 3.1 Sample Collection and Preparation
  - 3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).
  - 3.1.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Analytical Report Form.
  - 3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15 Celsius, (59-77<sup>0</sup>F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.
  - 3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

- 3.2 Sampling Procedure
  - 3.2.1 The instrument to be used in conducting VOC concentration testing shall be a RAE Systems Photoionization device. (Device will be identified on VOC Field Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.
  - 3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the sidewalls of the bag.
  - 3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Test Report Form.
  - 3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to QP-7. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing for BTEX is necessary. File the Field Test Report Form in the project file.

#### 4.0 Clean-up

After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal. IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE.

# Quality Procedure Composite Sampling of Excavation Sidewalls and Bottoms For BTEX

## 1.0 Purpose

This procedure outlines the methods to be employed when obtaining final composite soil samples for BTEX analysis.

#### 2.0 Scope

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory for BTEX analysis. This procedure is to be used only when the PID field-test results for OVM exceeds 100 ppm.

## 3.0 Preliminary

3.1 Obtain sterile, clear, 2 oz. glass containers with Teflon lid from a laboratory supply company or the testing laboratory designated to conduct analyses of the soil.

#### 4.0 Chain of Custody

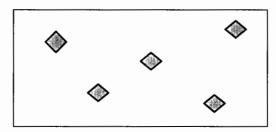
- 4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.
- 4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.
- 4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label.) Affix the labels to the jars.

#### 5.0 Sampling Procedure

- 5.1.Do not touch the soil with your bare hands. Use new nitrile gloves to help minimize any cross-contamination.
- 5.2.If safe and within OSHA regulations, go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to

obtain the soil. If the excavation is deeper than 6' BGS, do not enter the pit, but use a backhoe to assist in procurement of the sample. (If a backhoe is used, the backhoe will obtain an amount of soil from each composite point; bring the purchase to the surface staging area where a sample-portion of soil will be extracted from the backhoe purchase. The remainder of the backhoe purchase will be staged on the surface with other staged soils.)

- 5.3. Sidewall Samples
  - 5.3.1.On each sidewall, procure a 2oz sample from each of five distinct points on the sidewall with distinct points resembling the "W" pattern:



- 5.4.Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label. Repeat for each sampling point.
- 5.5.Place the samples directly on ice for transport to the laboratory if required.
- 5.6.Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

## **6.0 Documentation**

- 6.1 The testing laboratory shall provide the following minimum information:
  - a. Project and sample name.
  - b. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
  - c. Results of the requested analyses
  - d. Test Methods employed
  - e. Quality Control methods and results

# Procedure for Plugging & Abandonment of Cased Water Monitoring Wells

#### 1.0 Purpose

This procedure outlines the methods to be employed to plug and abandon cased monitoring wells.

# 2.0 Scope

This procedure shall be used for developed, cased water monitoring wells located in the State of New Mexico

#### 3.0 Preliminary

**3.1** No well may be drilled, modified or plugged without NMOCD approval. Additional approvals may be required if the well is situated in a sensitive area, within municipal jurisdictions or on federal or tribal lands.

#### 4.0 Plugging

**4.1** Each bore will be filled with a 1% - 3% bentonite/concrete slurry to three feet bgs. The remaining three feet will be capped with concrete only.

**4.2** All wellheads will be removed to below ground surface.

#### 5.0 Records

**5.1** The company plugging the well shall prepare a report on their company letter head listing the site name and describing general well construction including total depth of the well, the diameter of casing, material used to plug the well (e.g. bentonite/cement slurry), and date of the plugging operation.

**5.2** It is recommended but not required that photographs of the final surface restoration be taken and included within the records.

**5.3** Copies of the plugging report shall be submitted to all appropriate agencies and retained by the well operator for a minimum period of ten years.