# Site Clean-up Summary and Remediation Work Plan

Southwest Royalties, Inc. Wilderspin Federal Battery S-11, T-21S, R-27E

Eddy County, New Mexico

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#### SPORT ENVIRONMENTAL SERVICES, PLLC

502 N. Big Spring Street, Midland, Texas 79701 Business: 432.683.1100 Fax: 888.500.0622

August 10, 2009

Mr. Mike Bratcher State of New Mexico Oil Conservation Division 1301 W. Grand Artesia, New Mexico 88210

Re: Southwest Royalties, Inc. Wilderspin Federal Battery Section 11, T-21S, R-27E Eddy County, New Mexico

Dear Mr. Bratcher,

On behalf of Southwest Royalties, Inc., Sport Environmental Services is providing the enclosed Site Clean-up Summary and Remediation Work Plan for the Wilderspin Federal Battery release.

In response to the Release Notification and Corrective Action Report (Form C-141) dated April 3, 2009, an effort to fully delineate the release location both horizontally and vertically through extensive soil investigation was conducted. Site ranking criteria was used to determine the degree of remediation for the location. The acceptable concentrations resulting from the form are as follows; Benzene 10 ppm, BTEX 50 ppm, TPH 5000 ppm. Under NMOCD regulations, if a release has occurred, chloride concentrations are set at 250 ppm. Attached, please find the Site Excavations denoting sample locations along with the associated analytical results. Each soil sample was analyzed for **Total BTEX** (Benzene; Toluene; Ethylbenzene; m,p-Xylene; o-Xylene, Total Xylenes, and total BTEX) using the Method 8021B, **Total Petroleum Hydrocarbons** ( $C_6$ - $C_{12}$  Gasoline Range Hydrocarbons or GRO;  $C_{12}$ - $C_{18}$  Diesel Range Hydrocarbons or DRO;  $C_{28}$ - $C_{35}$  Oil Range Hydrocarbons; and Total TPH) using Method SW8015, and **Chlorides (Cl)** using EPA Method 300. There were a total of three excavation events, conducted April 6-9, April 27, and May 8, 2009.

The initial excavation began April 6, 2009 and was completed on April 9, 2009. During that time, approximately 340 cubic yards of contaminated caliche were excavated from around the release area, tanks and the firewall. The caliche was excavated to sample point depths ranging from .5 feet to 10 feet. All excavated caliche was stockpiled on impermeable liners at the battery. Production facility piping was removed from tank area to promote excavation efforts. An oil sump, to protect during loading releases, was removed and a hole was discovered within the sump container. This discovery resulted in further excavation of contaminated caliche beneath the sump. Sample collection was conducted on April 9, 2009, in which sixteen (16) soil samples were taken from the floor of excavation. As indicated in the Sample Data Summary, analytical results indicated eleven (11) sample locations were higher than the desired limits.

The second excavation of contaminated caliche, followed by sampling, took place on April 27, 2009. Three 500 bbl, out-of-service, steel oil storage tanks were removed by Southwest Royalties and sent to salvage in order to allow for further excavation of contaminated soils located under the removed tanks. Approximately 200 cubic yards of contaminated caliche were excavated from the area beneath the three tanks and the East and West

excavation floor. Fourteen soil samples were collected and analytical results indicated seven of those samples were above the allowable limits.

A third excavation and sampling event took place on May 8, 2009. Using analytical results from the April 27, 2009 sampling event as a guide, approximately 80 cubic yards of contaminated caliche was removed and stockpiled on the impermeable liners. Seven soil samples were collected and analytical results indicated that one sample point, EEF6-003, had an elevated chloride concentration of 281 ppm. Soil samples were also collected from each of the three stockpiles, in which analytical results showed TPH values to be much higher than the allowable 5000 ppm. Sample results are as follows:

SP1-00111,603 ppm TPHSP2-00112,786 ppm TPHSP3-00110,163 ppm TPH

Soil management recommendation for the Wilderspin Federal Battery is insitu soil treatment. Stockpiled caliche would be blended with clean caliche in a 3:1 ratio and hydrocarbons would be bioremediated to acceptable levels for reuse at the battery. By utilizing the Amigo model program we can demonstrate that the location is not a threat to groundwater contamination and since the location is an oilfield production facility the aforementioned caliche will have to be addressed, if or when the facility has been dismantled or abandoned.

Attached, please find the hydrogeology report which further provides evidence of, through researched wells and hydrogeology of the area surrounding the Wilderspin Federal Tank Battery, the poor quality of existing groundwater due to elevated chlorides and total dissolved solids (TDS), making it unsuitable for livestock and irrigation. As indicated in the report, the land use in the area is predominantly mining of high chloride minerals, and oil and gas exploration and production.

Several sampling events following excavation and stockpiling of soil showed decreasing levels of chlorides at increasing depths. To predict the migration of chlorides to groundwater we have utilized American Petroleum Institute's (API's) **AMIGO** online decision support tool which allows us to assess the threat to groundwater and soil posed by a produced water (brine) release. Attached, please find the Amigo report along with supporting hydrogeological report. After running many different scenarios using different mass loads and distances to nearest wells, the most conservative approach is to take the actual distance to the closest well and the stockpile chloride concentration average. This was determined to be the most realistic expectation rather than create soil boring values from previous sampling events. This is because the stockpiled soil will be used to spread evenly over the excavation area, which is the area of concern. The average chloride concentration used was the average of sampling at depths from five to seven feet. Ten feet was chosen to represent worst case scenario since it represented the maximum depth of excavation. The resulting projections from AMIGO show that the maximum concentration of chlorides in the groundwater will be 747 mg/L at 121 years. This is an increase of 35 mg/L over the background concentration of 712 mg/L.

Attached please find the supporting documentation which includes Form C-141, Site Plans denoting sample locations, Sample Data Summaries, Analytical Results, Hydrogeological Report (includes AMIGO output chart) and photographs taken April 2 thru May 8, 2009.

If you have any questions, or need additional information, please contact me at my office (432.683.1100) or on my cell (432.553.2172).

Sincerely,

Seelly M. for

Sally M. Jones Environmental Compliance Specialist

Southwest Royalties, Inc.

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Wilderspin Federal Battery

S-11, T-21S, R-27E Eddy County, New Mexico

Form C-141 Wilderspin Federal Battery

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District-1 1625 N. French Dr. Hobbs NM 88240	State of	New Mex	ico		Form C-141
District II 1301 W Grand Avenue Artesia NM88210 Energy M	linerals	and Natura	l Resources		Revised October 10, 2003
District III 1000 Rus Brazos Road Artec, NM 87410	Conser	vation Div	vision		Submit 2 Copies to appropriate
District IV 1220 St. Foresia Dr. Sonta Fo. NM 87605	0 South	n St. Franc	is Dr.		with Rule 116 on back
1220 S St. Francis Dr., Sama Fe, NW 87505	Santa Fe	e, NM 875	05		
30-015-21031 Release Notifi	ication	and Co	orrective A	ction	_
MCB 09/0448:390	<u> </u>	OPERAT	FOR		itial Report 📋 Final Report
Address 6 DESTA DRIVE, STE 2100, MIDLAND, TX	79705	Telephone N	No. 432/688-326	67	
Facility Name WILDERSPIN FEDERAL		Facility Typ	e BATTERY	- closest to we	1) #1
Surface Owner BLM – grazing permit allottee Mineral Winston Ballard #77020	Owner H	BLM/SWR		Leas	e No. NMNM1478B/16282
LOC	CATIO	N OF REI	LEASE		
Unit LetterSectionTownshipRangeFeet from theF1121S27E1980	North/ N	South Line	Feet from the 1980	East/West Lin W	e County EDDY
- Latitude		Longitud	e		, <u></u>
NA	TURE	OF RELI	EASE		
Type of Release OIL		Volume of	Release ~115	Volum	e Recovered 57
Source of Release HOLE IN TANK		4/1/09 mid	our of Occurrenc	e Date at 4/2/09	10:30 a.m
Was Immediate Notice Given?	Required	If YES, To NMOCD -	Whom? Mike Bratcher; H	3LM – Jim Amo	S
By Whom? Dawn Howard		Date and H	our 4/2/09 1	1·30 a.m.	
Was a Watercourse Reached?		If YES, Vo	lume Impacting t	he Watercourse.	
If a Watercourse was Impacted, Describe Fully.*		<b>J</b>			
Describe Cause of Problem and Remedial Action Taken.* A hole in the side of oil stock tank at the battery was discovered	when the	pumper gaug	ed. The tank wil	l be repaired.	
Describe Area Affected and Cleanup Action Taken.* All oil was contained within the firewall. Vacuumed and recove	red 57 Bb	ls of oil. A b	ackhoe was used	to scrape and du	ist location due to cattle in the
area. An environmental contractor's services have been obtained	to analy:	ze and aid in t	he efforts to reme	diate this locati	on.
I hereby certify that the information given above is true and compregulations all operators are required to report and/or file certain public health or the environment. The acceptance of a C-141 repshould their operations have failed to adequately investigate and or the environment. In addition, NMOCD acceptance of a C-141 federal, state, or local laws and/or regulations.	plete to th release no port by the remodiate report do	te best of my l otifications an NMOCD ma contamination bes not relieve	knowledge and un d perform correct rked as "Final Re on that pose a thre the operator of r	nderstand that purive actions for report does not report does not reat to ground wa esponsibility for	rsuant to NMOCD rules and releases which may endanger elieve the operator of liability ter, surface water, human health r compliance with any other
Signature: Dammer (ou a S)			OIL CONS	SERVATIO	N DIVISION
Printed Name: DAWN M. HOWARD	ŀ	Approved bg	isti Byup	4 Bran	un_
Title: OPERATIONS ASSISTANT	A	pproval Date	PR 17 200	9 Expiratio	n Date:
E-mail Address: <u>DHOWARD@CLAYTONWILLIAMS COM</u>	c	Conditions of	Approval:	diation per	
Date: 4/3/09 Phone: 432/688-3267		OCIS <i>flub</i> e	is & Guide In	ry 5	Attached []
Attach Additional Sheets If Necessary	<u> </u>			2R	P-300
17107 1075: Excaustor of impactal material hos con	1men l	t vemed	tos is onge	· .	

District ]	
1625 N	French Dr, Hobbs, NM 88240
District ]	<u>11</u>
1301 W	Grand Avenue, Artesia, NM88210
District	
1000 Ric	Brazos Road, Aztec, NM 87410
District ]	V
1220 S	St Francis Dr, Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

> **Oil Conservation Division** 1220 South St. Francis Dr. Santa Fe, NM 87505

Revised October 10, 2003

Form C-141

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

#### **Release Notification and Corrective Action**

	OPERATOR	Initial Re	port 🛛 Final Report
Name of Company SOUTHWEST ROYALTIES, INC.	Contact DAWN M. HOWARD	-	
Address 6 DESTA DRIVE, STE 2100, MIDLAND, TX 79705	Telephone No. 432/688-3267		
Facility Name WILDERSPIN FEDERAL	Facility Type BATTERY - closes	t to well #1	
Surface Owner BLM – grazing permit allottee   Mineral Owner	r BLM/SWR	Lease No. 1	NMNM1478B/16282

Winston Ballard #77020

#### LOCATION OF RELEASE

Unit Letter F	Section 11	Township 21S	Range 27E	Feet from the 1980	North/South Line N	Feet from the 1980	East/West Line W	County EDDY
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Latitude Longitude

#### NATURE OF RELEASE

Type of Release OIL	Volume of Release ~115	Volume Recovered 57
Source of Release HOLE IN TANK	Date and Hour of Occurrence	Date and Hour of Discovery
	4/1/09 midnight	4/2/09 10:30 a.m.
Was Immediate Notice Given?	If YES, To Whom?	
Yes 🗌 No 🗌 Not Required	NMOCD – Mike Bratcher; BLM –	Jim Amos
By Whom? Dawn Howard	Date and Hour 4/2/09 11:30 a.	m.
Was a Watercourse Reached?	If YES, Volume Impacting the Wat	ercourse.
🗌 Yes 🖾 No		
If a Watercourse was Impacted, Describe Fully.*	· · · · · · · · · · · · · · · · · · ·	

Describe Cause of Problem and Remedial Action Taken.\*

A hole in the side of oil stock tank at the battery was discovered when the pumper gauged.

Follow up:

Contaminated caliche has been excavated from the battery and stockpiled on impermeable liners awaiting bioremediation approval. The oil storage tank has been repaired and three oil storage tanks (that were not in service) have been removed and taken to salvage.

Describe Area Affected and Cleanup Action Taken.\*

Majority of oil was contained within the firewall. Vacuumed and recovered 57 Bbls of free oil. A backhoe was used to scrape and dust location due to cattle in the area. An environmental expert contacted.

Follow up:

Excavated around tanks and took soil analysis (please see attached excavation plan) Contaminated caliche has been excavated from the battery and stockpiled on impermeable liners awaiting bioremediation approval. The oil storage tank has been repaired and three oil storage tanks (that were not in service) have been removed and taken to salvage.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

$\sim$		<u>OIL CONSER</u>	VATION 1	DIVISION
Signature:	Daw Howard			
Printed Name:	DAWN M. HOWARD	Approved by District Supervisor	· · · · · · · · · · · · · · · · · · ·	
Title.	OPERATIONS ASSISTANT	Approval Date:	Expiration D	ate:
E-mail Address:	DHOWARD@CLAYTONWILLIAMS.COM	Conditions of Approval:		
Date; 8/11/09	Phone: 432/688-3267			Attached []

		NMOCD Notified 04/02/2009
Site Information and I	Metrics	
SITE: Wilderspin Federal Battery	Assigned Site Reference #:	
Company: Southwest Royalties, Inc.		
Street Address 6 Desta Drive, Ste 2100		
Mailing Address: 6 Desta Drive, Ste 210	0	
City, State, Zip: Midland, Texas 79705		
Representative: Dawn M. Howard		
Representative Telephone: 432.688.3267	7	
Telephone.	.,	
Fluid volume released (bbls): ~115	Recovered (bbls). ~55	
>25 bbls. N	otify NMOCD verbally within 24 hrs and submit form C (Also applies to unauthorized releases >500 mcf Natur	-141 within 15 days. Il Gas)
5-25 bble Submit form	C-141 within 15 days (Also applies to upaughorized teles	uses of 50-500 mcf Natural Gas)
Leak Spill or Dit (ISD) Name: Wilderst	un Federal Battery	action 50-500 met Natural Gasy
Source of Contamination: Hole in side	hi reaction battery	
Land Owner to BLM ST Fee Other	RIM	
Land Owner, 1 e., DLM, 51, Fee, Otner:	DLM	
LOP Dimensions		
LSP Area:		
Location of Reference Point (RP):		
Location distance and direction from RI	5	
Latitude: 32.496		
Longitude 104 162667	·····	
Elevation above mean sea level		
Feet from North Section Line: 1980		
Feet from West Section Line: 1980'		
Location - Unit or 1/41/4	Unit Letter. H	
Location - Section: 11		
Location - Township: 21S		
Location - Range: 27E		
Surface water body within 1000' radius of	of site: None	
Surface water body within 1000' radius of	of site	
Domestic water wells within 1000' radiu	s of site: None	
Domestic water wells within 1000' radiu	s of site:	
Agricultural water wells within 1000' rad	lius of site: None	
Agricultural water wells within 1000' rad	hus of site:	
Public water supply wells within 1000' ra	adrus of site: None	
Depth from land surface to ground wate	er (DG): <b>186 ft</b>	
Depth of Contamination (DC): 2 ft		
Depth to ground water (DG - DC = Dt	GW): 186-2 = 184 ft	
1. Ground Water	2. Wellhead Protection Area	3. Distance to Surface Water Body
If Depth to GW <50 feet: 20 hours	If <1000' from water source or <200' from	<200 horizontal feet: 20 boints
If Depth to GW 50 to 99 feet: 10 paints	private domestic water source: 20 points	200 to 100 horizontal feet: 10 paints
If Depth to GW >100 feet $\theta$ baints	If >1000' from water source or: >200' from	>1000 horizontal feet: 0 hours
	private domestic water source: 0 points	
Ground Water Score = 0	Wellhead Protection Area Score = 0	Surface Water Score = 0
Site Rank (1+2+3)=		• • • • • • • • • • • • • • • • • • •
	otal Site Ranking Score and Acceptable Conce	ntrations
Parameter >19	10 - 19	0 - 9
Benzene <sup>1</sup> 10 ppg	10 17 10 npm	
BTEX <sup>1</sup> 50 ppg	2 50 ppm	
DTEA         50 ppn           TDH         100	n 50 ppm n 1000 mm	50 ppm
1100 ppm field VOC head areas	m 1000 ppm	5000 ppm
LIVO ppin neid VOC neadspace measure	ement may be substituted for lab analysis	

Southwest Royalties, Inc. Wilderspin Federal Battery S-11, T-21S, R-27E Eddy County, New Mexico

> > SITE PLANS DENOTING SAMPLING LOCATIONS

Wilderspin Federal Battery

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Southwest Royalties, Inc. Wilderspin Federal Battery S-11, T-21S, R-27E Eddy County, New Mexico

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# SAMPLE DATA SUMMARY

Wilderspin Federal Battery

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Project Name: Southwest Royalties, Inc. - Wilderspin Federal Battery Project Location: Eddy County, New Mexico

						Analytical Results												
						5	<u>] [</u>	- eles 		Methods: I	EPA 418 1		PA 8021B	(BTEX)	EPA 300 (	CI)		- 3° - 3° - 3° - 3°
Sample ID	,Lab,ID	Matrix	Sample Depth	Date Sampled	Date Received	Carbon Ranges C6-C12	Carbon Ranges C12-C28	Carbon Ranges C28-C35	TPH.	<b>Benzene</b>	Toluene	Ethylbenzene	Xylene (p/m)	Xyl <u>e</u> ne (o)	Total Xylenes	Total BTEX	Chloride (C)) (mg/kg wet)	% Moisture
Excavatio	on Sampling	1							(***)*********************************				t to the second se			· · · · · · · · · · · · · · · · · · ·		
WF2-001	329402-001	Soil	2 in	4/3/2009 0.00	4/7/2009 7.54				248000	2 673	76 02	51 12	180.7	66.24	246 94	376.753	11300	8.73
WF3-001	329402-002	Soil	2 in	4/3/2009 0 00	4/7/2009 7 54				189000	6 463	85.59	40 35	139.3	47 83	187.13	319.533	267	5 92
CF1-001	329402-003	Soil	2 ın	4/3/2009 0 <sup>.</sup> 00	4/7/2009 7:54				278000	4.728	80.49	53 60	205.4	70 62	276 02	414.838	76 0	8 16
CF2-001	329402-004	Soil	2 in	4/3/2009 0 <sup>.</sup> 00	4/7/2009 7 <sup>.</sup> 54				39400	27.18	170 8	57 76	198 8	64 85	263.65	519.39	2030	8 37
ER1-001	329402-005	Soil	2 in	4/3/2009 0.00	4/7/2009 7 54				98100	ND	5 225	8 511	34 52	13 29	47 81	61.546	347	2.98
ER2-001	329402-006	Soil	2 in	4/3/2009 0 00	4/7/2009 7 54				78300	ND	2 819	5 108	20.70	7 968	28 668	36 595	125	2 50
ER3-001	329402-007	Soil	2 in	4/3/2009 0.00	4/7/2009 7 54				82500	ND	7.287	13 21	51.74	19 05	70.79	91.287	137	2 49
ER4-001	329402-008	Soil	2 ın	4/3/2009 0.00	4/7/2009 7.54				582000	ND	20 61	22 48	85 76	31 83	117.59	160.68	69 1	3 40
ER5-001	329402-009	Soil	2 ın	4/3/2009 0 00	4/7/2009 7 54				227000	ND	41 75	46 48	176.5	70.53	247 03	335.26	44 3	5.20
ER6-001	329402-010	Soil	2 in	4/3/2009 0.00	4/7/2009 7 54		1		173000	3 910	111 2	99.11	352 2	129 6	481.8	696.02	9210	4 23
SF1-001	329402-011	Soil	2 in	4/3/2009 0 00	4/7/2009 7:54				56500	5.276	135 1	92 13	312 0	118 5	430 5	663.006	45 9	9.60
SF2-001	329402-012	Soil	2 ın	4/3/2009 0:00	4/7/2009 7 <sup>.</sup> 54				73300	0 0022	0 0073	0.0020	0 0051	0.0022	0.0073	0 0188	39 5	7 39
SF3-001	329402-013	Soil	2 in	4/3/2009 0.00	4/7/2009 7 54				48500	0 0027	0 0071	0.0018	0.0045	0 0018	0 0063	0.0179	33 3	1 85



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Project Name: Southwest Royalties, Inc. - Wilderspin Federal Battery Project Location: Eddy County, New Mexico

						# **	eren ( 1)-e	R		的行行		Analytic	al Resu	lts	· 是 249.14年			14
		<b></b>						د آب ا		Methods: I	EPA 418.1	(TPH), E	PA 8021B	(BTEX), I	EPA 300 (	CI)		
Sample	Lab ID	Matrix	Sample Depth	Date Sampled	Date Received	Carbon Ranges C6-C12	Carbon Ranges C12-C28	Carbon Ranges C28-C35	<ul> <li>TPH</li> <li>Total Petroleům Hydročarbons</li> </ul>	Benzene	Toluene	Ethylbenzene	Xýleňe, (p/m)	Xylene (o)	a Total Xylenes	Total BTEX	Chloride (Cl) (mg/kg wet)	% Moisture
Excavatio	n Sampling <sub>:/</sub> :					- 15:		<u>, , , , , , , , , , , , , , , , , , , </u>		(14, <sup>4</sup> ,4) 		·· • • •	1 + <sup>2</sup>			e B.st.		
NF1-001	329402-014	Soil	2 in	4/3/2009 0·00	4/7/2009 7·54				253000	16.28	249 3	119.6	432 1	149 2	581 3	966.48	23.1	10 65
NF2-001	329402-015	Soil	2 in	4/3/2009 0·00	4/7/2009 7 <sup>.</sup> 54				181000	14.45	207.3	111 7	372.5	126 0	498.5	831.95	54 3	7.59
NF3-001	329402-016	Soil	2 ın	4/3/2009 0 <sup>.</sup> 00	4/7/2009 7:54				252000	6 120	136.5	84.20	293 5	97 58	391 08	617.9	ND	8 49
EF1-001	329402-017	Soil	2 in	4/3/2009 0.00	4/7/2009 7.54				169000	12.95	165 8	75.30	256 7	89 95	346 65	600.7	185	6 17
EF2-001	329402-018	Soil	2 in	4/3/2009 0 00	4/7/2009 7 54				282000	11.13	221 0	114.1	397 8	138 4	536.2	882.43	74.5	8.79
EF3-001	329402-019	Soil	2 in	4/3/2009 0 00	4/7/2009 7 54				73000	0 0032	0 0150	0 0033	0.0115	0 0040	0 0155	0 037	1960	ND
WF1-001	329402-020	Soil	2 ın	4/3/2009 0.00	4/7/2009 7:54				219000	7.214	202.0	119 8	421.1	147 5	568.6	879.614	64 8	9 21
WR1-001	329402-021	Soil	2 in	4/3/2009 0 <sup>.</sup> 00	4/7/2009 7 54				230000	2 074	70.72	57 10	193 6	72 32	265.92	395.814	ND	7.41
WR2-001	329402-022	Soil	2 in	4/3/2009 0.00	4/7/2009 7.54				114000	ND	51.95	47 55	168.7	63 47	232.17	331.67	33.9	4.54
WR3-001	329402-023	Soil	2 in	4/3/2009 0.00	4/7/2009 7 <sup>.</sup> 54				140000	ND	82 50	64 75	226.2	80 82	307.02	454.27	7.24	4 65
WR4-001	329402-024	Soil	2 in	4/3/2009 0.00	4/7/2009 7 <sup>.</sup> 54				148000	ND	16 34	23 06	89.89	33.74	123 63	163.03	20 9	3 34
		1																



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Project Name: Project Location:

							14 - 10 A 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				Anal	ytical R	esults		的教育	Sattania (		
									Methods	s: SW801	5 Mod (TI	PH), EPA	8021B (B	TEX), EP	A 300 (CI			
Sample ID	Lab.ID	Matrix	Sample Depth	Date Sampled	Date Received	Carbon Ranges Co-C12	Carbon Ranges C12-C28	Carbon Ranges, C28-C35	Total Petroleum Hydrocarbons	Benzene		Ethylbenzene	Xyleve.(0,w)	Xylene (o)	Total:Xylenes:	Total BTEX	Chloride (Cl):(mg/kg.wet): 22	%. Moisture
Excavation	Sampling	581.945 T	, <sup>3</sup> , з (,			· · ·		" tout.]			, i . i ., . i		1.7730					1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
WEF1-001	329770-001	Soil	1 ft	4/9/2009 9 28	4/9/2009 16:03	6370	15900	1640	23910	0.6117	19 29	19.81	72.65	26 54	99 19	138.9017	70 9	4.94
WEF2-001	329770-002	Soil	1 ft	4/9/2009 9 <sup>.</sup> 31	4/9/2009 16 03	6600	23700	2270	32570	ND	5.832	5.975	23.51	8.523	32.033	43 84	306	5 73
WEF3-001	329770-003	Soil	1 ft	4/9/2009 9 <sup>.</sup> 37	4/9/2009 16 03	1280	11000	1020	13300	0.0014	0 0496	0 1129	0.3965	0 2124	0.6089	0.7728	497	5 38
WEF4-001	329770-004	Soil	1 ft	4/9/2009 9 40	4/9/2009 16 03	417	5160	463	6040	ND	0 0014	0 0216	0 0492	0.0096	0 0588	0 0845	21 9	4 84
WEF5-001	329770-005	Soil	2.5 ft	4/9/2009 9 44	4/9/2009 16.03	28.4	542	56 0	626 4	ND	0 3587	0 3640	1 399	0.5301	1 9291	2.6518	53.3	5.68
CEF1-001	329770-006	Soil	6 in	4/9/2009 9 <sup>.</sup> 48	4/9/2009 16 03	22 3	1970	316	2308 3	ND	ND	ND	ND	ND	ND	ND	31.3	20.19
CEF2-001	329770-007	Soil	6 in	4/9/2009 9:51	4/9/2009 16 03	2610	13700	1470	17780	ND	5.991	7.913	29 07	11 63	40 7	54.604	122	12 98
CEF3-001	329770-008	Soil	6 in	4/9/2009 9:54	4/9/2009 16 03	13100	19300	2140	34540	6.894	75.77	32.38	112 9	36 97	149 87	264.914	14.0	12 11
CEF4-001	329770-009	Soil	6 in	4/9/2009 9 57	4/9/2009 16 03	511	5310	538	6359	ND	ND	0 6555	2.421	0.7878	3 2088	3.8643	5390	13 05
CEF5-001	329770-010	Soil	6 in	4/9/2009 10 00	4/9/2009 16 <sup>.</sup> 03	ND	75 6	ND	75 6	ND	0.0028	ND	0 0025	0.0013	0.0038	0.0066	ND	12 53
EEF1-001	329770-011	Soil	3 5 ft	4/9/2009 10.08	4/9/2009 16 <sup>.</sup> 03	206	8000	837	9043	ND	0 0023	ND	0 0056	0 0012	0.0068	0.0091	928	12 07
EEF2-001	329770-012	Soil	3.5 ft	4/9/2009 10 <sup>.</sup> 12	4/9/2009 16 03	28.9	491	53 7	573 6	ND	0.0134	0.0073	0 0276	0 0106	0.0382	0 0589	17 6	9 09
EEF3-001	329770-013	Soil	3 ft	4/9/2009 10 <sup>.</sup> 16	4/9/2009 16 <sup>.</sup> 03	2590	10200	1010	13800	ND	ND	ND	ND	ND	ND	ND	117	7 73



Project Name: Project Location:

						1-1 g-107 1 7 s (1	5		8		Anal	ytical R	esults	Sept. Survey		- ۲ ماری و مرکز ۲ ۲ مورد می و مرکز ۲ ۱۰ مرکز ۲ مرکز ۲		
								Te A	Methods	s: SW801	5 Mod (TI	PH), EPA	8021B (B	TEX), EP	Ą 300 (CI			
Sample ID	LabiD	Maţrix	Sample Depth	*Date Sampled	Date Received	Carbon Ranges C6-C12	Carbon Ranges, C12-C28	Carbon Ranges C28-C35	TPH, Total Petroleum Hydrocarbons	Benzene	Toluene	Ethylbenzene	Xylene (pím)	Xylane (o)	Total Xylenes	Total BTEX	Chloride (Cl) (mg/kg wet)	% Moisture
Excavation	Sampling (c	ontinue	<b>d)</b> ; <u>(</u>							, 		· · · · · ·						· E · · · · ·
EEF4-001	329770-014	Soil	5 ft	4/9/2009 10 19	4/9/2009 16 <sup>.</sup> 03	28.9	486	46 7	561.6	ND	0.0128	0 0232	0.0593	0.0225	0.0818	0 1178	31 9	11 18
EEF5-001	329770-015	Soil	10 ft	4/9/2009 10 22	4/9/2009 16 03	370	8980	1050	10400	ND	ND	0 0433	0.0741	0.0031	0 0772	0 1205	47.4	10 91
EEF6-001	329770-016	Soil	6 in	4/9/2009 10 <sup>.</sup> 26	4/9/2009 16 03	ND	519	61.8	580.8	ND	ND	ND	ND	ND	ND	ND	938	9.37
EEF7-001	329770-017	Soil	6 in	4/9/2009 10 30	4/9/2009 16:03	59 5	1570	91 4	1720 9	ND	ND	ND	ND	ND	ND	ND	1490	10.85



p. 1 of 2

Project Name: Project Location:

						1949年197日第二日 1949年1月1日 1949年1月1日 1949年1月1日 1949年1月1日				and a second	🤌 Analy	/tical R	esults			al a star all -		n and and
							le Maria di Manatan		Methods	: SW801	<sup>5</sup> Mod <sup>®</sup> (TP	PH), EPA	8021B (B	TEX), EP/	4 300 (CI)			
Sample ID	Läb ID	Matrix	Sample Depth	Date Sampled	Date Received	Carbon Ranges C6-C12 (mg/kg)	Carbon Ranges C12-C28	Carbon Ranges C28-C35	TPH Total Petroleum Hydrocarbons	Benzene	Toluene	Ethylbenzene	Xylene (p/m)	Xylene (o)	Total Xylenes	Total BTEX	Chloride (Cl) (mg/kg web)	% Moisture
Excavation	Sampling			د بروم ریش میشو به وروم بر و میشود به کلوک			- 1	AJAN I I										
EEF1-002	331171-001	Soil	6 ft	4/27/2009 0 00	4/27/2009 0·00	55 1	1080	112	1247								1280	11.75
EEF2-002	331171-002	Soil	6 ft	4/27/2009 0 00	4/27/2009 0.00	41 3	685	68 6	794.9									11 05
EEF3-002	331171-003	Soli	6 ft	4/27/2009 0:00	4/27/2009 0 00	348	3550	298	4196									9.64
EEF5-001	331171-004	Soil	12 ft	4/27/2009 0 00	4/27/2009 0.00	40 1	399	28.3	467 4									11 54
EEF6-002	331171-005	Soil	1 ft	4/27/2009 0:00	4/27/2009 0 00												867	8 03
EEF7-002	331171-006	Soil	1 ft	4/27/2009 0 <sup>.</sup> 00	4/27/2009 0·00												500	8 81
CEF2-001	331171-007	Soil	6 ft	4/27/2009 0 <sup>.</sup> 00	4/27/2009 0:00	1890	10200	784	12874.0	ND	0 1497	1.324	1 59	3.912	5 502	6.976		7 07
CEF3-002	331171-008	Soil	4 5 ft	4/27/2009 0 <sup>.</sup> 00	4/27/2009 0 00	1220	5180	515	6915	ND	ND	2.459	6 151	7 971	14.122	16 581		12 57
CEF4-002	331171-009	Soil	4 5 ft	4/27/2009 0 00	4/27/2009 0.00	406	3970	309	4685	0.0075	0 0251	0 22	0 6489	0 3008	0.9497	1 202		11 81
WEF1-002	331171-010	Soil	3 5 ft	4/27/2009 0.00	4/27/2009 0.00	30 2	138	ND	168	ND	ND	0 0067	0 0183	0 0108	0 0291	0.036		10 57



p. 2 of 2

Project Name: Project Location:

						a it is it is			ې پې د مې د مې د مې پې د مې د مې د مې د	γ - <sup>1</sup> - <sup></sup>	Anal	ytical R	esults				ienski ca k in in inga na inga	
	• · · · · · · · · · · · · · · · · · · ·							a states	Methods	SW8015	6 Mod (ŢĘ	?H), EPA	8021 <u>8</u> (Ŗ	TEX), EP/	4 300 <sup>+</sup> (Cl)			
Sample ID	Lab ID	Matrix	Sample Depth	Date Sampled	Date Received	Carbon Ranges C6-C12	Carbon Ranges C12-C28	Carbon Ranges C28-C35	TPH, Total Petroleum Hydrocarbons	Benzene	Toluene	Ethylbenzene	Xylene (p/m):	Xylene (o)	Total Xylenes	IotalBTEX	Chloride (Cl) (mg/kg wet)	% Moisture
Excavation	Sampling (co	ontinue	d) <u>' (1) (1) (1)</u>					• ۲ <sub>۰</sub> ۰۰۰ , ۲۰	<u> </u>		," <sup>1</sup> 113		inter ( ja		· at., * K ,		<u></u>	<u>- 14 1921</u>
WEF2-002	331171-011	Soil	3.5 ft	4/27/2009 0 00	4/27/2009 0.00	1330	3720	283	5333							 	538	9 63
WEF3-002	331171-012	Soil	3 5 ft	4/27/2009 0 <sup>.</sup> 00	4/27/2009 0.00	853	4310	380	5543								540	9 69
WEF4-002	331171-013	Soil	3 ft	4/27/2009 0 00	4/27/2009 0.00	500	2500	218	3218									11 15
WEF5-002	331171-014	Soil	3 ft	4/27/2009 0 00	4/27/2009 0 00	ND	43.5	ND	44									11.77
																ļ		
																		,



p. 1 of 1

Project Name: Project Location:

							΄		, 1 <sup>°</sup> , 1 <sup>°</sup> ,		Anal	ytical R	esults		ana An tanàna taon			
							u.		Methods	: SW801	5 Mod (TF	PH), EPA	8021B (B	TEX), EP/	A 300 (CI)			• • •
	I Constant					194 1947 (C) 1	n N	2	Irbons			1 = 1 = 1 1 = 1 = 1 1 = 1 = 1 1 = 1 = 1 1			1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			
		4 , i 9 , j i -				s C6-C12	s C12-C28	s C28-C3(	n Hydroca	* , * * * *	4 4 4		· · · · · · · · · · · · · · · · · · ·	r" · · ·		· · · · · · ·	ng/kg wet)	
		· · · · · ·	1.			Range	Rànge	Range	etroleur	ب ۲	m	nzene	(m/q)	· (o)	ylenes	TEX	e (Cl) (r	ture.
Sample ID	Lab ID	Matrix	Sample Depth	Date Sampled	Dáte Receivéd	Carbon (mg/kg)	Carbon	Carbon	TPH, Total P	Benzen	Toluene	Ethylbe	Xylene	Xylene	Total X	Total B	Chlorid	% Mois
Excavation	n Sampling	, , ,	· · · ·					÷.	Y 49	•				,			i	-
EEF1-003	332665-001	Soil	7 ft	5/8/2009 0 00	5/13/2009 0 <sup>.</sup> 00												138	9 71
EEF6-003	332665-002	Soil	5 ft	5/8/2009 0 00	5/13/2009 0 00												281	11
EEF7-003	332665-003	Soil	5 ft	5/8/2009 0 <sup>.</sup> 00	5/13/2009 0 00												229	8.37
WEF2-003	332665-004	Soil	5 ft	5/8/2009 0 00	5/13/2009 0:00	76 3	883	ND	959.3								83 3	8 74
WEF3-003	332665-005	Soil	5 ft	5/8/2009 0 00	5/13/2009 0.00	ND	39.5	ND	40								130	8 1
CEF2-003	332665-006	Soil	7 ft	5/8/2009 0.00	5/13/2009 0 00	1130	3390	193	4713 0									10 88
CEF3-003	332665-007	Soil	5.5 ft	5/8/2009 0.00	5/13/2009 0.00	149	1400	90 7	1639.7									10.47
SP1-001	332665-008	Soil	0 ft	5/8/2009 0·00	5/13/2009 0·00	409	10300	894	11603	ND	0.0022	0 0036	0.0122	0 0072	0 0194	0 025	798	1.46
SP2-001	332665-009	Soil	0 ft	5/8/2009 0 00	5/13/2009 0 00	740	11100	946	12786	ND	0 0423	0.0526	0 2005	0.1017	0 3022	0 397	49 7	2 34
SP3-001	332665-010	Soil	0 ft	5/8/2009 0 00	5/13/2009 0 00	1250	8290	623	10163	ND	ND	0.0199	0 0634	0.0916	0 155	0 175	183.0	6 65

Southwest Royalties. Inc. Wilderspin Federal Battery S-11, T-21S, R-27E Eddy County, New Mexico

# ANALYTICAL RESULTS XENCO LABORATORIES

Wilderspin Federal Battery

# Analytical Report 329402

for

Sport Environmental Services, PLLC

Project Manager: Debi Moore

Southwest Royalties Wilderspin Federal Battery

08-APR-09





12600 West I-20 East Odessa, Texas 79765

Texas certification numbers: Houston, TX T104704215-08B-TX - Odessa/Midland, TX T104704400-08-TX

Florida certification numbers: Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675 Miramar, FL E86349 Norcross(Atlanta), GA E87429

> South Carolina certification numbers: Norcross(Atlanta), GA 98015

> North Carolina certification numbers: Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Tampa - Miami - Latin America Midland - Corpus Christi - Atlanta



08-APR-09



Project Manager: **Debi Moore Sport Environmental Services, PLLC** 502 North Big Spring Street Midland, TX 79701

Reference: XENCO Report No: **329402 Southwest Royalties** Project Address:

#### Debi Moore:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 329402. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 329402 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II Odessa Laboratory Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies. A Small Business and Minority Status Company that delivers SERVICE and QUALITY Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



#### Sample Cross Reference 329402



# Sport Environmental Services, PLLC, Midland, TX

Southwest Royalties

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
WF2-001	S	Apr-03-09 00:00	2 In	329402-001
WF3-001	S	Apr-03-09 00:00	2 In	329402-002
CF1-001	S	Apr-03-09 00:00	2 In	329402-003
CF2-001	S	Apr-03-09 00:00	2 In	329402-004
ER1-001	S	Apr-03-09 00:00	2 In	329402-005
ER2-001	S	Apr-03-09 00:00	2 In	329402-006
ER3-001	S	Apr-03-09 00:00	2 In	329402-007
ER4-001	S	Apr-03-09 00:00	2 In	329402-008
ER5-001	S	Apr-03-09 00:00	2 In	329402-009
ER6-001	S	Apr-03-09 00:00	2 In	329402-010
SF1-001	S	Apr-03-09 00:00	2 In	329402-011
SF2-001	S	Apr-03-09 00:00	2 In	329402-012
SF3-001	S	Apr-03-09 00:00	2 In	329402-013
NF1-001	S	Apr-03-09 00:00	2 In	329402-014
NF2-001	S	Apr-03-09 00:00	2 In	329402-015
NF3-001	S	Apr-03-09 00:00	2 In	329402-016
EF1-001	S	Apr-03-09 00:00	2 In	329402-017
EF2-001	S	Apr-03-09 00:00	2 In	329402-018
EF3-001	S	Apr-03-09 00:00	2 In	329402-019
WF1-001	S	Apr-03-09 00:00	2 In	329402-020
WR1-001	S	Apr-03-09 00:00	2 In	329402-021
WR2-001	S	Apr-03-09 00:00	2 In	329402-022
WR3-001	S	Apr-03-09 00:00	2 In	329402-023
WR4-001	S	Apr-03-09 00:00	2 In	329402-024



Sport Environmental Services, PLLC, Midland, TX



Date Received in Lab: Tue Apr-07-09 07 54 am

**Project Name: Southwest Royalties** 

Project Id: Wilderspin Federal Battery Contact: Debi Moore

F

roject Location:								Report	Date:	08-APR-09			
								Project Ma	nager:	Brent Barron,	11		
	Lah Id:	329402-0	001	329402-0	002	329402-0	003	329402-0	004	329402-0	005	329402-0	06
Analysis Paguastad	Field Id:	WF2-00	)1	WF3-00	01	CF1-00	1	CF2-00	1	ER1-00	1	ER2-00	1
Anulysis Requested	Depth:	2- In		2- In		2- In		2- In		2- In		2- In	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09 (	00 00
Anions by EPA 300	Extracted:												
	Analyzed:	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09	10 26	Apt-07-09	10 26
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		11300	219	267	10.6	76 0	21 8	2030	54 6	347	10 3	125	5 1 3
BTEX by FPA 8021B	Extracted:	Apr-07-09	08 00	Apr-07-09	08 00	Apr-07-09	08 00	Apr-07-09	10 00	Apr-07-09	08 00	Apr-07-09 (	00 80
	Analyzed:	Apr-07-09	10 40	Apr-07-09	11 01	Арт-07-09	11 21	Apr-07-09	22 12	Apr-07-09	12 03	Apr-07-09	12 23
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		2 673	2 191	6 463	2 1 2 6	4 728	2 169	27 18	5 413	ND	1 021	ND	1 022
Toluene		76 02	4 383	85 59	4 252	80 49	4 338	170 8	10 83	5 225	2 041	2 819	2 043
Ethylbenzene		51 12	2 191	40 35	2 126	53 60	2 169	57 76	5 413	8 511	1 021	5 108	1 022
m,p-Xylenes		180 7	4 383	139 3	4 252	205 4	4 338	198 8	10 83	34 52	2 041	20 70	2 043
o-Xylene		66 24	2 191	47 83	2 126	70 62	2 169	64 85	5 413	13 29	1 021	7 968	1 022
Total Xylenes		246 94	2 191	187 13	2 126	276 02	2 169	263 65	5 413	47 81	1 021	28 668	1 022
Total BTEX		376 753	2 191	319 533	2 126	414 838	2 169	519 39	5 413	61 546	1 021	36 595	1 022
Percent Moisture	Extracted:												
	Analyzed:	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		8 73	1 00	5 92	1 00	8 16	1 00	8 37	1 00	2 98	1 00	2 50	1 00
TPH by EPA 418.1	Extracted:												
	Analyzed:	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
TPH, Total Petroleum Hydrocarbons		248000	548	189000	531	278000	544	39400	109	98100	103	78300	103

This analytical report and the entire data package it represents has been made for your exclusive and confidential use The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing

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Brent Barron

Odessa Laboratory Director



Sport Environmental Services, PLLC, Midland, TX

**Project Name: Southwest Royalties** 



Date Received in Lab: Tue Apr-07-09 07 54 am

Project Id: Wilderspin Federal Battery Contact: Debi Moore

Project Location

Project Location:								Report	Date:	08-APR-09			
								Project Ma	nager:	Brent Barron,	11		
	Lab Id:	329402-0	007	329402-0	008	329402-0	009	329402-	010	329402-0	)11	329402-0	012
Anglusis Paguastad	Field Id:	ER3-00	01	ER4-00	)1	ER5-00	1	ER6-00	)1	SF1-00	1	SF2-00	1
Analysis Requested	Depth:	2- In		2- In		2- In		2- In		2- In		2- In	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00
Anions by EPA 300	Extracted:				_								
	Analyzed:	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09	10 26	Apı-07-09	10 26
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		137	5 1 3	69 1	5 18	44 3	5 27	9210	209	45 9	11 1	39 5	216
BTEX by EPA 8021B	Extracted:	Apr-07-09	08 00	Apr-07-09	08 00	Apr-07-09	08 00	Apr-07-09	08 00	Apr-07-09	10 00	Apr-07-09	08 00
	Analyzed:	Apr-07-09	12 44	Apr-07-09	13 04	Apr-07-09	13 25	Apr-07-09	13 46	Apr-07-09	22 53	Apr-07-09	14 48
)	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		ND	1 023	ND	1 029	ND	1 053	3 910	2 080	5 276	2 217	0 0022	0 0011
Toluene		7 287	2 047	20 61	2 058	41 75	2 105	1112	4 160	135 1	4 4 3 4	0 0073	0 0022
Ethylbenzene		13 21	1 023	22 48	1 029	46 48	1 053	99 11	2 080	92 13	2 217	0 0020	0 0011
m,p-Xylenes		5174	2 047	85 76	2 058	176 5	2 105	352 2	4 160	312.0	4 4 3 4	0 0051	0 0022
o-Xylene		19 05	1 023	31 83	1 029	70 53	1 053	129 6	2 080	118 5	2 217	0 0022	0 0011
Total Xylenes		70 79	1 023	117 59	1 029	247 03	1 053	481.8	2 080	430 5	2 217	0 0073	0 0011
Total BTEX		91 287	1 023	160 68	1 029	335 26	1 053	696 02	2 080	663 006	2 217	0 0188	0 0011
Percent Moisture	Extracted:												
	Analyzed:	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		2 49	1 00	3 40	1 00	5 20	1 00	4 23	1 00	9 60	1 00	7 39	1 00
TPH by EPA 418.1	Extracted:												
	Analyzed:	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
TPH, Total Petroleum Hydrocarbons		82500	103	582000	518	227000	527	173000	522	56500	111	73300	540

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Brent Barron

Odessa Laboratory Director



Sport Environmental Services, PLLC, Midland, TX

**Project Name: Southwest Royalties** 



Date Received in Lab: Tue Apr-07-09 07 54 am

Report Date: 08-APR-09

Contact: Debi Moore

Project Id: Wilderspin Federal Battery

**Project Location:** 

Toject Eocation.								<b>Project</b> Ma	nager:	Brent Barron,	II		
	Lab Id:	329402-0	013	329402-	014	329402-0	015	329402-	016	329402-0	017	329402-0	18
Analysis Requested	Field Id:	SF3-00	1	NF1-00	DI 🛛	NF2-00	)1	NF3-00	01	EF1-00	01	EF2-00	1
Analysis Requested	Depth:	2- In		2- In		2- In		2- In		2- In		2- In	
	Matrix:	SOIL		SOIL	,	SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09 (	00 00
Anions by EPA 300	Extracted:												
	Analyzed:	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09 I	10 26
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		33 3	10 2	23 1	5 60	54 3	10.8	ND	219	185	10 7	74 5	110
BTEX by EPA 8021B	Extracted:	Apr-07-09	08 00	Apr-08-09	08 00	Apr-08-09	08 00	Apr-08-09	08 00	Apr-08-09	08 00	Ap1-08-09 (	08 00
	Analyzed:	Apr-07-09	15 08	Apr-08-09	13 40	Apr-08-09	14 01	Apr-08-09	14 22	Apr-08-09	14 42	Apr-08-09 1	5 03
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		0 0027	0 0010	16 28	5 596	14 45	5 411	6 120	5 464	12 95	5 329	11 13	5 482
Toluene		0 0071	0 0020	249 3	11 19	207 3	10 82	136 5	10 93	165 8	10 66	221 0	10 96
Ethylbenzene		0 0018	0 0010	1196	5 596	1117	5 411	84 20	5 464	75 30	5 329	114 1	5 482
m,p-Xylenes		0 0045	0 0020	432 1	11 19	372 5	10 82	293 5	10 93	256 7	10 66	397 8	10 96
o-Xylene		0 0018	0 0010	149 2	5 596	126 0	5 411	97 58	5 464	89 95	5 329	138 4	5 482
Total Xylenes		0 0063	0 0010	581 3	5 596	498 5	5 411	391 08	5 464	346 65	5 329	536 2	5 482
Total BTEX		0 0179	0 0010	966 48	5 596	831 95	5 411	6179	5 464	600 7	5 329	882 43	5 482
Percent Moisture	Extracted:												
	Analyzed:	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09 1	7 00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		1 85	1 00	10 65	1 00	7 59	1 00	8 49	1 00	6 17	1 00	8 79	1 00
<b>TPH by EPA 418.1</b>	Extracted:												
ľ	Analyzed:	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09 I	2 08
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
TPH, Total Petroleum Hydrocarbons		48500	509	253000	560	181000	541	252000	546	169000	533	282000	548

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Brent Barron

Odessa Laboratory Director



Sport Environmental Services, PLLC, Midland, TX

**Project Name: Southwest Royalties** 



Date Received in Lab: Tue Apr-07-09 07 54 am

Contact: Debi Moore

Project Id: Wilderspin Federal Battery

Project Location

roject Location:								Report	Date:	08-APR-09			
- ojeet Eoeution.								Project Ma	nager:	Brent Barron,	11		
	Lab Id:	329402-0	)19	329402-0	020	329402-0	21	329402-0	022	329402-0	023	329402-0	24
Analysis Paguastad	Field Id:	EF3-00	1	WF1-00	01	WR1-00	)1	WR2-00	D1	WR3-00	)1	WR4-00	1
Analysis Requested	Depth:	2- In		2- In		2- In		2- In		2- In		2- In	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09 (	00 00	Apr-03-09	00 00	Apr-03-09	00 00	Apr-03-09 0	00 00
Anions by EPA 300	Extracted:												
,, _,, _	Analyzed:	Apr-07-09	10 26	Apr-07-09	10 26	Apr-07-09 2	21 06	Apr-07-09	21 06	Apr-07-09	21 06	Ap1-07-09 2	21 06
l	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RĹ	mg/kg	RL	mg/kg	RL
Chloride		1960	50 4	64 8	22 0	ND	5 40	33 9	10 5	7 24	5 24	20 9	5 17
BTEX by EPA 8021B	Extracted:	Apr-07-09	10 00	Apr-08-09	08 00	Apr-07-09 (	00 80	Apr-07-09	10 00	Apr-07-09	10 00	Apr-07-09 1	0 00
	Analyzed:	Apr-07-09	20 50	Apr-08-09	15 23	Apr-07-09	18 05	Apr-07-09	21 10	Apr-07-09	21 31	Apr-07-09 2	21 52
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		0 0032	0 0010	7 214	5 507	2 074	1 080	ND	1 048	ND	2 098	ND	1 035
Toluene		0 0150	0 0020	202 0	11 01	70 72	2 160	51 95	2 095	82 50	4 195	16 34	2 069
Ethylbenzene		0 0033	0 0010	1198	5 507	57 10	1 080	47 55	1 048	64 75	2 098	23 06	1 035
m,p-Xylenes		0 0115	0 0020	421 1	11 01	193 6	2 160	168 7	2 095	226 2	4 195	89 89	2 069
o-Xylene		0 0040	0 0010	147 5	5 507	72 32	1 080	63 47	1 048	80 82	2 098	33 74	1 035
Total Xylenes		0 0155	0 0010	568 6	5 507	265 92	1 080	232 17	1 048	307 02	2 098	123 63	1 035
Total BTEX		0 037	0 0010	897 614	5 507	395 814	1 080	331 67	1 048	454 27	2 098	163 03	1 035
Percent Moisture	Extracted:												
	Analyzed:	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09	17 00	Apr-07-09 1	7 00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		ND	1 00	9 21	1 00	7 41	1 00	4 54	1 00	4 65	1 00	3 34	1 00
<b>TPH by EPA 418.1</b>	Extracted:												
	Analyzed:	Apr-07-09	12 08	Apr-07-09	12 08	Apr-07-09	13 26	Apr-07-09	13 26	Apr-07-09	13 26	Apr-07-09 1	3 26
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
TPH, Total Petroleum Hydrocarbons		73000	504	219000	551	230000	540	114000	524	140000	524	148000	517

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Brent Barron

Odessa Laboratory Director





- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- **E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- \* Outside XENCO's scope of NELAC Accreditation.

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2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
5757 NW 158th St, Miami Lakes, FL 33014	(305) 823-8500	(305) 823-8555
12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
842 Cantwell Lane, Corpus Christi, TX 78408	(361) 884-0371	(361) 884-9116



#### **Project Name: Southwest Royalties**

Vork Orders : 329402	),		Project II	D: Wilderspin	n Federal B	attery
Lab Batch #: 755193	Sample: 527900-1-BKS / B	KS Ba	tch: <sup>1</sup> Matri	ix: Solid		
Units: mg/kg	Date Analyzed: 04/07/09 09:07	SU	<b>RROGATE RI</b>	ECOVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount  B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Dıfluorobenzene		0 0296	0 0300	99	80-120	
4-Bromofluorobenzene		0 0302	0 0300	101	80-120	
Lab Batch #: 755193	Sample: 527900-1-BSD / B	SD Ba	tch: 1 Matri	ix: Solid		
Units: mg/kg	Date Analyzed: 04/07/09 09:28	SU	<b>RROGATE RI</b>	ECOVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 4-Difluorobenzene	2 Mary CS	0.0304	0.0300	101	80-120	
4-Bromofluorobenzene		0 0320	0 0300	107	80-120	
L L D / L // 755102	S • \$27000 1 DLK / D		 	l In Salid		
Lab Baten #: 755195	Sample: 32/900-1-BLK/B		DDOCATE DI	IX: Sonu	STUDV	
Units: mg/kg	Date Analyzed: 04/07/09 10:08	30				
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Dıfluorobenzene		0 0263	0 0300	88	80-120	
4-Bromofluorobenzene		0 0293	0 0300	98	80-120	
Lab Batch #: 755193	Sample: 329402-001 / SMP	Ba	tch: <sup>1</sup> Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/07/09 10:40	SU	<b>RROGATE RI</b>	ECOVERY	STUDY	
BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	4 <sup>, .</sup>	0 0241	0 0300	80	80-120	
4-Bromofluorobenzene		0 0355	0 0300	118	80-120	
Lab Batch #: 755193	Sample: 329402-002 / SMP	Ra	tch: ] Matri	ix: Soil	•	
Units: mg/kg	Date Analyzed: 04/07/09 11:01	SU	RROGATE RI	ECOVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R {DI	Control Limits %R	Flags
14-Diffuorobenzene	Analytts	0.0224	0.0200	75	80.120	*
4-Bromofluorobenzene		0.0331	0.0300	13	80-120	÷
		0 0001	1 00000	1 110	1 00 140	

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



#### Project Name: Southwest Royalties

ork Orders: 329402	'9		Project II	<b>):</b> Wilderspir	1 Federal B	attery
Lab Batch #: 755193	Sample: 329402-003 / SMP	Bat	tch: 1 Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/07/09 11:21	SU	RROGATE RF	ECOVERY S	STUDY	
втех	۲ by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			D		l
1,4-Dıfluorobenzene		0 0249	0 0300	83	80-120	
4-Bromofluorobenzene		0 0398	0 0300	133	80-120	<u> </u>
Lab Batch #: 755193	Sample: 329402-005 / SMP	Bat	tch: 1 Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/07/09 12:03	SU	RROGATE RF	ECOVERY S	STUDY	
ΒΤΕΧ	( by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 4-Difluorobenzene		0 0239	0 0300	80	80-120	
4-Bromofluorobenzene		0 0360	0 0300	120	80-120	
Lab Batch #: 755193	Sample: 329402-006 / SMP	Bat	tch: 1 Matri	ix: Soil	<u> </u>	
Units: mg/kg	Date Analyzed: 04/07/09 12:23	SU	RROGATE RI	ECOVERY	STUDY	
втех	<b>ў by EPA 8021В</b>	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes				ļ	ļ
1,4-Difluorobenzene		0 0247	0 0 300	82	80-120	<b> </b>
4-Bromotluorobenzene		0 0350	0.0300	117	80-120	<u> </u>
Lab Batch #: 755193	Sample: 329402-007 / SMP	Bat	tch: 1 Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/07/09 12:44	SU	RROGATE RE	ECOVERY S	STUDY	
BTEX	K by EPA 8021B	Amount Found [A]	True Amount  B	Recovery %R [D]	Control Limits %R	Flag
1 4-Difluorobenzene		0.0230	0.0300	77	80-120	*
4-Bromofluorobenzene		0 0384	0 0300	128	80-120	*
Lab Batch #: 755193	Sample: 329402-008 / SMP	Ba	tch: 1 Matr	ix: Soil	1 1	
Units: mg/kg	Date Analyzed: 04/07/09 13:04	SU	RROGATE RI	ECOVERY (	STUDY	
BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag
1,4-Dıfluorobenzene		0 0238	0 0300	79	80-120	*
4-Bromofluorobenzene		0 0372	0 0300	124	80-120	*

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



#### **Project Name: Southwest Royalties**

·•		Project II	): Wilderspir	n Federal Ba	attery
Sample: 329402-009 / SMP	Bat	t <mark>ch: 1 Matri</mark>	x: Soil		
Date Analyzed: 04/07/09 13:25	SUI	RROGATE RE	<b>COVERY</b> S	STUDY	
K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
Analytes			וען		
	0 0238	0 0300	79	80-120	*
	0 0437	0 0300	146	80-120	<del>т</del>
Sample: 329402-010 / SMP	Bat	tch: 1 Matri	x: Soil		
Date Analyzed: 04/07/09 13:46	SUI	RROGATE RE	ECOVERY S	STUDY	
X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag
	0 0247	0 0300	82	80-120	
	0 0428	0 0300	143	80-120	*
Sample: 329402-012 / SMP	Bat	tch: 1 Matri	ix: Soil	<u> </u>	
Date Analyzed: 04/07/09 14:48	SUI	RROGATE RE	<b>ECOVERY</b>	STUDY	
X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
Analytes			[ט]		
	0 0244	0 0300	81	80-120	
	0 0248	0 0300	83	80-120	
Sample: 329402-013 / SMP	Bat	tch: 1 Matri	ix: Soil		
Date Analyzed: 04/07/09 15:08	SU	RROGATE RI	ECOVERY	STUDY	
X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
Analytes			[D]		
	0 0270	0 0300	90	80-120	
	0.010/	0 0300	65	80-120	*
	00174		<u> </u>	<u></u>	
Sample: 329402-021 / SMP	Bat	tch: <sup>1</sup> Matri	ix: Soil		
Sample: 329402-021 / SMP Date Analyzed: 04/07/09 18:05	Bat	tch: 1 Matri RROGATE RI	ix: Soil	STUDY	
Sample: 329402-021 / SMP Date Analyzed: 04/07/09 18:05 X by EPA 8021B Analytes	Bat SU Amount Found [A]	tch: <sup>1</sup> Matri RROGATE RI True Amount [B]	ix: Soil ECOVERY : Recovery %R [D]	STUDY Control Limits %R	Flag
Sample: 329402-021 / SMP Date Analyzed: 04/07/09 18:05 X by EPA 8021B Analytes	Bat SU Amount [A] 0 0215	tch: 1 Matri RROGATE RI True Amount [B] 0.0300	ix: Soil ECOVERY S Recovery %R [D] 72	STUDY Control Limits %R 80-120	Flag *
	, Sample: 329402-009 / SMP Date Analyzed: 04/07/09 13:25 X by EPA 8021B Analytes Sample: 329402-010 / SMP Date Analyzed: 04/07/09 13:46 X by EPA 8021B Analytes Sample: 329402-012 / SMP Date Analyzed: 04/07/09 14:48 X by EPA 8021B Analytes Sample: 329402-013 / SMP Date Analyzed: 04/07/09 15:08 X by EPA 8021B Analytes	Sample:329402-009 / SMPBatDate Analyzed:04/07/09 13:25SUK by EPA 8021BAmount Found [A]Amount Found [A]Analytes0 02380 0437Sample:329402-010 / SMPBatDate Analyzed:04/07/09 13:46SUK by EPA 8021BAmount Found [A]Amount Found [A]Analytes0 02470 0428Sample:329402-012 / SMPBatDate Analyzed:04/07/09 14:48SUK by EPA 8021BAmount Found [A]BatDate Analyzed:04/07/09 14:48SUK by EPA 8021BAmount Found [A]BatDate Analyzed:04/07/09 14:48SUX by EPA 8021BAmount Found [A]BatDate Analyzed:0 02440 0248Sample:329402-013 / SMP BatBatDate Analyzed:04/07/09 15:08SUX by EPA 8021BAmount Found [A]Amount Found [A]Analytes0 02700 0194	,       Project II         Sample: 329402-009 / SMP       Batch:       1       Matri         Date Analyzed: 04/07/09 13:25       SURROGATE RI         K by EPA 8021B       Amount Found [A]       True Amount [A]         Analytes       0 0238       0 0300         0 0437       0 0300         Sample: 329402-010 / SMP       Batch:       1       Matri         Date Analyzed: 04/07/09 13:46       SURROGATE RI       Matri         K by EPA 8021B       Amount [A]       Frue Amount [A]       True Amount [A]         Analytes       0 0247       0 0300         Sample: 329402-012 / SMP       Batch:       1       Matri         Date Analyzed: 04/07/09 14:48       SURROGATE RI         K by EPA 8021B       Amount [A]       True Amount [A]       IB]         Analytes       0 0247       0 0300         Sample: 329402-012 / SMP       Batch:       1       Matri         Date Analyzed: 04/07/09 14:48       SURROGATE RI         K by EPA 8021B       Amount [A]       True Amount [A]       IB]         Analytes       0 0244       0 0300         Sample: 329402-013 / SMP       Batch:       1       Matri         Date Analyzed: 04/07/09 15:08       SUROGATE RI <td>, Project ID: Wilderspin Sample: 329402-009 / SMP Date Analyzed: 04/07/09 13:25 X by EPA 8021B Analytes Analytes 329402-010 / SMP Date Analyzed: 04/07/09 13:46 Sample: 329402-010 / SMP Date Analyzed: 04/07/09 13:46 X by EPA 8021B Amount Found [A] Analytes 0 0247 0 0300 146 Sample: 329402-012 / SMP Date Analyzed: 04/07/09 14:48 SurROGATE RECOVERY S X by EPA 8021B Amount Found [A] Date Analyzed: 04/07/09 15:08 Sample: 329402-013 / SMP Batch: 1 Matrix: Soil Date Analyzed: 04/07/09 15:08 SurROGATE RECOVERY S X by EPA 8021B Amount Found [A] [B] [D] (D] (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (D) (D) (D) (D) (D) (D) (D</td> <td>Project ID: Wilderspin Federal B:         Sample: 329402-009 / SMP       Bate:       1       Matrix: Soil         Date Analyzed:       04/07/09 13:25       SURROGATE RECOVERY STUDY         K by EPA 8021B       Amount [A]       True [B]       Recovery % R       Control Limits         Analytes       0 0238       0 0300       79       80-120         Sample:       329402-010 / SMP       Batch:       1       Matrix: Soil         Date Analyzed:       04/07/09 13:46       SURROGATE RECOVERY STUDY         K by EPA 8021B       Amount [A]       True [A]       Recovery % R       Control Limits         Analytes       04/07/09 13:46       SURROGATE RECOVERY STUDY       Soil       Control Limits         Analytes       00/0247       0.0300       82       80-120         Matrix:       Soil       Batch:       1       Matrix:       Soil         Date Analyzed:       04/07/09 14:48       SURROGATE RECOVERY STUDY       %R       Control Limits         K by EPA 8021B       Amount [A]       True [B]       Recovery %R       Control Limits       Soil         Date Analyzed:       04/07/09 14:48       SURROGATE RECOVERY STUDY       %R       Control Limits       %R       Control Limits         Matalytes</td>	, Project ID: Wilderspin Sample: 329402-009 / SMP Date Analyzed: 04/07/09 13:25 X by EPA 8021B Analytes Analytes 329402-010 / SMP Date Analyzed: 04/07/09 13:46 Sample: 329402-010 / SMP Date Analyzed: 04/07/09 13:46 X by EPA 8021B Amount Found [A] Analytes 0 0247 0 0300 146 Sample: 329402-012 / SMP Date Analyzed: 04/07/09 14:48 SurROGATE RECOVERY S X by EPA 8021B Amount Found [A] Date Analyzed: 04/07/09 15:08 Sample: 329402-013 / SMP Batch: 1 Matrix: Soil Date Analyzed: 04/07/09 15:08 SurROGATE RECOVERY S X by EPA 8021B Amount Found [A] [B] [D] (D] (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (A) (D) (D) (D) (D) (D) (D) (D) (D	Project ID: Wilderspin Federal B:         Sample: 329402-009 / SMP       Bate:       1       Matrix: Soil         Date Analyzed:       04/07/09 13:25       SURROGATE RECOVERY STUDY         K by EPA 8021B       Amount [A]       True [B]       Recovery % R       Control Limits         Analytes       0 0238       0 0300       79       80-120         Sample:       329402-010 / SMP       Batch:       1       Matrix: Soil         Date Analyzed:       04/07/09 13:46       SURROGATE RECOVERY STUDY         K by EPA 8021B       Amount [A]       True [A]       Recovery % R       Control Limits         Analytes       04/07/09 13:46       SURROGATE RECOVERY STUDY       Soil       Control Limits         Analytes       00/0247       0.0300       82       80-120         Matrix:       Soil       Batch:       1       Matrix:       Soil         Date Analyzed:       04/07/09 14:48       SURROGATE RECOVERY STUDY       %R       Control Limits         K by EPA 8021B       Amount [A]       True [B]       Recovery %R       Control Limits       Soil         Date Analyzed:       04/07/09 14:48       SURROGATE RECOVERY STUDY       %R       Control Limits       %R       Control Limits         Matalytes

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



#### **Project Name: Southwest Royalties**

ork Orders : 329402	,		Project IE	: Wilderspir	n Federal B	attery
Lab Batch #: 755193	Sample: 329402-012 S / MS	Bat	tch: 1 Matri	x: Soil		
Units: mg/kg	Date Analyzed: 04/07/09 18:26	SU	RROGATE RE	COVERY	STUDY	
BTE	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			ועו		
1,4-Difluorobenzene		0 0287	0 0300	96	80-120	
4-Bromofluorobenzene		0 0289	0 0300	96	80-120	
Lab Batch #: 755193	Sample: 329402-012 SD / M	ISD Bat	tch: <sup>1</sup> Matri	x: Soil		
Units: mg/kg	Date Analyzed: 04/07/09 18:46	SU	RROGATE RE	COVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount  B	Recovery %R [D]	Control Limits %R	Flags
1.4-Difluorobenzene		0.0273	0.0300	91	80-120	
4-Bromofluorobenzene		0 0276	0 0300	92	80-120	
Lab Batch #: 755198	Sample: 527904-1-BKS / B	KS Ba	tch: <sup>]</sup> Matri	x: Solid	I	
Units: mg/kg	Date Analyzed: 04/07/09 19:27	SU	RROGATE RE	COVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			ועו		
1,4-Difluorobenzene		0 0313	0 0300	104	80-120	
4-Bromofluorobenzene		0 0339	0 0300	113	80-120	
Lab Batch #: 755198	Sample: 527904-1-BSD / B	SD Ba	tch: <sup>1</sup> Matri	x: Solid		
Units: mg/kg	Date Analyzed: 04/07/09 19:48	SU	RROGATE RE	COVERY	STUDY	
BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R  D]	Control Limits %R	Flags
1,4-Dıfluorobenzene	J	0 0308	0 0300	103	80-120	
4-Bromofluorobenzene		0 0347	0 0300	116	80-120	
Lab Batch #: 755198	<b>Sample:</b> 527904-1-BLK / B	LK Ba	tch: 1 Matri	x: Solid	·	
Units: mg/kg	Date Analyzed: 04/07/09 20:29	SU	RROGATE RI	COVERY	STUDY	
BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount  B]	Recovery %R [D]	Control Limits %R	Flag
1,4-Difluorobenzene		0 0254	0 0300	85	80-120	
4-Bromofluorobenzene		0 0296	0 0300	99	80-120	

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B All results are based on MDL and validated for QC purposes



#### **Project Name: Southwest Royalties**

Flag ** Flag			
Flag ** Flag			
Flag ** Flag			
**  Flag			
** Flag			
Flag			
*			
*			
Batch: 1 Matrix: Soil			
Flag			
*			
*			
Flag			
*			
*			
SURROGATE RECOVERY STUDY			
Flag			
**			

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



#### **Project Name: Southwest Royalties**

Vork Orders : 329402	•		Project II	D: Wilderspin	n Federal B	attery
Lab Batch #: 755198	Sample: 329402-011 / SMP	Ba	tch: <sup>1</sup> Matri	x: Soil		
Units: mg/kg	Date Analyzed: 04/07/09 22:53	SURROGATE RECOVERY STUDY				
BTE	K by EPA 8021B	Amount Found [A]	True Amount  B]	Recovery %R	Control Limits %R	Flags
	Analytes			וען		
1,4-Difluorobenzene		0 0239	0 0300	80	80-120	
4-Bromofluorobenzene		0 0399	0 0300	133	80-120	**
Lab Batch #: 755198	Sample: 329402-019 S / MS	Ba	tch: <sup>1</sup> Matri	x: Soil		
Units: mg/kg	Date Analyzed: 04/08/09 04:01	SU	RROGATE RI	ECOVERY	STUDY	
BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene		0 0275	0 0300	92	80-120	
4-Bromofluorobenzene		0 0164	0 0300	55	80-120	**
Lab Batch #: 755198	Sample: 329402-019 SD / N	1SD Ba	tch: 1 Matri	x: Soil	1	I
Units: mg/kg	Date Analyzed: 04/08/09 04:22	SURROGATE RECOVERY STUDY				
BTEX by EPA 8021B		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
14 Diffuorabarrana	Analytes	0.0272	0.0200		00.120	
4-Bromofluorobenzene		0.0122	0.0300	91	80-120	**
		00133	0 0300	44	80-120	
Lab Batch #: 755272	Sample: 527956-1-BKS / B	KS Batch: 1 Matrix: Solid				
Units: mg/kg	Date Analyzed: 04/08/09 09:13	SURROGATE RECOVERY STUDY				
BTE	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.4-Difluorobenzene		0.0299	0.0300	100	80-120	
4-Bromofluorobenzene		0 0322	0 0300	107	80-120	
Lab Batch #• 755272	Sample: 527956-1-BSD / B	SD Ra	tch: ] Matri	ix: Solid	I	
Units: mg/kg	Date Analyzed: 04/08/09 10:58	SURROGATE RECOVERY STUDY				
BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	•	0 0290	0 0300	97	80-120	
4-Bromofluorobenzene		0 0298	0 0300	99	80-120	

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



### Form 2 - Surrogate Recoveries

#### **Project Name: Southwest Royalties**

Vork Orders : 329402	· · ·		Project II	D: Wilderspin	n Federal B	attery
Lab Batch #: 755272	Sample: 527956-1-BLK / BI	JK Ba	tch: <sup>1</sup> Matri	ix: Solid		
Units: mg/kg	Date Analyzed: 04/08/09 12:24	SU	RROGATE RI	ECOVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			וטן		
1,4-Dıfluorobenzene		0 0261	0 0300	87	80-120	
4-Bromofluorobenzene		0 0322	0 0300	107	80-120	
Lab Batch #: 755272	Sample: 329402-014 / SMP	Ba	tch: <sup>1</sup> Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/08/09 13:40	SURROGATE RECOVERY STUDY				
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R  D	Control Limits %R	Flags
1.4-Difluorobenzene	1 xiiuiy (C5	0.0209	0.0300	70	80-120	**
4-Bromofluorobenzene		0 0326	0 0300	109	80-120	
Lah Batch #: 755272	Sample: 329402-015 / SMP	Ba	tch: 1 Matri	ix: Soil	1	
Units: mg/kg	Date Analyzed: 04/08/09 14:01	SURROGATE RECOVERY STUDY				
BTE	BTEX by EPA 8021B Amount True Cor Found Amount Recovery Li [A] [B] %R 9		Control Limits %R	Flags		
	Analytes					
1,4-Difluorobenzene		0 0231	0 0300	77	80-120	**
4-Bromofluorobenzene	1	0 0338	0 0300	113	80-120	
Lab Batch #: 755272	Sample: 329402-016 / SMP	Batch: 1 Matrix: Soil				
Units: mg/kg	Date Analyzed: 04/08/09 14:22	SURROGATE RECOVERY STUDY				
BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	~	0 0210	0 0300	70	80-120	**
4-Bromofluorobenzene		0 0309	0 0300	103	80-120	
Lab Batch #: 755272	Sample: 329402-017 / SMP	Ba	tch: <sup>1</sup> Matri	ix: Soil	•	
Units: mg/kg	Date Analyzed: 04/08/09 14:42	SURROGATE RECOVERY STUDY				
BTEZ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Dıfluorobenzene	J · · ···	0 0210	0 0300	70	80-120	**
4-Bromofluorobenzene		0 0292	0 0300	97	80-120	<u>.</u>

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



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### Form 2 - Surrogate Recoveries

#### **Project Name: Southwest Royalties**

Work Orders : 329402	Project ID: Wilderspin Federal Battery						
Lab Batch #: 755272	Batch: 1 Matrix: Soil						
Units: mg/kg	Date Analyzed: 04/08/09 15:03	SU	RROGATE R	ATE RECOVERY STUDY			
BTEX by EPA 8021B Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Dıfluorobenzene		0 0245	0 0300	82	80-120	1	
4-Bromofluorobenzene		0 0338	0 0300	113	80-120		
Lab Batch #: 755272	Sample: 329402-020 / SMP	Ba	tch: 1 Matr	ix: Soil			
Units: mg/kg	Date Analyzed: 04/08/09 15:23	SURROGATE RECOVERY STUDY					
BTE	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
1,4-Dıfluorobenzene		0 0240	0 0300	80	80-120		
4-Bromofluorobenzene		0 0355	0 0300	118	80-120		

**\*\*** Surrogates outside limits, data and surrogates confirmed by reanalysis **\*\*\*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B




#### **Project Name: Southwest Royalties**

Work Order #: 329402		Pr	oject ID:	Wilders	pin Federa	l Battery
Lab Batch #: 755139	Sample: 755139	-1-BKS	Matri	ix: Solid		
Date Analyzed: 04/07/2009	Date Prepared: 04/07/2	009	Analy	st: LATCO	OR	
Reporting Units: mg/kg	Batch #: 1	BLANK /	BLANK SPI	KE REC	COVERY S	STUDY
Anions by EPA 300	Blank Result	Spike Added [B]	Blank Spike Result	Blank Spike %R	Control Limits %R	Flags
Analytes	1.1		[C]	[D]		
Chloride	ND	10 0	10 0	100	80-120	
Lab Batch #: 755160	Sample: 755160	-1-BKS	Matri	ix: Solid		
Date Analyzed: 04/07/2009	Date Prepared: 04/07/2	009	Analy	st: LATCO	OR	
Reporting Units: mg/kg	Batch #: 1	BLANK /I	BLANK SPI	KE REC	OVERY S	STUDY
Anions by EPA 300	Blank Result	Spike Added	Blank Spike Bassili	Blank Spike	Control Limits	Flags
Analytes		[13]		%R  D	~∕oK	
Chloride	ND	10 0	10.4	104	80-120	

Blank Spike Recovery [D] = 100\*[C]/[B]All results are based on MDL and validated for QC purposes





#### Project Name: Southwest Royalties

Work Order #: 329402	D	- 4 - D		0			Pro Date A	ject ID: <sup>1</sup>	Wilderspin	Federal Ba	attery
Lab Batch ID: 755193 Sample: 527900	-1-BKS	ate Prepar Bate	h #: 1	)7			DateA	Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK S	SPIKE / I	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUD	Ŷ	
BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	ND	0 1000	0 0915	92	0 1	0 0930	93	2	70-130	35	
Toluene	ND	0 1000	0 0869	87	0 1	0 0884	88	2	70-130	35	
Ethylbenzene	ND	0 1000	0 0892	89	01	0 0919	92	3	71-129	35	
m,p-Xylenes	ND	0 2000	0 1784	89	0 2	0 1840	92	3	70-135	35	
o-Xylene	ND	0 1000	0 0846	85	0 1	0 0883	88	4	71-133	35	
Analyst: ASA	D	ate Prepar	ed: 04/07/200	)9			Date A	nalyzed: (	04/07/2009		
Lab Batch ID: 755198 Sample: 527904	-1-BKS	Bate	h #: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK S	SPIKE / H	BLANK S	SPIKE DUP	LICATE	RECOVI	ERY STUD	Y	
BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate Result (F)	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[2]	[0]				191				
Benzene	ND	0 1000	0 0959	96	01	0 0956	96	0	70-130	35	
Toluene	ND	0 1000	0 0928	93	01	0 0926	93	0	70-130	35	
Ethylbenzene	ND	0 1000	0 0993	99	01	0 0999	100	1	71-129	35	
m,p-Xylenes	ND	0 2000	0 1985	99	02	0 1995	100	1	70-135	35	
o Vylane							1				





#### Project Name: Southwest Royalties

Work Order #: 329402 Analyst: ASA	D	ate Prepar	ed: 04/08/200	09			Pro Date A	ject ID: \ nalyzed: (	Wilderspin )4/08/2009	Federal Ba	attery
Lab Batch ID: 755272 Sample: 527956-1	BKS	Batel	h#: 1					Matrix: S	Solid		
Units: mg/kg		BLAN	K/BLANK	SPIKE / I	BLANK S	PIKE DUP	LICATE	RECOVI	ERY STUE	PY	
BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	ND	0 2000	0 1911	96	0 2	0 1760	88	8	70-130	35	
Toluene	ND	0 2000	0 1861	93	0 2	0 1705	85	9	70-130	35	
Ethylbenzene	ND	0 2000	0 1939	97	0 2	0 1751	88	10	71-129	35	
m,p-Xylenes	ND	0 4000	0 3941	99	04	0 3558	89	10	70-135	35	i
o-Xylene	ND	0 2000	0 1878	94	0 2	0 1696	85	10	71-133	35	
Analyst: LATCOR Lab Batch ID: 755131 Sample: 755131-1	D: •BKS	ate Prepar Batel	ed: 04/07/200 h #: 1	09			Date A	nalyzed: ( Matrix: S	)4/07/2009 Solid		
Units: mg/kg		BLAN	K/BLANK S	SPIKE / I	BLANK S	PIKE DUPI	LICATE	RECOVI	ERY STUE	Y	
TPH by EPA 418.1 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
TPH, Total Petroleum Hydrocarbons	ND	2500	2230	89	125000	110000	88	192	65-135	35	





#### Project Name: Southwest Royalties

Work Order #:         329402           Analyst:         LATCOR           Lab Batch ID:         755136         Sample:         755	D: 136-1-BKS	ate Prepar Batch	ed: 04/07/200	09			Pro Date A	ject ID: \ nalyzed: ( Matrix: S	Wilderspin 1 )4/07/2009 Solid	Federal Ba	attery
Units: mg/kg		BLAN	K/BLANKS	SPIKE / I	BLANK S	SPIKE DUPI	LICATE	RECOVE	ERY STUD	PY	
TPH by EPA 418.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[D]	N ICI		[ [E]		[U]				
TPH, Total Petroleum Hydrocarbons	ND	2500	2510	100	2500	2460	98	2	65-135	35	

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Laboratories

# Form 3 - MS Recoveries



#### **Project Name: Southwest Royalties**

Work Order #: 329402 Lab Batch #: 755139

Lab Batch #: 755139			Pr	oject ID:	Wilderspin	Federal Batte
Date Analyzed: 04/07/2009	Date Prepared:	04/07/2009		Analyst:	LATCOR	
QC- Sample ID: 329402-001 S	Batch #:	1		Matrix:	Soil	
Reporting Units: mg/kg	MAT	RIX / MA	TRIX SPIKE	RECOV	VERY STU	DY
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]				
Chloride	11300	4380	16000	107	80-120	
Lab Batch #: 755160						
Date Analyzed: 04/07/2009	Date Prepared:	04/07/2009	I	Analyst:	LATCOR	
QC- Sample ID: 329402-021 S	Batch #:	1		Matrix:	Soil	
Reporting Units: mg/kg	MAT	'RIX / MA'	TRIX SPIKE	RECO	VERY STU	DY
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]				
Chloride	ND	108	124	115	80-120	

Matrix Spike Percent Recovery  $[D] = 100^{*}(C-A)/B$ Relative Percent Difference  $[E] = 200^{*}(C-A)/(C+B)$ All Results are based on MDL and Validated for QC Purposes

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Form 3 - MS / MSD Recoveries

#### **Project Name: Southwest Royalties**



Work Order #: 329402						Project II	D: Wilders	spin Feder	al Battery		
Lab Batch ID: 755193 ( Date Analyzed: 04/07/2009	C- Sample ID: Date Prepared:	329402 04/07/2	-012 S 009	Ba An	tch #: alyst:	l Matrix ASA	c: Soil				
Reporting Units: mg/kg		M	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY S	STUDY		
BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added IE1	Duplicate Spiked Sample Result [F]	Spiked Dup. %R IGI	RPD %	Control Limits %R	Control Limits %RPD	Flag
				(~)			191				
Benzene	0 0022	0 1080	0 0445	39	0 1080	0 0404	35	10	70-130	35	X
Toluene	0 0073	0 1080	0 0355	26	0 1080	0 0322	23	10	70-130	35	X
Ethylbenzene	0 0020	0 1080	0 0164	13	0 1080	0 0152	12	8	71-129	35	X
m,p-Xylenes	0 0051	0 2160	0 0337	13	0 2160	0 0309	12	9	70-135	35	х
o-Xylene	0 0022	0 1080	0 0123	9	0 1080	0 0131	10	6	71-133	35	X
Lab Batch ID: 755198	C- Sample ID:	329402	-019 S	Ba	tch #:	1 Matrix	: Soil				
Date Analyzed: 04/08/2009	Date Prepared:	04/07/2	009	An	alyst:	ASA					
Reporting Units: mg/kg		M	ATRIX SPIK	E / MAT	RIX SPI	KE DÜPLICA	TE REC	OVERY S	ŜTUDY		_
BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R {D}	Spike Added {E}	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	0 0032	0 5043	0 1323	26	0 5043	0 1513	29	13	70-130	35	x
Toluene	0 0150	0 5043	0 1965	36	0 5043	0 2105	39	7	70-130	35	X
Ethylbenzene	0 0033	0 5043	0 0605	11	0 5043	0 0688	13	13	71-129	35	X
m,p-Xylenes	0 0115	1 009	0 2079	19	1 009	0 2073	19	0	70-135	35	Х
o-Xylene	0 0040	0 5043	0 0785	15	0 5043	0 0765	14	3	71-133	35	X

Matrix Spike Percent Recovery [D] = 100\*(C-A)/BRelative Percent Difference RPD = 200\*[(C-F)/(C+F)]

Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries

#### **Project Name: Southwest Royalties**



Work Order # : 329402						Project II	<b>D:</b> Wilders	spin Feder	al Battery		
Lab Batch ID: 755131 Date Analyzed: 04/07/2009	QC- Sample ID: Date Prepared:	329402 04/07/2	-001 S 009	Ba An	tch #: alyst:	l Matrix LATCOR	x: Soil				
Reporting Units: mg/kg		M	IATRIX SPIKI	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
TPH by EPA 418.1	Parent Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
TPH, Total Petroleum Hydrocarbons	248000	137000	196000	0	137000	182000	0	7	65-135	35	X
Lab Batch ID: 755136	QC- Sample ID:	329402	-021 S	Ba	tch #:	1 Matrix	x: Soil				
Date Analyzed: 04/07/2009	Date Prepared:	04/07/2	009	An	alyst:	LATCOR					
Reporting Units: mg/kg		M	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
TPH by EPA 418.1	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[13]		וען	լեյ		[V]				
TPH, Total Petroleum Hydrocarbons	230000	135000	280000	37	135000	243000	10	14	65-135	35	Х

Matrix Spike Percent Recovery  $[D] = 100^{+}(C-A)/B$ Relative Percent Difference RPD =  $200^{+}[(C-F)/(C+F)]$  Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit



# Sample Duplicate Recovery



**Project Name: Southwest Royalties** 

Work Order #: 329402

Lab Batch #: 755139				Project I	D: Wildersp	in Federal I
Date Analyzed: 04/07/2009	Date Pre	pared: 04/0	17/2009	Analy	st: LATCO	ર
QC- Sample ID: 329402-001 D	В	atch #: 1		Matr	ix: Soil	
Reporting Units: mg/kg		SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Anions by EPA 300		Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte			[8]			
Chloride		11300	11400	1	20	
Lab Batch #: 755160						
Date Analyzed: 04/07/2009	Date Pre	pared: 04/0	)7/2009	Analy	st: LATCO	٤
QC- Sample ID: 329402-021 D	В	atch #: 1		Matr	ix: Soil	
Reporting Units: mg/kg		SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Anions by EPA 300		Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte			[D]			
Chloride		ND	ND	NC	20	
Lab Batch #: 755115						
Date Analyzed: 04/07/2009	Date Pre	pared: 04/0	)7/2009	Analy	st: BEV	
QC- Sample ID: 329398-001 D	В	atch #: 1		Matr	ix: Soil	
Reporting Units: %		SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture		Parent Sample Result [A]	Sample Duplicate Result (Bl	RPD	Control Limits %RPD	Flag
Analyte			(~)			
Percent Moisture		24 5	24 7		20	
Lab Batch #: 755118						
Date Analyzed: 04/07/2009	Date Pre	pared: 04/0	17/2009	Analy	st: BEV	
<b>QC- Sample ID:</b> 329402-012 D	В	atch #:		Matr	ix: Soil	
Reporting Units: %	_	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture		Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte		17-1	<b> B</b> }	}		
			1	1	1	

Spike Relative Difference RPD 200 \* [(B-A)/(B+A) | All Results are based on MDL and validated for QC purposes

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#### Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

Client	Sport Environmental
Date/ Time	04-07-09 @ 0754
Lab ID #	329402
Initials	BRB

#### Sample Receipt Checklist

	1 12-1		Client Ini	nal
*1 Temperature of container/ cooler?	(res)	0/1	2.0 -0	
2 Shipping container in good condition? DOX	Xes	No		
43 Custody Seals intact on shipping container/ cooler?	Yes	No	CNot PreseñP	
#4 Custody Seals intact on sample bottles/ container?	Yes	No	(Not Present)	
5 Chain of Custody present?	Ves	No		
6 Sample instructions complete of Chain of Custody?	(Yes)	No		
7 Cnain of Custody signed when relinquished/ received?	(Yes)	No		
#8 Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont / Lid	
#9 Container label(s) legible and intact?	Yes	No	Not Applicable	
#10 Sample matrix/ properties agree with Chain of Custody?	Yes	No		
11 Containers supplied by ELOT?	(es)	No		
#12 Samples in proper container/ bottle?	(Yes>	No	See Below	
#13 Samples properly preserved?	(Yes)	No	See Below	
#14 Sample bottles intact?	(Les	No		
#15 Preservations documented on Chain of Custody?	Yes	No		
#16 Containers documented on Chain of Custody?	Yes	No		
#17 Sufficient sample amount for indicated test(s)?	(Tes)	No	See Below	
#18 All samples received within sufficient hold time?	Yes	No	See Below	
#19 Subcontract of sample(s)?	Yes	No	(Not Applicable	
#20 VOC samples have zero headspace?	(Yes)	No	Not-Applicable	
Variance Do	cumentation			
Contact Contacted by			Date/ Time-	

Regarding.

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Corrective Action Taken

Check all that Apply

See attached e-mail/ fax Client understands and would like to proceed with analysis

Cooling process had begun shortly after sampling event

# Analytical Report 329770

for

Sport Environmental Services, PLLC

Project Manager: Debi Moore

**Southwest Royalties** 

Wilderspin Battery

13-APR-09





12600 West I-20 East Odessa, Texas 79765

Texas certification numbers: Houston, TX T104704215-08B-TX - Odessa/Midland, TX T104704400-08-TX

Florida certification numbers: Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675 Miramar, FL E86349 Norcross(Atlanta), GA E87429

> South Carolina certification numbers: Norcross(Atlanta), GA 98015

> North Carolina certification numbers: Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Tampa - Miami - Latin America Midland - Corpus Christi - Atlanta



13-APR-09



Project Manager: **Debi Moore Sport Environmental Services, PLLC** 502 North Big Spring Street Midland, TX 79701

Reference: XENCO Report No: **329770** Southwest Royalties Project Address:

#### Debi Moore:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 329770. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 329770 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II Odessa Laboratory Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies A Small Business and Minority Status Company that delivers SERVICE and QUALITY Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



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# Sample Cross Reference 329770

## Sport Environmental Services, PLLC, Midland, TX

Southwest Royalties

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
WEF 1-001	S	Apr-09-09 09:28	1 ft	329770-001
WEF 2-001	S	Apr-09-09 09:31	1 ft	329770-002
WEF 3-001	S	Apr-09-09 09:37	1 ft	329770-003
WEF 4-001	S	Apr-09-09 09:40	1 ft	329770-004
WEF 5-001	S	Apr-09-09 09:44	2.5 ft	329770-005
CEF 1-001	S	Apr-09-09 09:48	6 In	329770-006
CEF 2-001	S	Apr-09-09 09:51	6 In	329770-007
CEF 3-001	S	Apr-09-09 09:54	6 In	329770-008
CEF 4-001	S	Apr-09-09 09:57	6 In	329770-009
CEF 5-001	S	Apr-09-09 10:00	6 In	329770-010
EEF 1-001	S	Apr-09-09 10:08	3.5 ft	329770-011
EEF 2-001	S	Apr-09-09 10:12	3.5 ft	329770-012
EEF 3-001	S	Apr-09-09 10:16	3 ft	329770-013
EEF 4-001	S	Apr-09-09 10:19	5 ft	329770-014
EEF 5-001	S	Apr-09-09 10:22	10 ft	329770-015
EEF 6-001	S	Apr-09-09 10:26	6 In	329770-016
EEF 7-001	S	Apr-09-09 10:30	6 In	329770-017



# Certificate of Analysis Summary 329770

Sport Environmental Services, PLLC, Midland, TX

**Project Name: Southwest Royalties** 



Date Received in Lab: Thu Apr-09-09 04 03 pm

Report Date: 13-APR-09

Project Id: Wilderspin Battery Contact: Debi Moore

Project Location

Toject Location:								Project Ma	nager:	Brent Barron,	11		
	Lab Id:	329770-0	001	329770-	002	329770-0	003	329770-0	004	329770-0	005	329770-0	006
Anglusis Banusstad	Field Id:	WEF 1-0	001	WEF 2-0	001	WEF 3-0	01	WEF 4-0	01	WEF 5-0	001	CEF 1-0	001
Analysis Kequestea	Depth:	1 ft		1 ft		l ft		1 ft		25 ft		6 In	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-09-09	09 28	Apr-09-09	09 31	Apr-09-09 (	09 37	Apr-09-09	09 40	Apr-09-09	09 44	Apr-09-09	09 48
Anions by EPA 300	Extracted:												
	Analyzed:	Apr-09-09	19 47	Apr-09-09	19 47	Apr-09-09	19 47	Apr-09-09	19 47	Apr-09-09	19 47	Apt-09-09	19 47
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		70 9	210	306	26 5	497	26 4	21 9	5 25	53 3	26 5	31 3	25 1
BTEX by EPA 8021B	Extracted:	Apr-09-09	17 00	Apr-09-09	17 00	Apr-10-09 (	08 00	Apr-10-09	08 00	Apr-09-09	17 00	Apı-09-09	17 00
	Analyzed:	Apr-10-09	00 27	Apr-10-09	00 47	Apr-10-09	1149	Apr-10-09	12 09	Apr-10-09	01 08	Apr-09-09	20 20
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		0 6117	0 5228	ND	0 2652	0 0014	0 0011	ND	0 0011	ND	0 1058	ND	0 0012
Toluene		19 29	1 046	5 832	0 5304	0 0496	0 0021	0 0041	0 0021	0 3587	0 2116	ND	0 0025
Ethylbenzene		19 81	0 5228	5 975	0 2652	0 1129	0 0011	0 0216	0 0011	0 3640	0 1058	ND	0 0012
m,p-Xylenes		72 65	1 046	23 51	0 5304	0 3965	0 0021	0 0492	0 0021	1 399	0 2116	ND	0 0025
o-Xylene		26 54	0 5228	8 523	0 2652	0 2124	0 0011	0 0096	0 0011	0 5301	0 1058	ND	0 0012
Total Xylenes		99 19	0 5228	32 033	0 2652	0 6089	0 0011	0 0588	0 0011	1 9291	0 1058	ND	0 0012
Total BTEX		138 9017	0 5228	43 84	0 2652	0 7728	0 0011	0 0845	0 0011	2 6518	0 1058	ND	0 0012
Percent Moisture	Extracted:												
	Analyzed:	Apr-09-09	20 31	Apr-09-09	20 31	Apr-09-09 2	20 31	Apr-09-09 1	20 31	Apr-09-09	20 31	Apr-09-09	20 31
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		4 94	1 00	5 73	1 00	5 38	1 00	4 84	1 00	5 68	1 00	20 19	1 00
TPH By SW8015 Mod	Extracted:	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00
	Analyzed:	Apr-09-09	21 56	Apr-09-09	22 21	Apr-09-09 2	22 47	Apr-09-09	23 12	Apr-09-09	23 37	Apt-10-09	00 02
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Gasoline Range Hydrocarbons		6370	158	6600	159	1280	79 3	417	158	28 4	15 9	22 3	18 8
C12-C28 Diesel Range Hydrocarbons		15900	158	23700	159	11000	79 3	5160	15.8	542	159	1970	18 8
C28-C35 Oil Range Hydrocarbons		1640	158	2270	159	1020	79 3	463	158	56 0	159	316	18 8
Total TPH		23910	158	32570	159	13300	79 3	6040	15 8	626 4	159	2308 3	18 8

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Brent Barron

Odessa Laboratory Director



## Certificate of Analysis Summary 329770

Sport Environmental Services, PLLC, Midland, TX

**Project Name: Southwest Royalties** 



Date Received in Lab: Thu Apr-09-09 04 03 pm

Report Date: 13-APR-09

Project Id: Wilderspin Battery Contact: Debi Moore

**Project Location:** 

rojett Eotation.								Project Ma	nager:	Brent Barron	, II		
	Lab Id:	329770-0	07	329770-	008	329770-	009	329770-0	010	329770-	011	329770-0	012
Anglusis Deguasted	Field Id:	CEF 2-0	01	CEF 3-0	01	CEF 4-0	01	CEF 5-0	01	EEF 1-0	001	EEF 2-0	01
Analysis Kequesieu	Depth:	6 In		6 In		6 ln		6 In		35 ft		35 ft	
	Matrix:	SOIL		SOIL		SOIL	,	SOIL		SOIL		SOIL	
	Sampled:	Apr-09-09 (	09 51	Apr-09-09	09 54	Apr-09-09	09 57	Apr-09-09	10 00	Apr-09-09	10 08	Apr-09-09	10 12
Anions by EPA 300	Extracted:												
	Analyzed:	Apr-09-09	1947	Apr-09-09	19 47	Apr-09-09	19 47	Apr-09-09	19 47	Apr-09-09	19 47	Αρι-09-09	19 47
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chlonde		122	28 7	14 0	114	5390	57 5	ND	114	928	22 7	176	5 50
BTEX by EPA 8021B	Extracted:	Apr-09-09	17 00	Apr-09-09	17 00	Apr-10-09	08 00	Apr-09-09	17 00	Ap1-09-09	17 00	Арт-09-09	17 00
	Analyzed:	Apr-10-09	01 29	Apr-10-09	01 49	Apr-10-09	12 30	Apr-09-09	21 02	Apr-09-09	21 22	Apr-09-09	21 43
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		ND	0 1 1 4 5	6 894	2 253	ND	0 5750	ND	0 0011	ND	0 0011	ND	0 0011
Toluene		5 991	0 2289	75 77	4 506	ND	1 1 5 0	0 0028	0 0023	0 0023	0 0023	0 0134	0 0022
Ethylbenzene		7 913	0 1 1 4 5	32 38	2 253	0 6555	0 5750	ND	0 0011	ND	0 0011	0 0073	0 0011
m,p-Xylenes		29 07	0 2289	112 9	4 506	2 421	1 1 5 0	0 0025	0 0023	0 0056	0 0023	0 0276	0 0022
o-Xylene		11 63	0 1 1 4 5	36 97	2 253	0 7878	0 5750	0 0013	0 0011	0 0012	0 0011	0 0 1 0 6	0 0011
Total Xylenes		40 7	0 1 1 4 5	149 87	2 253	3 2088	0 5750	0 0038	0 0011	0 0068	0 0011	0 0382	0 0011
Total BTEX		54 604	0 1 1 4 5	264 914	2 253	3 8643	0 5750	0 0066	0 0011	0 0091	0 0011	0 0589	0 0011
Percent Moisture	Extracted:												
	Analyzed:	Apr-09-09	20 31	Apr-09-09	20 31	Apr-09-09	20 31	Apr-09-09	20 37	Apr-09-09	20 37	Apr-09-09	20 37
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		12 98	1 00	12 11	1 00	13 05	1 00	12 53	1 00	12 07	1 00	9 0 9	1 00
TPH By SW8015 Mod	Extracted:	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00
	Analyzed:	Apr-10-09	00 27	Apr-10-09	00 52	Apr-10-09	01 43	Apr-10-09	02 07	Apr-10-09	07 36	Apr-10-09	02 58
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Gasoline Range Hydrocarbons		2610	86 2	13100	171	511	86 3	ND	171	206	85 3	28 9	16 5
C12-C28 Diesel Range Hydrocarbons		13700	86 2	19300	171	5310	86 3	75 6	171	8000	85 3	491	16 5
C28-C35 Oil Range Hydrocarbons		1470	86 2	2140	171	538	86 3	ND	171	837	85 3	53 7	16 5
Total TPH		17780	86 2	34540	171	6359	86 3	75 6	171	9043	85 3	573 6	16 5

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Brent Barron

Odessa Laboratory Director



# Certificate of Analysis Summary 329770

Sport Environmental Services, PLLC, Midland, TX

**Project Name: Southwest Royalties** 



Date Received in Lab: Thu Apr-09-09 04 03 pm

Project Id: Wilderspin Battery Contact: Debi Moore

Project Location:								Report	Date:	13-APR-09		
								Project Ma	nager:	Brent Barron,	11	
	Lab Id:	329770-0	013	329770-0	014	329770-	015	329770-0	16	329770-0	017	
Anglusis Bagy antad	Field Id:	EEF 3-0	01	EEF 4-0	01	EEF 5-0	001	EEF 6-0	01	EEF 7-0	01	
Analysis Kequestea	Depth:	3 ft		5 ft		10 ft		6 In		6 In		
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		
	Sampled:	Apr-09-09	10 16	Apr-09-09	10 19	Apr-09-09	10 22	Apr-09-09	10 26	Apr-09-09	10 30	
Anions by EPA 300	Extracted:											
	Analyzed:	Apr-09-09	19 47	Арг-09-09	19 47	Apr-09-09	19 47	Apr-09-09	9 47	Apr-09-09	19 47	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
Chloride		117	10 8	31 9	5 63	47 4	112	938	22 1	1490	28 0	
BTEX by EPA 8021B	Extracted:	Apr-10-09	08 00	Арг-09-09	17 00	Apr-10-09	08 00	Apr-09-09	7 00	Apr-09-09	17 00	
	Analyzed:	Apr-10-09	14 33	Apr-09-09	22 24	Apr-10-09	11 28	Apr-09-09 2	23 46	Apr-10-09	00 06	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
Benzene		ND	0 0542	ND	0 0011	ND	0 0011	ND	0 0011	ND	0 0011	
Toluene		ND	0 1084	0 0128	0 0022	ND	0 0022	ND	0 0022	ND	0 0022	
Ethylbenzene		ND	0 0542	0 0232	0 0011	0 0433	0 0011	ND	0 0011	ND	0 0011	
m,p-Xylenes		ND	0 1084	0 0593	0 0022	0 0741	0 0022	ND	0 0022	ND	0 0022	
o-Xylene		ND	0 0542	0 0225	0 0011	0 0031	0 0011	ND	0 0011	ND	0 0011	
Total Xylenes		ND	0 0542	0 0818	0 0011	0 0772	0 0011	ND	0 0011	ND	0 0011	
Total BTEX		ND	0 0542	0 1178	0 0011	0 1205	0 0011	ND	0 0011	ND	0 0011	
Percent Moisture	Extracted:											
	Analyzed:	Apr-09-09	20 37	Apr-09-09	20 37	Apr-09-09	20 37	Apr-09-09 2	20 37	Apr-09-09	20 37	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	
Percent Moisture		7 73	1 00	11 18	1 00	10 91	1 00	9 37	1 00	10 85	1 00	
TPH By SW8015 Mod	Extracted:	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00	Apr-09-09	17 00	
, , , , , , , , , , , , , , , , , , ,	Analyzed:	Apr-10-09	03 23	Apr-10-09	03 48	Apr-10-09	08 02	Apr-10-09 (	)4 38	Apr-10-09	05 04	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	
C6-C12 Gasoline Range Hydrocarbons		2590	813	28 9	169	370	84 2	ND	166	59 5	16.8	
C12-C28 Diesel Range Hydrocarbons		10200	813	486	169	8980	84 2	519	166	1570	16 8	
C28-C35 Oil Range Hydrocarbons		1010	813	46 7	16 9	1050	84 2	61 8	166	91 4	168	
Total TPH		13800	813	561 6	169	10400	84 2	580 8	166	1720 9	16 8	

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Brent Barron

Odessa Laboratory Director





- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- \* Outside XENCO's scope of NELAC Accreditation.

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842 Cantwell Lane, Corpus Christi, TX 78408	(361) 884-0371	(361) 884-9116



# Form 2 - Surrogate Recoveries

## Project Name: Southwest Royalties

/ork Orders : 329770	),	Project ID: Wilderspin Battery							
Lab Batch #: 755473	Sample: 528065-1-BKS / Bł	KS Bat	tch: 1 Matri	ix: Solid					
Units: mg/kg	Date Analyzed: 04/09/09 18:17	SU	<b>RROGATE RF</b>	ECOVERY	STUDY				
втех	X by EPA 8021B	Amount Found [A]	True Amount  B]	Recovery %R	Control Limits %R	Flags			
	Analytes			D					
1,4-Dıfluorobenzene		0 0304	0 0300	101	80-120				
4-Bromofluorobenzene		0 0305	0 0300	102	80-120	<u> </u>			
Lab Batch #: 755473	Sample: 528065-1-BSD / BS	SD Bat	tch: 1 Matri	ix: Solid					
Units: mg/kg	Date Analyzed: 04/09/09 18:37	SURROGATE RECOVERY STUDY							
BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R  D	Control Limits %R	Flags			
1 4-Difluorobenzene		0.0313	0.0300	104	80-120				
4-Bromofluorobenzene		0 0324	0 0300	108	80-120				
			· 1 Motr	· Calid	t	<u>.</u>			
Lab Batch #: /334/3	Sample: 320003-1-0LK / DI	BLK Batch: I Matrix: Solid							
Units: mg/kg	Date Analyzea: 04/09/09 19:10	50				<del></del>			
втех	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
	Analytes			[D]					
1,4-Difluorobenzene		0 0262	0 0300	87	80-120				
4-Bromofluorobenzene		0 0302	0 0300	101	80-120	1			
Lab Batch #: 755473	Sample: 329770-006 / SMP	Bat	tch: 1 Matri	ix: Soil					
Units: mg/kg	Date Analyzed: 04/09/09 20:20	SU	RROGATE RI	ECOVERY	STUDY				
BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags			
1,4-Dıfluorobenzene	-	0 0256	0 0300	85	80-120				
4-Bromofluorobenzene		0 0280	0 0300	93	80-120	1			
Lab Batch #: 755473	Sample: 329770-010 / SMP	Bai	tch: 1 Matri	ix: Soil	<u> </u>				
Units: mg/kg	Date Analyzed: 04/09/09 21:02	SU	RROGATE RI	ECOVERY '	STUDY				
BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount  B	Recovery %R  D	Control Limits %R	Flags			
1,4-Dıfluorobenzene		0 0255	0 0300	85	80-120				
4-Bromofluorobenzene		0 0168	0 0300	56	80-120	*			

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



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# Form 2 - Surrogate Recoveries

## **Project Name: Southwest Royalties**

Vork Orders: 329770	),	Project ID: Wilderspin Battery						
Lab Batch #: 755473	Sample: 329770-011 / SMP	Ba	tch: 1 Matr	ix: Soil				
Units: mg/kg	Date Analyzed: 04/09/09 21:22	SU	<b>RROGATE R</b>	ECOVERY S	STUDY			
втеу	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	Analytes			נטן		I		
1,4-Difluorobenzene		0 0260	0 0300	87	80-120			
4-Bromofluorobenzene		0 0301	0 0300	100	80-120			
Lab Batch #: 755473	Sample: 329770-012 / SMP	Ba	tch: 1 Matr	ix: Soil	_	_		
Units: mg/kg	Date Analyzed: 04/09/09 21:43	SU	RROGATE R	ECOVERY !	STUDY			
ВТЕУ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1 4-Difluorobenzene		0.0216	0.0300	72	80-120	*		
4-Bromofluorobenzene		0 0310	0 0300	103	80-120	<u> </u>		
Lah Batah #. 755473	Semple: 329770-014 / SMP	Ra	Matr	÷ Soil	<u></u>	<u> </u>		
Lao Battin #. 199119 Uniter mg/kg	Date Analyzed: 04/09/09 22:24	SU	ICON: I IVIALI	ECOVERY	STUDY			
DTE		Amount	True	T	Control	f		
BIEA	X by EPA 8021B	Found [A]	Amount [B]	Recovery %R	Limits %R	Flags		
142.0	Analytes					<u> </u>		
1,4-Ditluorobenzene		0 0232	0 0300	150	80-120	*		
4-Bromofluorobenzene		0 04 /5	0.0300	158	80-120	<u> </u>		
Lab Batch #: 755473	Sample: 329770-016 / SMP	Bat	tch: 1 Matri	ix: Soil				
Units: mg/kg	Date Analyzed: 04/09/09 23:46		<b>RROGATE RI</b>	ECOVERY S	STUDY			
ВТЕХ	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1,4-Dıfluorobenzene		0 0256	0 0300	85	80-120	i		
4-Bromofluorobenzene		0 0303	0 0300	101	80-120			
Lab Batch #: 755473	Sample: 329770-017 / SMP	Ba	tch: 1 Matr	ix: Soil				
Units: mg/kg	Date Analyzed: 04/10/09 00:06	SU	RROGATE RI	ECOVERY S	STUDY			
ВТЕХ	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
1.4-Difluorobenzene		0.0254	0.0300	85	80-120	[		
4-Bromofluorobenzene		0 0304	0.0300	101	80-120	1		

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



# Form 2 - Surrogate Recoveries

## **Project Name: Southwest Royalties**

/ork Orders : 329770	),		Project II	<b>):</b> Wilderspii	n Battery	
Lab Batch #: 755473	Sample: 329770-001 / SMP	Bar	tch: 1 Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/10/09 00:27	SU	RROGATE RE	ECOVERY S	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			וטי		
1,4-Dıfluorobenzene		0 0239	0 0300	80	80-120	<u> </u>
4-Bromofluorobenzene		0 0422	0 0300	141	80-120	*
Lab Batch #: 755473	Sample: 329770-002 / SMP	Bat	tch: <sup>1</sup> Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/10/09 00:47	SU	RROGATE RE	ECOVERY	STUDY	
BTEZ	X by EPA 8021B	Amount Found [A]	True Amount  B	Recovery %R [D]	Control Limits %R	Flags
14-Difluorobenzene		0.0236	0.0300	79	80-120	*
4-Bromofluorobenzene		0.0396	0.0300	132	80-120	*
			• 1 Motri	C		<u> </u>
Lab Batch #: 133413	Sample: 329/70-0037 Sivil	Batch:   Matrix: Soil				
Units: mg/kg	Date Analyzed: 04/10/09 01:08	ອບ	RRUGAIE RE	COVERT .		
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0 0242	0 0 300	81	80-120	
4-Bromofluorobenzene		0 0320	0 0300	107	80-120	
Lab Batch #: 755473	Sample: 329770-007 / SMP	Ba	tch: 1 Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/10/09 01:29	SU	RROGATE RE	ECOVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount  B]	Recovery %R [D]	Control Limits %R	Flag
1 4-Difluorobenzene		0.0219	0.0300	73	80-120	*
4-Bromofluorobenzene		0 0489	0 0300	163	80-120	*
I ak Datah #. 755473		Ba		l Soil		<u> </u>
Lab Batch #: 199119	Date Analyzed: 04/10/09 01:49	SU	RROGATE RE	COVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount  B	Recovery %R	Control Limits %R	Flag
	Analytes			D		
1,4-Difluorobenzene		0 0253	0 0300	84	80-120	
4-Bromofluorobenzene		0 0311	0 0300	104	80-120	

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

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Surrogate Recovery [D] = 100 \* A / B All results are based on MDL and validated for QC purposes



# Form 2 - Surrogate Recoveries

# **Project Name: Southwest Royalties**

Vork Orders : 329770	,		Project II	D: Wilderspir	n Battery	
Lab Batch #: 755473	<b>Sample:</b> 329770-017 S / MS	Ba Ba	tch: 1 Matr	ix: Soil		
Units: mg/kg	Date Analyzed: 04/10/09 02:30	su	RROGATE R	ECOVERY	STUDY	
втех	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limíts %R	Flags
	Analytes			וען		
1,4-Difluorobenzene		0 0292	0 0300	97	80-120	
4-Bromofluorobenzene		0 0300	0 0300	100	80-120	
Lab Batch #: 755473	Sample: 329770-017 SD / M	ISD Ba	tch: 1 Matr	ix: Soil		
Units: mg/kg	Date Analyzed: 04/10/09 02:51	SU	RROGATE R	ECOVERY	STUDY	
BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1.4-Difluorobenzene		0 0294	0 0300	98	80-120	
4-Bromofluorobenzene		0 0306	0 0300	102	80-120	
Lab Batch #: 755549	Sample: 329619-1-BKS / B	KS Ba	teh: 1 Matr	ix: Solid		
Units: mg/kg	Date Analyzed: 04/10/09 10:02	SU	RROGATE R	ECOVERY	STUDY	
BTEX	X by EPA 8021B	Amount Found  A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Dıfluorobenzene		0 0302	0 0300	101	80-120	
4-Bromofluorobenzene		0 0311	0 0300	104	80-120	
Lab Batch #: 755549	Sample: 329619-1-BSD / BS	SD Ba	tch: 1 Matr	ix: Solid		
Units: mg/kg	Date Analyzed: 04/10/09 10:23	SU	RROGATE R	ECOVERY	STUDY	
BTEX	K by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Dıfluorobenzene		0 0311	0 0300	104	80-120	
4-Bromofluorobenzene		0 0320	0 0300	107	80-120	
Lab Batch #: 755549	Sample: 329619-1-BLK / B	LK Ba	tch: 1 Matr	ix: Solid	· · ·	
Units: mg/kg	Date Analyzed: 04/10/09 11:03	SU	RROGATE R	ECOVERY	STUDY	
BTE	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene		0.0260	0.0300	87	80-120	
4 Dagarda 1		0.0205	0.0300		80.120	

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

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\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



# Form 2 - Surrogate Recoveries

# **Project Name: Southwest Royalties**

	Project II	D: Wilderspir	n Battery	
Ba	tch: 1 Matr	ix: Soil		
SU	<b>RROGATE RI</b>	ECOVERY S	STUDY	
Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
		וטן		L
0 0252	0 0300	84	80-120	_
0 0575	0 0300	192	80-120	**
Ba	tch: 1 Matri	ix: Soil		
SU	RROGATE RI	ECOVERY	STUDY	
Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
0 0734	0.0300	78	80-120	**
0 1002	0.0300	334	80-120	**
01002	1	0.11	00100	l
Batch: 1 Matrix: Soil				
50	RROGATE KI	ECOVERY	STUDY T	
Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
		[D]		
0 0243	0 0300	81	80-120	
0 0445	0 0300	148	80-120	*
Ba	tch: 1 Matri	ix: Soil		
SU	RROGATE RI	ECOVERY	STUDY	
Amount Found [A]	True Amount  B]	Recovery %R	Control Limits %R	Flag
		וטן		
0 0239	0 0300	80	80-120	
0 0296	0 0300	99	80-120	
		. 0.1		
Ba	tch: 1 Matr.	ix: 5011		
Ba SU	tch: 1 Matr RROGATE RI	ECOVERY	STUDY	
Ba SU Amount Found [A]	tch: 1 Matr RROGATE R True Amount [B]	ECOVERY Recovery %R [D]	STUDY Control Limits %R	Flag
Ba SU Amount Found [A] 0.0254	Itch: 1 Matr RROGATE R True Amount [B] 0.0300	Recovery %R [D] 85	STUDY Control Limits %R	Flag
	Bat SU Amount Found [A] 0 0252 0 0575 Ba SU Amount Found [A] 0 0234 0 1002 Ba SU Amount Found [A] 0 0243 0 0445 Ba SU Amount Found [A] 0 0243 0 0445 Ba	Batch:       1       Matri         SURROGATE       RI         Amount       True       Amount       IB         Amount       IB       IB       II         0 0252       0 0300       0000       II         0 0252       0 0300       II       III         0 0252       0 0300       IIII       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Project ID: WilderspinBatch:1Matrix: SoilSURROGATE RECOVERYAmount Found $ A $ True $ B $ Recovery $%R$ $ D $ 0 02520 0300840 05750 0300192Batch:1Matrix: SoilSURROGATE RECOVERYAmount Found $ A $ True $ B $ Recovery $%R$ $ D $ 0 02340 0300780 10020 0300334Batch:1Matrix: SoilSURROGATE RECOVERYAmount Found $ A $ True $ B $ Recovery $%R$ $ D $ 0 02340 0300334Batch:1Matrix: SoilSURROGATE RECOVERYAmount $ A $ True $ B $ Recovery $%R$ $ D $ 0 02430 0300810 04450 0300148Batch:1Matrix: SoilSURROGATE RECOVERYAmount $ A $ True $ B $ Recovery $%R$ $ D $ 0 02390 0300800 02390 0300800 02960 030099	Project ID: Wilderspin Battery Bateh:         1 Matrix: Soil           SURROGATE RECOVERY STUDY           Amount Found [A]         True Amount [B]         Recovery %R [D]         Control Limits %R           0 0252         0 0300         84         80-120           0 0575         0 0300         192         80-120           Batch:         1         Matrix: Soil         SURROGATE RECOVERY STUDY           Amount Found [A]         True [B]         Recovery %R [D]         Control Limits %R           0 0234         0 0300         78         80-120           0 1002         0 0300         334         80-120           0 1002         0 0300         334         80-120           0 1002         0 0300         334         80-120           Batch:         1         Matrix: Soil         SURROGATE RECOVERY STUDY           Amount [A]         True [B]         Recovery %R [D]         Control Limits %R           0 0243         0 0300         81         80-120           0 0243         0 0300         148         80-120           0 0445         0 0300         148         80-120           SURROGATE RECOVERY STUDY           Amount [A]         Tru

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



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# Form 2 - Surrogate Recoveries

## **Project Name: Southwest Royalties**

ork Orders: 329770	),		Project II	<b>D:</b> Wilderspir	n Battery									
Lab Batch #: 755511	Sample: 528051-1-BKS / BF	KS / BKS Batch: 1 Matrix: Solid												
Units: mg/kg	Date Analyzed: 04/09/09 19:52	SU	RROGATE RI	ECOVERY	STUDY									
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag								
	Analytes			ועו										
1-Chlorooctane		98 8	100	99	70-135									
o-Terpnenyi		44 4 50 0 89 /0-135												
Lab Batch #: 755511	Sample: 528051-1-BSD / BS	SD Bat	tch: 1 Matri	ix: Solid										
Units: mg/kg	Date Analyzed: 04/09/09 20:17	SU	RROGATE RI	ECOVERY	STUDY									
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag								
1-Chlorooctane		97 2	100	97	70-135									
o-Terphenyl		43 8	50 0	88	70-135									
Lab Batch #: 755511		UK Bat	tch: 1 Matri	ix: Solid										
Units: mg/kg	Date Analyzed: 04/09/09 20:42	SU	RROGATE RI	ECOVERY	STUDY									
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag								
	Analytes			%R [D]										
1-Chlorooctane		84 5	100	85	70-135									
o-Terphenyl		47 7	50 0	95	70-135									
Lab Batch #: 755511	Sample: 329770-001 / SMP	Bat	tch: 1 Matri	ix: Soil										
Units: mg/kg	Date Analyzed: 04/09/09 21:56	SU	RROGATE RI	ECOVERY	STUDY									
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag								
1 Chloropotano		07.0	100		70.125									
o-Ternbenyl		9/9 	50.0	98	70-135									
		4//	500	<u> </u>	70-135									
Lab Batch #: 755511	Sample: 329770-002 / SMP	Bat	tch: Matri	ix: Soil										
Units: mg/kg	Date Analyzed: 04/09/09 22:21	SU	RROGATE RI	ECOVERY	STUDY									
ТРН	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag								
1-Chlorooctane		111	100	111	70-135									
o-Terphenyl		51 1	50 0	102	70-135									

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



# Form 2 - Surrogate Recoveries

## **Project Name: Southwest Royalties**

Nork Orders : 329770	),	Project ID: Wilderspin Battery														
Lab Batch #: 755511	Sample: 329770-003 / SMP	Bat	tch: <sup>1</sup> Matri	ix: Soil												
Units: mg/kg	Date Analyzed: 04/09/09 22:47	SU	<b>RROGATE RI</b>	ECOVERY S	STUDY											
TPH 3	By SW8015 Mod	Amount Found [A]	True Amount  B]	Recovery %R	Control Limits %R	Flags										
	Analytes			[D]												
1-Chlorooctane		90 6	100	91	70-135											
o-Terphenyl		47 2	50 0	94	70-135											
Lab Batch #: 755511	Sample: 329770-004 / SMP	Bar	tch: 1 Matri	ix: Soil												
Units: mg/kg	Date Analyzed: 04/09/09 23:12	SU	RROGATE RI	ECOVERY	STUDY											
TPH 3	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags										
1-Chlorooctane		86.2	100	86	70-135	<u> </u>										
o-Terphenyl		45 0	50 0	90	70-135											
L . L D-4-L 4. 755511		MP Batch: 1 Matrix: Soil														
Lab Batch #: 155511	Sample: 327770-0037 0m.	Sivir         Batch:         Matrix:         Soil           7         SURROGATE         RECOVERY STUDY														
Units: mg/×g	Date Analyzed. 04/07/07 23:37					<del></del>										
TPH	By SW8015 Mod	Amount Found [A]	Amount B	Recovery %R	Limits %R	Flags										
	Analytes			[D]												
1-Chlorooctane		83 8	100	84	70-135											
o-Terphenyl		47 1	50 0	94	70-135											
Lab Batch #: 755511	Sample: 329770-006 / SMP	Ba	tch: 1 Matri	ix: Soil												
Units: mg/kg	Date Analyzed: 04/10/09 00:02	SU	RROGATE R	ECOVERY	STUDY											
ТРН	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags										
1-Chlorooctane		85 8	100	86	70-135											
o-Terphenyl		47 0	50 0	94	70-135											
Lab Batch #: 755511	Sample: 329770-007 / SMP	Ba	tch: ] Matr	ix: Soil	• • • • • • • • • • • • • • • • • • • •											
Units: mg/kg	Date Analyzed: 04/10/09 00:27	SU	RROGATE RI	ECOVERY	STUDY											
ТРН	By SW8015 Mod	Amount Found [A]	True Amount  B	Recovery %R [D]	Control Limits %R	Flags										
1-Chlorooctane		97 3	100	97	70-135											
o-Terphenyl		44 5	50 0	89	70-135											

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



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# Form 2 - Surrogate Recoveries

#### **Project Name: Southwest Royalties**

Work Orders: 329770	١,		Project I	D: Wilderspir	n Battery								
Lab Batch #: 755511	Sample: 329770-008 / SMP	AP         Batch:         Matrix:         Soil											
Units: mg/kg	Date Analyzed: 04/10/09 00:52	SU	RROGATE R	ECOVERY	STUDY								
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags							
	Analytes			[D]									
1-Chlorooctane		122	100	122	70-135								
o-Terphenyl		51 9	50 0	104	70-135								
Lab Batch #: 755511	Sample: 329770-009 / SMP	Ba	tch: 1 Matr	ix: Soil									
Units: mg/kg	Date Analyzed: 04/10/09 01:43	SU	RROGATE R	ECOVERY	STUDY								
TPH 1	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags							
1-Chlorooctane	Analytes	83.0	100	83	70-135								
o-Terphenyl		47.3	50 0	95	70-135								
Lah Ratch #. 755511	Sample: 329770-010 / SMP	Ba	toh: 1 Matr	iv: Soil	I I								
Lab Datcu #. 100011	Date Analyzed: 04/10/09 02:07	SU	RROGATE R	ECOVERY	STUDY								
		Amount	True		Control								
	By SW 8015 Mod	Found [A]	Amount [B]	Recovery %R	Limits %R	Flags							
	Analytes			101									
1-Chlorooctane		88 4	100	88	70-135								
o-Terphenyl		50 4	50 0	101	70-135								
Lab Batch #: 755511	Sample: 329770-012 / SMP	Ba	tch: 1 Matr	ix: Soil									
Units: mg/kg	Date Analyzed: 04/10/09 02:58	SU	RROGATE R	ECOVERY	STUDY								
TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R  D	Control Limits %R	Flags							
1-Chlorooctane		84 3	100	84	70-135								
o-Terphenyl		47 7	50 0	95	70-135								
Lab Batch #: 755511	Sample: 329770-013 / SMP	Ba	tch: <sup>1</sup> Matr	ix: Soil									
Units: mg/kg	Date Analyzed: 04/10/09 03:23	SU	RROGATE R	ECOVERYS	STUDY								
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags							
1-Chlorooctane		99.5	100	100	70-135								
o-Terphenyl		48.4	50.0	97	70-135								

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



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# Form 2 - Surrogate Recoveries

# **Project Name: Southwest Royalties**

Vork Orders : 329770	),		Project I	<b>D:</b> Wilderspir	n Battery						
Lab Batch #: 755511	Sample: 329770-014 / SMP	P Batch: 1 Matrix: Soil									
Units: mg/kg	Date Analyzed: 04/10/09 03:48	SU	RROGATE R	ECOVERY	STUDY						
TPH	By SW8015 Mod	Amount Found [A]	True Amount  B]	Recovery %R	Control Limits %R	Flags					
	Analytes			וחן							
1-Chlorooctane		86 4	100	86	70-135						
o-Terphenyl		48 9	50 0	98	70-135						
Lab Batch #: 755511	Sample: 329770-016 / SMP	Ba	tch: l Matr	ix: Soil							
Units: mg/kg	Date Analyzed: 04/10/09 04:38	SU	RROGATE R	ECOVERY	STUDY						
TPH By SW8015 Mod Analytes		Amount Found [A]	True Amount [B]	Recovery %R  D]	Control Limits %R	Flags					
1-Chlorooctane	<b>Amary (CS</b>	84 2	100	84	70-135						
o-Terphenyl		47.7	50 0	95	70-135						
Lab Ratab # 755511	Sample: 329770-017 / SMP	Da	i tahi 1 Matr	iv: Soil	l						
Lab Datch #: 755511	Date A polyzod: 04/10/09 05:04	Da	RPOCATE R	TX: 300	STUDY						
Units: mg/kg	Date Analyzeu: 04/10/09 03.04										
TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag					
	Analytes										
1-Chlorooctane		85 1	100	85	70-135						
o-Terphenyl		47 5	50 0	95	70-135						
Lab Batch #: 755511	Sample: 329770-010 S / MS	Ba	tch: l Matr	ix: Soil							
Units: mg/kg	Date Analyzed: 04/10/09 05:29	SU	RROGATE R	ECOVERY	STUDY						
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag					
1-Chlorooctane		101	100	101	70-135						
o-Terphenyl		45 2	50 0	90	70-135						
Lab Batch #, 755511	Sample: 329770-010 SD / M	SD Ba	tah: 1 Metr	iv: Soil	<u> </u>						
Units: mg/kg	Date Analyzed: 04/10/09 05:55	SU DA	RROGATE R	ECOVERY	STUDY						
TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag					
	Analytes					<b> </b>					
T-Chlorooctane		104	100	104	70-135	ļ					
o-Terphenyl		46 8	50 0	94	70-135	1					

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



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# Form 2 - Surrogate Recoveries

## **Project Name: Southwest Royalties**

Work Orders : 329770	Ι,		Project II	<b>):</b> Wilderspir	1 Battery						
Lab Batch #: 755511	Sample: 329770-011 / SMP	Bat	tch: 1 Matri	x: Soil							
Units: mg/kg	Date Analyzed: 04/10/09 07:36	SU	RROGATE RI	RECOVERY STUDY							
ТРН	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R  D	Control Limits %R	Flags					
1-Chlorooctane		86 4	100	86	70-135						
o-Terphenyl		50 4	50 0	101	70-135						
Lab Batch #: 755511	Sample: 329770-015 / SMP	Bat	tch: 1 Matri	ix: Soil							
Units: mg/kg	Date Analyzed: 04/10/09 08:02	SU	RROGATE RI	ECOVERY	STUDY						
ТРН	By SW8015 Mod Analytes	Amount Found [A]	True Amount  B	Recovery %R [D]	Control Limits %R	Flags					
1-Chlorooctane		82 0	100	82	70-135						
o-Terphenyl		47 6	50 0	95	70-135						

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis \*\*\* Poor recoveries due to dilution Surrogate Recovery [D] = 100 \* A / B All results are based on MDL and validated for QC purposes



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#### **Project Name: Southwest Royalties**

Work Order #: 329770		Рт	roject ID:		Wilderspir	Battery		
Lab Batch #: 755448	Sample: 755448-	1-BKS	Matr	ix: Solid				
Date Analyzed: 04/09/2009	Date Prepared: 04/09/20	)09	Analy	st: LATC	COR			
Reporting Units: mg/kg	Batch #: 1	BLANK /	BLANK SPI	COVERY STUDY				
Anions by EPA 300	Blank Result	Spike Added	Blank Spike	Blank Spike	Control Limits	Flags		
Analytes		[B]	Result [C]	%R [D]	%R			
Chloride	ND	10 0	10 5	105	80-120			

Blank Spike Recovery [D] = 100\*[C]/[B] All results are based on MDL and validated for QC purposes



## **BS / BSD Recoveries**



#### Project Name: Southwest Royalties

Work Order #: 329770	Project ID: Wilderspin Battery											
Analyst: ASA	Da	ate Prepar	ed: 04/10/200	)9			Date A	nalyzed: (	04/10/2009			
Lab Batch ID: 755549 Sample: 329619-1-J	BKS	Bate	h #: 1					Matrix: 3	50110			
Units: mg/kg		BLAN	K/BLANK S	SPIKE / E	BLANK S	SPIKE DUPI	LICATE		ERY STUE	Y		
BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
Benzene	ND	0 1000	0 0925	93	01	0 0988	99	7	70-130	35		
Toluene	ND	0 1000	0 0886	89	0.1	0 0944	94	6	70-130	35		
Ethylbenzene	ND	0 1000	0 0930	93	01	0 0983	98	6	71-129	35		
m,p-Xylenes	ND	0 2000	0 1865	93	0 2	0 1974	99	6	70-135	35		
o-Xylene	ND	0 1000	0 0891	89	0 1	0 0941	94	5	71-133	35	_	
Analyst: ASA	Da	ate Prepar	ed: 04/09/200	)9			Date A	nalyzed: (	04/09/2009			
Lab Batch ID: 755473 Sample: 528065-1-1	BKS	Bate	h #: 1					Matrix: S	Solid			
Units: mg/kg		BLAN	K/BLANK S	SPIKE / I	BLANK S	SPIKE DUPI	LICATE	RECOVI	ERY STUE	Y		
BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added (B)	Blank Spike Result ICl	Blank Spike %R [D]	Spike Added	Blank Spike Duplicate Result IFI	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
Analytes		0.1000	1-1		(~)		100		<b>TO 100</b>	25		
Benzene	ND	0 1000	0 0952	95	0 1	0 1024	102	7	70-130	35		
	ND	0 1000	0 0918	92	0 1	0 0988	99	7	70-130	35		
Ethylbenzene	ND	0 1000	0 0968	97	0 1	0 1041	104	7	71-129	35		
m,p-Xylenes	ND	0 2000	0 1942	97	0 2	0 2088	104	7	70-135	35		
o-Xylene	ND	ND 0 1000 0 0927 93 0 1 0 0995 100 7 71-133 35										



**BS / BSD Recoveries** 



#### Project Name: Southwest Royalties

Work Order #: 329770 Analyst: BHW Lab Batch ID: 755511	Sample: 528051-1-BKS	Project ID: Wilderspin Batt Date Prepared: 04/09/2009 Date Analyzed: 04/09/2009 BKS Batch #: 1 Matrix: Solid													
Units: mg/kg		BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY													
TPH By SW801 Analytes	15 Mod Sa	Blank ample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag			
C6-C12 Gasoline Range Hydroca	rbons	ND	1000	1010	101	1000	997	100	1	70-135	35				
C12-C28 Diesel Range Hydrocarl	bons	ND	1000	972	97	1000	960	96	1	70-135	35				



# Form 3 - MS Recoveries



#### **Project Name: Southwest Royalties**

Work Order #: 329770

Lab Batch #: 755448			Pro	oject ID:	Wilderspin	Battery
Date Analyzed: 04/09/2009	Date Prepared:	04/09/2009	)	Analyst:	LATCOR	
QC- Sample ID: 329770-001 S	Batch #:	1		Matrix:	Soil	
Reporting Units: mg/kg	MAT	'RIX / MA'	TRIX SPIKE	RECO	VERY STU	DY
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]		• •		
Chloride	70 9	421	478	97	80-120	

Matrix Spike Percent Recovery  $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference  $[E] = 200^{\circ}(C-A)/(C+B)$ All Results are based on MDL and Validated for QC Purposes



Form 3 - MS / MSD Recoveries

#### **Project Name: Southwest Royalties**



Work Order #: 329770	Project ID: Wilderspin Battery											
Lab Batch ID:755473QDate Analyzed:04/10/2009IBananting Unitsmailure	C- Sample ID: Date Prepared:	329770- 04/09/2	-017 S 009	Ba An	tch #: alyst:	l Matri ASA	x: Soil					
<b>Reporting Units:</b> mg/kg		M	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE RECO	OVERY	STUDY			
BTEX by EPA 8021B	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag	
Analytes		[B]		[D]	[E]		[G]					
Benzene	ND	0 1119	0 0635	57	0 1111	0 0653	59	3	70-130	35	Х	
Toluene	ND	0 1119	0 0457	41	0 1111	0 0475	43	4	70-130	35	Х	
Ethylbenzene	ND	0 1 1 1 9	0 0313	28	0 1111	0 0328	30	5	71-129	35	X	
m,p-Xylenes	ND	0 2239	0 0601	27	0 2221	0 0621	28	3	70-135	35	Х	
o-Xylene	ND	0 1119	0 0280	25	0 1111	0 0281	25	0	71-133	35	X	
Lab Batch ID:         755511         Q           Date Analyzed:         04/10/2009         1	C- Sample ID: Date Prepared:	329770- 04/09/2	-010 S 009	Ba An	tch #: alyst:	l Matri: BHW	<b>x:</b> Soil					
Reporting Units: mg/kg		М	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE RECO	OVERY	STUDY			
TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
C6-C12 Gasoline Range Hydrocarbons	ND	1140	1200	105	1140	1240	109	3	70-135	35		
C12-C28 Diesel Range Hydrocarbons	75 6	1140	1200	99	1140	1230	101	2	70-135	35		

Matrix Spike Percent Recovery [D] = 100\*(C-A)/BRelative Percent Difference RPD = 200\*|(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit





#### **Project Name: Southwest Royalties**

Work Order #: 329770

Lab Batch #: 755448			Project I	D: Wildersp	in Battery				
Date Analyzed: 04/09/2009 Date	Prepared: 04/0	)9/2009	Analy	st: LATCOF	ર				
QC- Sample ID: 329770-001 D	Batch #:		Matr	ix: Soil					
Reporting Units: mg/kg	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY				
Anions by EPA 300 Analyte	Parent Sample Result JAJ	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag				
Chloride	70 9	41 2	53	20	F				
Lab Batch #: 755418									
Date Analyzed: 04/09/2009 Date	Prepared: 04/0	)9/2009	Analy	st: BEV					
QC- Sample ID: 329774-006 D	Batch #:	l	Matrix: Soil						
Reporting Units: %	SAMPLE	/ SAMPLE	E DUPLICATE RECOV						
Percent Moisture Analyte	Parent Sample Result [A]	Sample Duplicate Result  B]	RPD	Control Limits %RPD	Flag				
Percent Moisture	6 22	9 01	37	20					
Lab Batch #: 755419				l	1				
Date Analyzed: 04/09/2009 Date	Prepared: 04/0	)9/2009	Analy	st: BEV					
QC- Sample ID: 329770-010 D	Batch #:		Matr	ix: Soil					
Reporting Units: %	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY				
Percent Moisture Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag				
Percent Moisture	12 5	13 5	7	20					

Spike Relative Difference RPD 200 \* | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes

Xenco Laboratories The Environmental Lab of Texas	atories s 12600 West I-20 Eas Odessa, Texas 7976								V OF East 1765	cu	STO	PACEI 5.2. STODY RECORD AND ANALYSIS REQUEST Phone. 432-563-1800 Fax: 432-563-1713												n bran	1.9.8			
Project Manager Deby S. M.	wre.													P	roje	ct Na	me	Se	uf	h	)25	+R	, Du	alt	ies	\$ •••		
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City/State/Zip							······									p	0#											
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ORDER # 329710						Г	Pres	ervatic	n å f	af C	Contas	ners	T	Matrix	-	1	T		AL	-		+-	-				1 1	
	Beginning Depth	Ending Depth	Tole Sampled	Padues autor 925 931 931	ર્જલપ્ત મહારકલ	- Total # of Contastants	CONH K	HCI	H,SQ,	NaOH	Na,S,O,	None Other ( Specify)	EffeDrinning Water Sueduigs	V GW e Groundwater SasuerSchd	TPH 4181 CENTER SE	1P-1 1X 1005 TY 1000	Cations (Cat, Mg, Na, K)	Anons (C)504. Akdenity)	SAR / CSP / CEC	Metals Ab Ag Ba Co Ur Po Hg	Volatios	BTEX 002187020 or BTEX 022	RCI	NORM			RUSH TAT (Pre-schedule) (24	
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FIELD CODE $FIELD CODE$ $FIE$	A         A         Beginning Depth           A         A         C         C           A         C         C         C           A         C         C         C	Date Samped	Pade 1003 1012 1014 1019 1022 1026 1030	Field Filtered	X ta 140.	1461	H.SO.	142,03	None None None	DriveChnickeg Verter Sit-Studge	U) GW × Groundshalter BreGottSels	08 (WELLOW 181 Hat 52	1001 X1 9001 X1 H41	X Antone Co. Sola Altrain N.	SAR JESP / CEC	Metals As Ag Ba Cd Cr Fh : Hg	Volaties	Seminotaties	X BIL ( BATES ON ON BTEX B2	NORM			RUSH TAT Investment 5	Standard TAT				
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#### Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In



#### Sample Receipt Checklist

				Client Ini	tials
#1 Temperature of co	ntainer/ cooler?	Yes	No	<u> </u>	
#2 Shipping container	in good condition?	(es)	No	<b></b>	
#3 Custody Seals inta	ect on shipping container/ cooler?	Yes	No	Not Present	
#4 Custody Seals inta	act on sample bottles/ container?	Yes	No	Not Present	
#5 Chain of Custody	present?	Yes	No		
#6 Sample instruction	is complete of Chain of Custody?	Yes	No		
#7 Chain of Custody	signed when relinquished/ received?	(Y.es)	No		
#8 Chain of Custody	agrees with sample label(s)?	Yes	No	-ID written on Cont / Lid	
#9 Container label(s)	legible and intact?	Yes	No	CNot Applicable	
#10 Sample matrix/ pi	roperties agree with Chain of Custody?	Yes	No		
#11 Containers suppli	ed by ELOT?	Yes)	No		
#12 Samples in prope	r container/ bottle?	(Yes)	No	See Below	
#13 Samples properly	preserved?	Yēs	No	See Below	
#14 Sample bottles in	tact?	Yes	No		
#15 Preservations do	cumented on Chain of Custody?	Yes	No		
#16 Containers docur	nented on Chain of Custody?	Yes	No		
#17 Sufficient sample	amount for indicated test(s)?	Yes	No	See Below	
#18 All samples recei	ved within sufficient hold time?	(es)	No	See Below	
#19 Subcontract of sa	ample(s)?	Yes	No	CNot Applicable	
#20 VOC samples ha	ve zero headspace?	(Yes)	No	Not Applicable	
Contact.	Variance Doc Contacted by.	cumentation		Date/ Time.	
Regarding					
Corrective Action Take	90				
Check all that Apply	See attached e-mail/ fax Client understands and w Cooling process had had	ould like to pro	ceed with	n analysis	

## Analytical Report 331171

for

Sport Environmental Services, PLLC

**Project Manager: Debi Moore** 

**Southwest Royalties** 

Wilderspin Battery

01-MAY-09





12600 West I-20 East Odessa, Texas 79765

Texas certification numbers: Houston, TX T104704215-08B-TX - Odessa/Midland, TX T104704400-08-TX

Florida certification numbers: Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675 Miramar, FL E86349 Norcross(Atlanta), GA E87429

> South Carolina certification numbers: Norcross(Atlanta), GA 98015

> North Carolina certification numbers: Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Tampa - Miami - Latin America Midland - Corpus Christi - Atlanta



01-MAY-09



Project Manager: **Debi Moore Sport Environmental Services, PLLC** 502 North Big Spring Street Midland, TX 79701

Reference: XENCO Report No: **331171 Southwest Royalties** Project Address:

#### Debi Moore:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 331171. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 331171 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II Odessa Laboratory Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994. Certified and approved by numerous States and Agencies A Small Business and Minority Status Company that delivers SERVICE and QUALITY Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



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## Sample Cross Reference 331171



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#### Sport Environmental Services, PLLC, Midland, TX

Southwest Royalties

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
EEF 1-002	S	Apr-27-09 00:00	6 ft	331171-001
EEF 2-002	S	Apr-27-09 00:00	6 ft	331171-002
EEF 3-002	S	Apr-27-09 00:00	6 ft	331171-003
EEF 5-002	S	Apr-27-09 00:00	12 ft	331171-004
EEF 6-002	S	Apr-27-09 00:00	1 ft	331171-005
EEF 7-002	S	Apr-27-09 00:00	1 ft	331171-006
CEF 2-002	S	Apr-27-09 00:00	6 ft	331171-007
CEF 3-002	S	Apr-27-09 00:00	4.5 ft	331171-008
CEF 4-002	S	Apr-27-09 00:00	4.5 ft	331171-009
WEF 1-002	S	Apr-27-09 00:00	3.5 ft	331171-010
WEF 2-002	S	Apr-27-09 00:00	3.5 ft	331171-011
WEF 3-002	S	Apr-27-09 00:00	3.5 ft	331171-012
WEF 4-002	S	Apr-27-09 00:00	3 ft	331171-013
WEF 5-002	S	Apr-27-09 00:00	3 ft	331171-014

#### Certificate of Analysis Summary 331171

Sport Environmental Services, PLLC, Midland, TX



Project Name: Southwest Royalties

Project Id: Wilderspin Battery

Contact: Debi Moore

**Project Location:** 

Laboratorics

Date Received in Lab:	Tue Apr-28-09 09 30 am
Report Date:	04-JUN-09

roject Location:								Project Ma	nager:	Brent Barron,	11		
	Lab Id:	331171-(	01	331171-0	002	331171-0	003	331171-0	004	331171-0	05	331171-00	06
	Field Id:	EEF 1-0	02	EEF 2-0	02	EEF 3-0	02	EEF 5-00	02	EEF 6-0	02	EEF 7-00	2
Analysis Kequestea	Depth:	6 ft		6 ft		6 ft		12 ft		1 ft		l ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-27-09	00 00	Apr-27-09 (	00 00	Api-27-09	00 00	Apr-27-09 (	00 00	Apr-27-09 (	00 00	Apr-27-09 0	0 00
Anions by EPA 300	Extracted:												
	Analyzed:	Apr-28-09	13 21							Apr-28-09	13 21	Apr-28-09 1	3 21
	Units/RL:	mg/kg	RL							mg/kg	RL	mg/kg	RL
Chloride		1280	28 3							867	217	500	110
Percent Moisture	Extracted:												
	Analyzed:	Apr-28-09	17 00	Apr-28-09	17 00	Apr-28-09	17 00	Apr-28-09	17 00	Apr-28-09	7 00	Apr-28-09 1	7 00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		11 75	1 00	11 05	1 00	9 64	1 00	11 54	1 00	8 03	1 00	8 81	1 00
TPH By SW8015 Mod	Extracted:	Apr-29-09	11 56	Apr-29-09	11 56	Apr-29-09	11 56	Apr-29-09	11 56				
	Analyzed:	Apr-30-09	02 21	Apr-30-09	02 46	Apr-30-09	03 12	Apr-30-09 (	03 37				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
C6-C12 Gasoline Range Hydrocarbons		55 1	170	41 3	169	348	83 0	40 1	170				
C12-C28 Diesel Range Hydrocarbons		1080	170	685	169	3550	83 0	399	170				
C28-C35 Oil Range Hydrocarbons		112	170	68 6	169	298	83 0	28 3	170				_
Total TPH		1247 1	170	794 9	169	4196	83 0	467 4	170				

This analytical report and the entire data package it represents has been made for your evalusive and confidential use The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented Our liability is limited to the amount involved for this work order unless otherwise agreed to in writing

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Brent Barron Odessa Laboratory Director

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#### Certificate of Analysis Summary 331171

Sport Environmental Services, PLLC, Midland, TX

**Project Name: Southwest Royalties** 



Date Received in Lab: Tue Apr-28-09 09 30 am

Report Date: 04-JUN-09

Project Id: Wilderspin Battery Contact: Debi Moore

**Project Location:** 

Laboratorics

<b>9</b>								Project Ma	nager:	Brent Barron,	[]		
	Lab Id:	331171-0	007	331171-0	08	331171-	009	331171-	010	331171-0	п	331171-0	012
An alusia Descretad	Field Id:	CEF 2-0	02	CEF 3-0	02	CEF 4-0	002	WEF 1-	002	WEF 2-0	02	WEF 3-0	002
Analysis Requested	Depth:	6 ft		45 ft		45 ft		35 ft	:	35 ft		35 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-27-09	00 00	Apr-27-09 (	00 00	Apr-27-09	00 00	Apr-27-09	00 00	Apr-27-09 (	00 00	Apr-27-09	00 00
Anions by EPA 300	Extracted:												
· · · · · · · · · · · · · · · · · · ·	Analyzed:									Apr-28-09	13 21	Apt-28-09	13 21
	Units/RL:									mg/kg	RL	mg/kg	RL
Chloride										538	22.1	540	27 7
BTEX by EPA 8021B	Extracted:	Apr-28-09	09 45	Apr-30-09	17 00	Apr-28-09	09 45	Apr-28-09	09 45				
	Analyzed:	Apr-28-09	16 36	Apr-30-09 2	21 13	Apr-28-09	17 18	Apr-28-09	15 53				
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		ND	0 0054	ND	0 0571	0 0075	0 0057	ND	0 0011				
Toluene		0 1497	0 0107	ND	0 1141	0 0251	0 0113	ND	0 0022				
Ethylbenzene		1 324	0 0054	2 459	0 0571	0 2200	0 0057	0 0067	0 0011				
m,p-Xylenes		1 590	0 0107	6 151	0 1141	0 6489	0 0113	0 0183	0 0022				
o-Xylene		3 912 D	0 0535	7 971	0 0571	0 3008	0 0057	0 0108	0 0011				
Total Xylenes		5 5020	0 0107	14 122	0 0571	0 9497	0 0057	0 0291	0 0011				
Total BTEX		6 9760	0 0054	16 581	0 0571	1 2023	0 0057	0 0358	0 0011				
Percent Moisture	Extracted:												
	Analyzed:	Apr-28-09	17 00	Apr-28-09	17 00	Apr-28-09	17 00	Apr-28-09	17 00	Apr-28-09	17 00	Apr-28-09	17 00
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		7 07	1 00	12 57	1 00	11 81	1 00	10 57	1 00	9 63	1 00	9 69	1 00
TPH By SW8015 Mod	Extracted:	Apr-29-09	11 56	Apr-29-09	11 56	Apr-29-09	11 56	Apr-29-09	11 56	Apr-29-09	11 56	Apr-29-09	11 56
	Analyzed:	Apr-30-09	04 02	Apr-30-09 (	04 26	Apr-30-09	04 52	Apr-30-09	05 17	Apr-30-09 (	05 43	Apr-30-09	06 08
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
C6-C12 Gasoline Range Hydrocarbons		1890	80 7	1220	85 8	406	170	30 2	16 8	1330	83 0	853	83 0
C12-C28 Diesel Range Hydrocarbons		10200	80 7	5180	85 8	3970	170	138	168	3720	83 0	4310	83 0
C28-C35 Oil Range Hydrocarbons		784	80 7	515	85 8	309	170	ND	16 8	283	83 0	380	83 0
Total TPH		12874	80 7	6915	85 8	4685	170	168 2	168	5333	83 0	5543	83 0

This analytical report, and the entire data package it represents has been made for your evolusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratores XENCO Laboratorea assumes no responsibility and makes no warranty to the end use of the data hereby presented Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing

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Brent Barron

Odessa Laboratory Director



#### Certificate of Analysis Summary 331171

Sport Environmental Services, PLLC, Midland, TX



Project Name: Southwest Royalties

Project Id: Wilderspin Battery Contact: Debi Moore

**Project Location:** 

Date Received in Lab: Tue Apr-28-09 09 30 am Report Date: 04-JUN-09

Project Manager: Brent Barron, II

	Lab Id:	331171-013	331171-014		
Analysis Requested	Field Id:	WEF 4-002	WEF 5-002		
Analysis Requested	Depth:	3ft.	3 ft		
	Matrix:	SOIL	SOIL		
	Sampled:	Apr-27-09 00 00	Apr-27-09 00 00		
Percent Moisture	Extracted:				
i ci cont intoisture	Analyzed:	Apr-28-09 17 00	Apr-28-09 17 00		
	Units/RL:	% RL	% RL		
Percent Moisture		11 15 1 00	11 77 1 00		
TPH By SW8015 Mod	Extracted:	Apr-29-09 11 56	Apr-29-09 11 56		
	Analyzed:	Apr-30-09 06 57	Apr-30-09 07 23		
	Units/RL:	mg/kg RL	mg/kg RL		
C6-C12 Gasoline Range Hydrocarbons		500 16 9	ND 170		
C12-C28 Diesel Range Hydrocarbons		2500 16 9	43 5 17 0		
C28-C35 Oil Range Hydrocarbons		218 169	ND 170		
Total TPH		3218 16.9	43 5 17 0		

This analytical report and the entire data package it represents has been made for your evclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Brent Barron

Odessa Laboratory Director





- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- **E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit. RL Reporting Limit

\* Outside XENCO's scope of NELAC Accreditation.

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## **Project Name: Southwest Royalties**

ork Orders : 331171	., 	VC Do	Project II	D: Wilderspir	1 Battery	
Jab Baten #: 737210 Units: mg/kg	Sample: 526761-1-51377 B	S Dat	RROGATE R	ECOVERY :	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes	,		וטן		I
1,4-Dıfluorobenzene		0 0310	0 0300	103	80-120	
4-Bromofluorobenzene		0 0320	0 0300	107	80-120	I
Lab Batch #: 757210	Sample: 528981-1-BSD / BS	SD Bat	tch: <u>1</u> Matri	ix: Solid		
Units; mg/kg	Date Analyzed: 04/28/09 10:53	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R  D	Control Limits %R	Flags
1.4-Difluorobenzene		0.0310	0.0300	103	80-120	
4-Bromofluorobenzene		0 0318	0 0300	106	80-120	
Lah Batch #: 757210		LK Bat	tch: 1 Matr	ix: Solid	<u>i</u>	
Units: mg/kg	Date Analyzed: 04/28/09 11:45	SU'	RROGATE RI	ECOVERY (	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount  B	Recovery %R IDI	Control Limits %R	Flags
1.4-Difluorobenzene	Allalytes	0.0262	0.0300	87	PO 120	i
4-Bromofluorobenzene		0.0300	0.0300	100	80-120	[
	Sample: 331171-010 / SMP	Ba	1 Matr	÷r. Soil		
JAD DAICH #: 151410	Sample: JJ11/1-010/ JM	Dar SU	PROGATE R	FCOVERY	STUDY	
Units: mg/kg BTE2	X by EPA 8021B	Amount Found	True Amount IRI	Recovery %R	Control Limits %R	Flag
	Analytes		[~]	[D]		i
1,4-Dıfluorobenzene		0 0256	0 0300	85	80-120	
4-Bromofluorobenzene		0 0465	0 0300	155	80-120	**
Lab Batch #: 757210	Sample: 331171-010 S / MS	Bat	tch: 1 Matr	ix: Soil	·	
Units: mg/kg	Date Analyzed: 04/28/09 16:14	SU	RROGATE R	ECOVERY f	STUDY	
		Amount	True		Control Limits	Flag
BIE.	Analytes	Found [A]	Amount [B]	Recovery %R [D]	%R	1
BIE.	Analytes	Found [A]	Amount [B]	Recovery %R [D] 99	%R	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



## **Project Name: Southwest Royalties**

ork Orders : 331171	,	D-4	Project IF	<b>):</b> Wilderspin	ı Battery	
Jab Baten #: 131210	Sample: 3311/1-00/7 SWI	SU!	RROGATE RE	X: SOIL ECOVERY (	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1 4-Difluorobenzene	Analytes	0.0220	0.0300	73	80-120	**
4-Bromofluorobenzene		0.2646	0.0300	882	80-120	**
	~ • 221171 000 / SMI			· e	00-120	
Lab Batch #: 151210 Units: mg/kg	Sample: 331171-0097 Smit Date Analyzed: 04/28/09 17:18	Bate SU	RROGATE RF	x: Son ECOVERY !	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R iDl	Control Limits %R	Flag
1.4 Difluorahenzene	Analytes	0.0226	0.0300	70	PO 120	i **
4-Bromofluorobenzene		0.1086	0.0300	362	80-120	**
	- 221171 010 CD //	01000	0.0300	0.11	00-120	<u></u>
<b>Jab Batch #:</b> 757210	Sample: 331171-010 SD7 N	ASD Bat	ch: Matri	X: Soll	ortiny	
Units; mg/kg	Date Analyzed: 04/28/09 20:55	501	RROGATE RE	COVERY 3	STUDY	<del></del>
BTEX	K by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R 1D1	Control Limits %R	Flag
1.4 Difluorohenzene		0.0202	0.0200		PO 120	I
4-Bromofluorobenzene		0.0525	0.0300	175	80-120	**
		00323	0.0300		80-120	
<b>Jab Batch #:</b> 757589	Sample: 529182-1-BK87B	KS Bat	ch: Matri	x: Solid	COUNT	
Units: mg/kg	Date Analyzed: 04/30/09 16:34	501	RROGATE KE	COVERY 3	STUDY	
BTE	<b>X</b> by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
	Analytes	Í		[D]	[]	I
1,4-Dıfluorobenzene		0 0307	0 0300	102	80-120	
4-Bromofluorobenzene		0 0325	0 0300	108	80-120	l
Lab Batch #: 757589	Sample: 529182-1-BSD / B	SD Bat	tch: <u>1</u> Matri	ix: Solid		
Units: mg/kg	Date Analyzed: 04/30/09 16:55	SU	RROGATE RF	<b>ECOVERY</b> S	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
	Analytes		<b>!</b> '	ן טן		L
1,4-Difluorobenzene		0 0308	0 0300	103 '	80-120	1
		ļł		+	↓}	<u>ــــــــــــــــــــــــــــــــــــ</u>

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



## Project Name: Southwest Royalties

l,	11/ D-	Project II	D: Wilderspir	1 Battery	
Sample: 329102-1-BLN / DI	SU	RROGATE RI	ECOVERY	STUDY	
X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
Analytes			[D]		I
	0 0262	0 0300	87	80-120	I
	0 0282	0 0300	94	80-120	
Sample: 331171-007 / DL	Bar	tch: <u> </u> Matri	ix: Soil		
Date Analyzed: 04/30/09 20:30	SU	RROGATE RI	ECOVERY S	STUDY	
X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag
	0 0250	0 0300	83	80-120	[
	0 0808	0 0300	269	80-120	**
Sample: 331171-008 / SMP	Ba	tch: 1 Matr	ix: Soil	·	
Date Analyzed: 04/30/09 21:13	SU	<b>RROGATE RI</b>	ECOVERY S	STUDY	
X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R IDI	Control Limits %R	Flag
Analytes	0.0220	0.0200		<u>90 120</u>	i
	0.0239	0.0300	569	80-120	**
Sample: 331229-005 S / MS	Pa	4	ing Soil	00-120	
Sample: 551227-005 57 MS		RROGATE R	ECOVERY	STUDY	
X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Fla
Analytes	· · · ·	•••	[D]		1
	0 0308	0 0300	103	80-120	1
	0 0327	0 0300	109	80-120	í
Sample: 331229-005 SD / N	1SD Ba	tch: 1 Matr	ix: Soil		
Date Analyzed: 05/01/09 01:08	SU	<b>RROGATE RI</b>	ECOVERY	STUDY	
		T	<u> </u>	Control	í —
X by EPA 8021B	Amount Found [A]	Amount [B]	Recovery %R  D	Limits %R	Fla
X by EPA 8021B Analytes	Amount Found [A]	Amount [B]	Recovery %R  D	Limits %R	Fla
	, Sample: 529182-1-BLK / BI Date Analyzed: 04/30/09 17:39 X by EPA 8021B Analytes Sample: 331171-007 / DL Date Analyzed: 04/30/09 20:30 X by EPA 8021B Analytes Sample: 331171-008 / SMP Date Analyzed: 04/30/09 21:13 X by EPA 8021B Analytes Sample: 331229-005 S / MS Date Analyzed: 05/01/09 00:47 X by EPA 8021B Analytes Sample: 331229-005 S / MS Date Analyzed: 05/01/09 00:47 X by EPA 8021B Analytes	Sample:         529182-1-BLK / BLK         Bat           Date Analyzed:         04/30/09 17:39         SU           X by EPA 8021B         Amount Found [A]         Found [A]           Analytes         0 0262         0 0282           Sample:         331171-007 / DL         Bat           Date Analyzed:         04/30/09 20:30         SU           X by EPA 8021B         Amount Found [A]         Found [A]           Analytes         0 0250         0 0808           Sample:         331171-008 / SMP         Bat           Date Analyzed:         04/30/09 21:13         SU           X by EPA 8021B         Amount Found [A]         Found [A]           Date Analyzed:         04/30/09 21:13         SU           X by EPA 8021B         Amount Found [A]         Found [A]           Analytes         0 0308         0 0327           Sample:         331229-005 SD / MSD         Ba           Date Analyzed:         05/01/09 01:08         S	y       Project II         Sample: 529182-1-BLK / BLK       Batch:       1       Matri         Date Analyzed:       04/30/09 17:39       SURROGATE RI         X by EPA 8021B       Amount IAI       True Amount IBI       True Amount IBI         Analytes       0 0262       0 0300         Sample:       331171-007 / DL       Batch:       1       Matri         Date Analyzed:       04/30/09 20:30       SURROGATE RI       Matri         X by EPA 8021B       Amount Found IAI       True Amount IBI       True Amount IBI         Analytes       0 0250       0 0300         Sample:       331171-008 / SMP       Batch:       1       Matri         Date Analyzed:       04/30/09 21:13       SURROGATE RI       Matri         X by EPA 8021B       Amount Found IAI       True Amount IBI       True Amount IBI       True Amount IBI         Analytes       0 0239       0 0300       0 0300       0 0300         Sample:       331229-005 S / MS       Batch:       1       Matri         Date Analyzed:       05/01/09 00:47       SURROGATE RI       Amount IBI       True Amount IBI       Amount IBI       True Amount IBI       Amount IBI       True Amount IBI       Amount IBI       True Amount IBI	Sample: 529182-1-BLK / BLKBatch:IMatrix: SolidDate Analyzed: 04/30/09 17:39SURROGATE RECOVERY SV by EPA 8021BAmount Found [A]True Amount [B]Recovery %R [D]0 02620 0300870 02820 030094Sample: 331171-007 / DL Date Analyzed: 04/30/09 20:30Batch:IMatrix: SoilDate Analyzed: 04/30/09 20:30SURROGATE RECOVERY SX by EPA 8021BAmount Found [A]True Amount [B]Recovery %R [D]Analytes0 02500 0300830 02500 0300830 02500 0300830 08080 0300269Sample: 331171-008 / SMP Date Analyzed: 04/30/09 21:13SURROGATE RECOVERY SX by EPA 8021BAmount Found [A]True (Amount Found [A]Matrix: SoilSurroogatic SoilSoilDate Analyzed: 04/30/09 21:13SURROGATE RECOVERY SX by EPA 8021BAmount Found [A]True (B]Manalytes0 02390 03000 02390 0300800 02390 0300800 02390 0300569Sample: 331229-005 S / MS [A]Batch:1Matrix: SoilTrue Matrix: SoilDate Analyzed: 05/01/09 00:47SURROGATE RECOVERY SX by EPA 8021BFound [A]Imatrix: SoilDate Analyzed: 05/01/09 00:47SURROGATE RECOVERY SX by EPA 8021BFound [A]Imatrix: Soil <tr< td=""><td>Sample:         529182-1-BLK / BLK         Bate         I         Matrix:         Solid           Date Analyzed:         04/30/09         17:39         SURROGATE         RECOVERY         SUDRY           X by EPA 8021B         Amount Found IAI         True Amount IAI         True BBI         Recovery %R (IDI         Control Limits %R           Analytes         0.0262         0.0300         87         80-120           Sample:         331171-007 / DL         Batch:         I         Matrix:         Soil           Date Analyzed:         04/30/09         20:30         SURROGATE         Recovery %R         Limits %R           Analytes         0         0250         0.0300         83         80-120           Matrix:         Soil         Soil         Soil         Soil           Sample:         331171-008 / SMP         Bateh:         I         Matrix:         Soil           Matayzed:         04/30/09         21:13         SURROGATE         RECOVERY STUDY           X by EPA 8021B         Amount Found IAI         True BII         Matrix:         Soil           Date Analyzed:         04/30/09         21:13         SURROGATE         RECOVERY STUDY           X by EPA 8021B         Amount Found IAI</td></tr<>	Sample:         529182-1-BLK / BLK         Bate         I         Matrix:         Solid           Date Analyzed:         04/30/09         17:39         SURROGATE         RECOVERY         SUDRY           X by EPA 8021B         Amount Found IAI         True Amount IAI         True BBI         Recovery %R (IDI         Control Limits %R           Analytes         0.0262         0.0300         87         80-120           Sample:         331171-007 / DL         Batch:         I         Matrix:         Soil           Date Analyzed:         04/30/09         20:30         SURROGATE         Recovery %R         Limits %R           Analytes         0         0250         0.0300         83         80-120           Matrix:         Soil         Soil         Soil         Soil           Sample:         331171-008 / SMP         Bateh:         I         Matrix:         Soil           Matayzed:         04/30/09         21:13         SURROGATE         RECOVERY STUDY           X by EPA 8021B         Amount Found IAI         True BII         Matrix:         Soil           Date Analyzed:         04/30/09         21:13         SURROGATE         RECOVERY STUDY           X by EPA 8021B         Amount Found IAI

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



## **Project Name: Southwest Royalties**

<b>ork Orders :</b> 331171	,		Project II	D: Wilderspi	n Battery	
Lab Batch #: 737491	Sample: 529110-1-BK57 B	KS Ba	RROGATE RI	ECOVERY	STUDY	
TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
	Analytes			נטן		
1-Chlorooctane		104	100	104	70-135	
o-Terphenyl	·····	48 2	50 0	96	70-135	
Lab Batch #: 757491	Sample: 529110-1-BSD / B	SD Ba	tch: 1 Matri	ix: Solid		
Units: mg/kg	Date Analyzed: 04/30/09 01:31	SU	RROGATE RI	ECOVERY	STUDY	
ТРН	By SW8015 Mod Analytes	Amount Found [A]	True Amount  B	Recovery %R [D]	Control Limits %R	Flag
1-Chlorooctane		104	100	104	70-135	
o-Terphenyl		47 5	50 0	95	70-135	
Lab Batch #: 757491	Sample: 529110-1-BLK / B	LK Ba	tch: 1 Matri	ix: Solid	<u> </u>	
Units: mg/kg	Date Analyzed: 04/30/09 01:56	SU	<b>RROGATE RI</b>	ECOVERY	STUDY	
TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R  D]	Control Limits %R	Flag
1-Chlorooctane	Anaryus	89.0	100	89	70-135	
o-Terphenyl		51 5	50 0	103	70-135	
	Sample: 331171-001 / SMP	Ba	tch: 1 Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/30/09 02:21	SU	RROGATE RI	ECOVERY	STUDY	
TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
	Analytes			[D]		
1-Chlorooctane		96 8	100	97	70-135	
o-Terphenyl		55 5	50 0	111	70-135	
Lab Batch #: 757491	Sample: 331171-002 / SMP	Ba	tch: 1 Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 04/30/09 02:46	su	RROGATE RI	ECOVERY	STUDY	
ТРН	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flag
1-Chlorooctane	· · · · · · · · · · · · · · · · · · ·	88 5	100	89	70-135	
o-Terphenyl		514	50 0	103	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



#### **Project Name: Southwest Royalties**

<b>'ork Orders :</b> 331171	, Somelas 331171-003 / SMP	Da	Project II	): Wilderspir	a Battery	
Lad ballen #: 151451 Units: mg/kg	Date Analyzed: 04/30/09 03:12	Da	RROGATE RI	<b>X</b> : SOIL	STUDY	
TPH 3	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		1
1-Chlorooctane		86 6	100	87	70-135	
o-Terphenyl		517	50 0	103	70-135	
Lab Batch #: 757491	Sample: 331171-004 / SMP	Ba	tch: <sup>1</sup> Matri	x: Soil		
Units: mg/kg	Date Analyzed: 04/30/09 03:37	SU	RROGATE RE	ECOVERY	STUDY	
ТРН І	By SW8015 Mod	Amount Found [A]	True Amount  B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	Anarytto	88.3	100	88	70-135	
o-Terphenyl		51 1	50 0	102	70-135	
	Sample: 331171-007 / SMP	Ba	tch: 1 Matri	ix: Soil	<u> </u> 1	
Units: mg/kg	Date Analyzed: 04/30/09 04:02	SU	RROGATE RI	COVERY	STUDY	
TPH J	By SW8015 Mod	Amount Found [A]	True Amount  B	Recovery %R	Control Limits %R	Flag
	Analytes			ועו		·
1-Chlorooctane		98.8	100	99	70-135	
o-Terphenyl		54 6	50 0	109	70-135	
Lab Batch #: 757491	Sample: 331171-008 / SMP	Ba	tch: 1 Matri	x: Soil		
Units: mg/kg	Date Analyzed: 04/30/09 04:26	SU	RROGATE RE	ECOVERY S	STUDY	
TPH }	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flag
1 Chloropotono	Analytes	00 7	100		70.125	
- Terphenyl		907 	50.0	102	70-135	
	231171.000 / SMP		- 1 Motei	- 102 	10-155	
Lab Batch #: /3/471	Sample: 3311/1-007/3001	ва SU	tch: I IVIAIT	X: SOIL	STUDY	
Units: mg/kg	By SW8015 Mod	Amount Found  A	True Amount [B]	Recovery %R	Control Limits %R	Flag
1 Chlorosstere	Analytes	00.0	100			ļ
a Tambanul		92.0	<u> </u>	92	70-135	
o-resphenys		54 0	50.0	108	/0-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



## Project Name: Southwest Royalties

		Project IE	: Wilderspir	1 Battery	
Sample: 331171-010 / SMP	Ba	tch: 1 Matri	x: Soil	STUDY	
Date Analyzed: 04/30/09 05:17	50	RRUGATE Kr	LCOVERY 3		
3y SW8015 Mod	Amount Found {A}	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
	88 3	100	88	70-135	
	51 3	50 0	103	70-135	
Sample: 331171-011 / SMP	Ba	itch: 1 Matri	x: Soil		
Date Analyzed: 04/30/09 05:43	SU	RROGATE RE	<b>ECOVERY</b> S	STUDY	
By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R IDI	Control Limits %R	Flags
Analytes	05.2	100	05	70.125	
	95 5 49 7	50.0	95	70-135	
	47 /	500	27		
Sample: 3311/1-012/ 5MIP	Ba	tch:   Matri	X: SOIL	O'THINV	
Date Analyzed: 04/30/09 06:08	50	RROGATE KE			. <u> </u>
3y SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			101	L	
	91 9	100	92	70-135	
	51 5	50 0	103	70-135	
Sample: 331171-013 / SMP	Ba	tch: 1 Matri	x: Soil		
Date Analyzed: 04/30/09 06:57	SU	RROGATE RE	ECOVERY S	STUDY	
3y SW8015 Mod	Amount Found  A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes	02.1	100	02	70.125	<u> </u>
	93 1	100	93	/0-135	
	52.0	50.0	106	70 125	1
	52 9	50 0	106	70-135	
Sample: 331171-014 / SMP	52 9 Ba	50 0 tch: 1 Matri	106 ix: Soil	70-135	
Sample: 331171-014 / SMP Date Analyzed: 04/30/09 07:23	52 9 Ba SU	50 0 (tch: 1 Matri JRROGATE RE	106 ix: Soil ECOVERY S	70-135 STUDY	
Sample: 331171-014 / SMP Date Analyzed: 04/30/09 07:23 By SW8015 Mod	52 9 Ba SU Amount Found [A]	50 0 ntch: 1 Matri JRROGATE RE True Amount [B]	106 ix: Soil ECOVERY S Recovery %R [D]	70-135 STUDY Control Limits %R	Flags
Sample: 331171-014 / SMP Date Analyzed: 04/30/09 07:23 By SW8015 Mod Analytes	52 9 Ba SU Amount Found [A]	50 0 Itch: 1 Matri JRROGATE RE True Amount [B]	106 ix: Soil SCOVERY S Recovery %R [D]	70-135 STUDY Control Limits %R	Flags
	Sample: 331171-010 / SMP Date Analyzed: 04/30/09 05:17 By SW8015 Mod Analytes Sample: 331171-011 / SMP Date Analyzed: 04/30/09 05:43 By SW8015 Mod Analytes Sample: 331171-012 / SMP Date Analyzed: 04/30/09 06:08 By SW8015 Mod Analytes Sample: 331171-013 / SMP Date Analyzed: 04/30/09 06:57 By SW8015 Mod Analytes	Sample:         331171-010 / SMP         Ba           Date Analyzed:         04/30/09 05:17         SU           by SW8015 Mod         Amount Found [A]         Amount Found [A]           Analytes         88 3           Sample:         331171-011 / SMP           Ba         Date Analyzed:         04/30/09 05:43           By SW8015 Mod         Amount Found [A]         Su           Analytes         95 3         95 3           Ba         95 3         49 7           Sample:         331171-012 / SMP         Ba           Date Analyzed:         04/30/09 06:08         SU           By SW8015 Mod         Amount Found [A]         Found [A]           Analytes         91 9         51 5           Sample:         331171-013 / SMP         Ba           Date Analyzed:         04/30/09 06:57         SU           By SW8015 Mod         Amount Found [A]         Found [A]           Analytes         91 9         51 5           Sample:         331171-013 / SMP         Ba           Date Analyzed:         04/30/09 06:57         SU           By SW8015 Mod         Amount Found [A]         Found [A]           Analytes         93 1	Project II Sample: 331171-010 / SMPBatch: 1 Matri Date Analyzed: 04/30/09 05:17by SW8015 ModAmount Found [A]True Amount [B]Analytes100Sample:331171-011 / SMPBatch:1 Matri Matri Date Analyzed: 04/30/09 05:43By SW8015 ModAmount Found [A]Bate Analyzed:04/30/09 05:43By SW8015 ModAmount Found [A]Analytes95 395 310049 750 0Sample:331171-012 / SMP Batch:Bate Analyzed:04/30/09 06:08SURROGATE RE Sy SW8015 ModSURROGATE RE Amount [A]Analytes95 391 910051 550 0Sample:331171-013 / SMP SurROGATE RE Batch:91 910051 550 0Sample:331171-013 / SMP Found [A]Batch:1 Matri Amount [B]Analytes91 910051 5Sy SW8015 ModAmount Found [A]Analytes93 1100101	Project ID: Wilderspin Batch: 1 Matrix: SoilDate Analyzed: 04/30/09 05:17SURROGATE RECOVERY SBy SW8015 ModAmount Found [A]True [B]Recovery %RAnalytes10088100881008810088100881008810088100881008810088100881008810088100881008110081100811008110095100951009510095100951009510095100951009510095100951009211110011	Project ID: Wilderspin Battery Batch: 1 Matrix: SoilDate Analyzed: 04/30/09 05:17SURROGATE RECOVERY STUDYby SW8015 ModAmount [A]True [B]Recovery %RControl Limits %RAnalytes88.31008870-135Sample: 331171-011 / SMPBatch: 1 51.3Matrix: SoilSoilDate Analyzed: 04/30/09 05:43SURROGATE RECOVERY STUDYby SW8015 ModAmount Found [A]True Manount [B]Recovery %RAnalytes95.31009570-135by SW8015 ModAmount Found [A]True [B]Recovery %RControl Limits %RAnalytes95.31009570-135Sample: 331171-012 / SMP Batch: 1 Matrix: SoilBatch: 1 Matrix: SoilControl Limits %RDate Analyzed: 04/30/09 06:08SURROGATE RECOVERY STUDYBy SW8015 ModAmount Found [A]True Matrix: SoilControl Limits %RAnalytes91.91009270-135Sample: 331171-013 / SMP Batch: 1 Matrix: SoilSurrol Matrix: SoilControl Limits %RAnalytes91.91009270-135Sample: 331171-013 / SMP Batch: 1 Matrix: SoilSurrol Matrix: SoilControl Limits %RAnalytes91.91009270-135Sample: 331171-013 / SMP Batch: 1 Matrix: SoilControl Matrix: SoilControl Limits %RBate Analyzed: 04/30/09 06:57SURROGATE

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



#### **Project Name: Southwest Royalties**

Work Orders : 331171 Lab Batch #: 757491	, Sample: 331229-006 S / MS	AS Batch: 1 Matrix: Soil								
Units: mg/kg	Date Analyzed: 04/30/09 11:09	SU	<b>RROGATE R</b>	ECOVERY	STUDY					
ТРН	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1-Chlorooctane		108	100	108	70-135					
o-Terphenyl		46 7	50 0	93	70-135					
Lab Batch #: 757491	Sample: 331229-006 SD / N	ISD Ba	tch: 1 Mati	rix: Soil						
Units: mg/kg	Date Analyzed: 04/30/09 11:34	SU	<b>RROGATE R</b>	ECOVERY	STUDY					
TPH	By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
1-Chlorooctane		109	100	109	70-135					
o-Terphenyl		46 7	50 0	93	70-135					

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B





Work Order #: 331171		Pr		Wilderspin Battery			
Lab Batch #: 757296	Sample: 757296-	1-BKS	Matri	ix: Solid			
Date Analyzed: 04/28/2009	Date Prepared: 04/28/2009 Analyst: LATC						
<b>Reporting Units:</b> mg/kg	Batch #: 1	BLANK /	BLANK SPI	KE REC	COVERY S	STUDY	
Anions by EPA 300	Blank Result	Spike Added	Blank Spike	Blank Spike	Control Limits	Flags	
Analytes	[A]	[B]	Result {C}	%R {D}	%R		
Chloride	ND	10 0	9 44	94	80-120		

Blank Spike Recovery [D] = 100\*[C]/[B] All results are based on MDL and validated for QC purposes





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Work Order #: 331171				/				Pro	ject ID: Y	Wilderspin	Battery	
Analyst: BRB		Da	ite Prepar	ed: 04/28/200	19			Date A	nalyzed: (	04/28/2009		
Lab Batch ID: 757210	Sample: 528981-1-E	BKS	KS Batch #: 1 Matrix: Solid									
Units: mg/kg			BLAN	K/BLANK S	SPIKE / E	BLANK S	PIKE DUPI	LICATE	RECOVI	ERY STUD	Y	
BTEX by EP.	A 8021B	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	·	ND	0 1000	0 1079	108	01	0 1087	109	1	70-130	35	
Toluene	- <u> </u>	ND	0 1000	0 1063	106	0 1	0 1066	107	0	70-130	35	
Ethylbenzene		ND	0 1000	0 1116	112	01	0 1124	112	1	71-129	35	
m,p-Xylenes		ND	0 2000	0 2286	114	0 2	0 2296	115	0	70-135	35	
o-Xylene		ND	0 1000	0 1078	108	01	0 1083	108	0	71-133	35	
Analyst: ASA		Da	ate Prepar	ed: 04/30/200	19	-		Date A	nalyzed: (	4/30/2009		
Lab Batch ID: 757589	Sample: 529182-1-E	BKS	Batel	n #: 1					Matrix: S	Solid		
Units: mg/kg			BLAN	K/BLANK S	SPIKE / E	BLANK S	PIKE DUPI	LICATE	RECOVI	ERY STUD	Y	
BTEX by EP.	A 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	· · · · · · · · · · · · · · · · · · ·		וען				Kesuit [1]					
Benzene		ND	0 1000	0 1012	101	01	0 0985	99	3	70-130	35	
Toluene		ND	0 1000	0 1026	103	01	0 0995	100	3	70-130	35	
Ethylbenzene		ND	0 1000	0 1045	105	01	0 1009	101	4	71-129	35	
m,p-Xylenes		ND	0 2000	0 2236	112	0 2	0 2150	108	4	70-135	35	
												<u> </u>

Relative Percent Difference RPD = 200\*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100\*(C)/[B]Blank Spike Duplicate Recovery [G] = 100\*(F)/[E]All results are based on MDL and Validated for QC Purposes





Work Order #: 331171 Analyst: BHW Lab Batch ID: 757491	Sample: 529110-1-Bk	Da KS	Project ID: Wilderspin B       Date Prepared:     04/29/2009       Batch #:     1       Matrix:     Solid								Battery	
Units: mg/kg			BLAN	K/BLANK S	SPIKE / E	BLANK S	PIKE DUPL	ICATE	RECOVE	CRY STUD	Y	
TPH By SW801	5 Mod	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes			[B]	[C]	[ נט]	[E]	Result [F]	[6]				
C6-C12 Gasoline Range Hydrocar	rbons	ND	1000	1020	102	1000	1030	103	1	70-135	35	
C12-C28 Diesel Range Hydrocart	oons	ND	1000	994	99	1000	985	99	1	70-135	35	

Relative Percent Difference RPD =  $200^{*}|(C-F)/(C+F)|$ Blank Spike Recovery [D] =  $100^{*}(C)/[B]$ Blank Spike Duplicate Recovery [G] =  $100^{*}(F)/[E]$ All results are based on MDL and Validated for QC Purposes



#### Form 3 - MS Recoveries



**Project Name: Southwest Royalties** 

## Work Order #: 331171

Lab Batch #: 757296			Pro	oject ID	Wilderspin	Battery
Date Analyzed: 04/28/2009	Date Prepared:	04/28/2009	9	Analyst:	LATCOR	
QC- Sample ID: 331171-001 S	Batch #:	1		Matrix:	Soil	
Reporting Units: mg/kg	MAT	RIX / MA	TRIX SPIKE	RECO	VERY STU	DY
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]		•••		
Chloride	1280	567	1900	109	80-120	

Matrix Spike Percent Recovery  $[D] = 100^{\circ}(C-A)/B$ Relative Percent Difference  $[E] = 200^{\circ}(C-A)/(C+B)$ All Results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

#### **Project Name: Southwest Royalties**



1

Work Order #: 331171						Project II	D: Wilders	spin Batter	ry		
Lab Batch ID: 757210 ( Date Analyzed: 04/28/2009	C- Sample ID: Date Prepared:	331171 04/28/2	-010 S 009	Ba An	tch #: alyst:	l Matrix ASA	k: Soil				
Reporting Units: mg/kg		M	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERYS	STUDY		
BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	ND	0 1114	0 0921	83	0 1118	0 0980	88	6	70-130	35	
Toluene	ND	0 1114	0 0886	80	0 1 1 1 8	0 0937	84	6	70-130	35	
Ethylbenzene	0 0067	0 1114	0 0903	75	0 1118	0 0999	83	10	71-129	35	
m,p-Xylenes	0 0183	0 2227	0 1851	75	0 2236	0 1993	81	7	70-135	35	
o-Xylene	0 0108	0 1114	0 1016	82	0 1118	0 1145	93	12	71-133	35	
Lab Batch ID: 757589 (C) Date Analyzed: 05/01/2009	C- Sample ID: Date Prepared:	331229 04/30/2	-005 S 009	Ba An	tch #: alyst:	l Matrix ASA	<b>x:</b> Soil				
Reporting Units: mg/kg		M	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY S	STUDY		
BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	ND	0 1023	0 0798	78	0 1025	0 0768	75	4	70-130	35	
Toluene	ND	0 1023	0 0764	75	0 1025	0 0732	71	4	70-130	35	
Ethylbenzene	0 0010	0 1023	0 0678	65	0 1025	0 0639	61	6	71-129	35	X
m,p-Xylenes	ND	0 2046	0 1417	69	0 2050	0 1340	65	6	70-135	35	X
										T	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/BRelative Percent Difference RPD = 200\*|(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries

#### Project Name: Southwest Royalties



Work Order #: 331171						Project II	<b>D:</b> Wilders	spin Batter	ry		
Lab Batch ID:         757491         Q           Date Analyzed:         04/30/2009         1	C- Sample ID: Date Prepared:	331229- 04/29/2	-006 S 009	Ba An	tch #: alyst:	1 Matrix BHW	c: Soil				
Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
TPH By SW8015 Mod	Parent Sample Posult	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	[A]	Added [B]		%R [D]	Added [E]	Result [F]	%R [G]	70	70 K	70 <b>K</b> PD	
C6-C12 Gasoline Range Hydrocarbons	ND	1020	1200	118	1020	1210	119	1	70-135	35	
C12-C28 Diesel Range Hydrocarbons	48 3	1020	1200	113	1020	1220	115	2	70-135	35	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/BRelative Percent Difference RPD = 200\*[(C-F)/(C+F)] Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

			-
<b>P 4 3</b>	s.	[ ]	• ]
	- <b>L</b>		
Loha			
Gala	81		195



Work	Order #	• 331171
WUIK	Oluci #	. 551171

Lab Batch #: 757296 Date Analyzed: 04/28/2009 QC- Sample ID: 331171-001 D Reporting Units: mg/kg	Date Pr B	epared: 04/2 Batch #: 1 SAMPLE	28/2009 / SAMPLE	Project I Analy Matr DUPLIC	D: Wildersp st: LATCOF ix: Soil ATE REC	OVERY
Anions by EPA 300 Analyte		Parent Sample Result  A	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride		1280	1280	0	20	
Lab Batch #: 757260 Date Analyzed: 04/28/2009 QC- Sample ID: 331171-001 D	Date Pr E	epared: 04/2 Batch #: 1	28/2009	Analy Matr	rst: BEV ix: Soil	
Reporting Units: %		SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture Analyte		Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture		118	114	3	20	

Spike Relative Difference RPD 200 \* | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes

Env A Xenco	Project Manager Debi Sport Moore						CHAIN OF CUST 12600 West I-20 East Odessa, Tøxas 79765						rody	RE	COR	D A	ND	AN/ F	AL' Pho Fax	/\$/\$ ne 4 1. 4	RE 132-1	QUI 563- 563-	EST 1800 1713	١	st	2				
	Project Manager	Debi Sport Moore														ŧ	, tole	Ct N	ame				So	uthy	vest	Roy	alties	;		
	Company Name	Sport Environment	a Services														ı	Proje	ct #				w	lide	rspi	n Ba	ttery			_
	Company Address	502 N Big Spring 5	street														Pre	oject	Loc								_			
	City/State/Zip	Midland Texas 79	701															P	•o #•											
	Telephone No	432-683-1100				Fax No.		883	.500	.062	······					Ren	nrt F	orm:		п	Star	ortau	м.	ſ	7 76	000				
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	Sampler Signature			9		e-man		uet	<u>onu</u>	spor	tenv	ni Qi	in ei	nai t	<u>, on</u>		Ľ					Ar	alyze	For					$\overline{V}$	ł
(lab use o	niy) - 2~	171															╞	•••••		10 10	J.P IAL			+	-				14	ľ
LAB # (lab use only)	FIE	LD CODE		Beginning Depth Ending Depth	Date Sampled	lime Sanipled	F.ehtl I thered	Total # of Cuntamory	i.e	Hardy,	HC' HSC.	A POPL	Na S.K.	Aone	Other ( Specify)	244-2744 May Mark 54-550-026	Nerwas Patable byeady cares	1000 AL GROUND AL HAI	Cations (Cal Mg Nal K)	Anioms (C) SO4 Aikath IV	SAR I SPICEC	Metels As rig 8a (.g ( r Pb ) kg Se	Volution	SERVICENS RIFKENTRISTON HIEX HIM	HC:	NORM			RUSH TAT (Pre Schedules 24, 4	St codard TAT
01	EE	F1-002		<u>le'</u>	4/17/09			1	X	_				┞╌┤		S	4	4		X				+	-	_↓			1×	Ļ
OL	EE	F2-002		(e	<u>├</u> ──┤			1	X	-+-	-	-			-+	\$	-12	4						+	+	+			X	┡
02	EE	F3-002		121			┝╍┼	<u>+</u> +	Ť			-+	+	┝─┤	-+		+	4	+			-	-+-		+-	+			Ě	┝
09	<u>*</u>	F6-007		<i>12</i>			┼╌┼	<u>'</u>	Ŷ	-+-		-+	╈	$\left  \right $	-+	 	ť	╧	+	Y				+	╈	┼╌┼	-+-	+	Ę.	t
DW	` EE	F7-002		11			1-1	1	x	+	-	+	$\top$	††	-+	S	+	+	+	x		-	+	+	+	$\dagger$	$\uparrow$	+	x	Γ
01	CE	F2-001		6'		****	T	1	x	1		1	-		1	S	5	1	1		-						1		x	Γ
08	CE	F3-002		4,5				1	x							S	)							×					X	
04	CE	F4-002		4.5				1	4		_	1	ļ		_	\$	2	4	ļ					×	4				x	ļ
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	Project Manager	Debi Sport Moor	e															Pre	ojec	t Na	me.			Şc	uth	wes	t Ro	yaiti	es			
	Company Name	Sport Environme	anta Servic	<b>.</b> 25															Pr	ojec	:₹#;			W	/ilde	rspi	n Ba	atter	<u>у</u>			
	Company Address	5C2 N Big Spring	g Street															F	>roje	oct L	.oc											
	City/State/Zip	Midland Texas	79701																	PC	<b>5</b> #											
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E S I D MB # (lab use only)	FIEI WE WE WE	D CODE F1-002 F2-002 F3-002 F4-002 F5-002		Beginning Depth	Control Control Control Depth	2//2 1//2 2/2	I me Sampled	Field Fate-od		a x x x x x x x x x x x	1400,	HO 100	T 3004	Na <sub>5</sub> S <sub>2</sub> O <sub>5</sub>	None	Other ( Sueculy)	and the second the second seco	U U U U U U U U U U U U U U U U U U U	1.09 (HEIDERAND HIT X X X X X	11HH TX 1005 FX 1005	Catoria (Ca, Mg, Na K)	X X Anions @ 804, Arubeury,	SAK 155- 1 CFC	Metals As Ag Us Cd Cr Pp Hg St	Volatifies	Sonswattes x Safex 60714-40 Mar 836 X H290		NORM				
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#### Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

Chent	Sport Env.	
Date/ Time	4.28.09 9.30	
Lab ID #	331171	
Initials	CIL	

#### Sample Receipt Checklist

#1 Temperature of container/ cooler	r?	Yes	No	Z.O °C
#2 Shipping container in good cond	ition?	(Ye)	No	
#3 Custody Seals intact on shipping	container/ cooler?	Yes.	No	Not Present
#4 Custody Seals intact on sample	bottles/ container?	Yes	No	Not Present
#5 Chain of Custody present?		(Yes)	No	
#6 Sample instructions complete of	Chain of Custody?	Yes	No	
#7 Chain of Custody signed when re	elinquished/ received?	Tes	No	
#8 Chain of Custody agrees with sa	mple label(s)?	Yes	No	D written on Cont LLid
#9 Container label(s) legible and int	lact?	Yes	No	Not Applicable
#10 Sample matrix/ properties agree	e with Chain of Custody?	Yes	No	
#11 Containers supplied by ELOT?		(Yes)	No	
#12 Samples in proper container/ br	ottle?	Yes	No	Sne Below
#13 Samples properly preserved?		(Yes)	No	See Below
#14 Sample bottles intact?		Yes	No	
#15 Preservations documented on (	Chain of Custody?	Yes	No	
#16 Containers documented on Cha	ain of Custody?	Yes)	No	
#17 Sufficient sample amount for in	dicated test(s)?	Yes	No	See Below
#18 All samples received within suff	ficient hold time?	Yes	No	See Below
#19 Subcontract of sample(s)?		Yes	No	(Not Applicable)
#20 VOC samples have zero heads	space?	res	No	Not Applicable
	Variance Docu	mentation		
Contact.	Contacted by			Date/ Time
Pagardina				

Corrective Action Taken

Check all that Apply.

•

#### See attached e-mail/ fax

Client understands and would like to proceed with analysis Cooling process had begun shortly after sampling event

## Analytical Report 332665

for

Sport Environmental Services, PLLC

Project Manager: Debi Moore

**Southwest Royalties** 

Wilderspin Battery

20-MAY-09





12600 West I-20 East Odessa, Texas 79765

Texas certification numbers: Houston, TX T104704215-08B-TX - Odessa/Midland, TX T104704400-08-TX

Florida certification numbers: Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675 Miramar, FL E86349 Norcross(Atlanta), GA E87429

> South Carolina certification numbers: Norcross(Atlanta), GA 98015

> North Carolina certification numbers: Norcross(Atlanta), GA 483

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20-MAY-09



Project Manager: **Debi Moore Sport Environmental Services, PLLC** 502 North Big Spring Street Midland, TX 79701

Reference: XENCO Report No: **332665 Southwest Royalties** Project Address:

#### Debi Moore:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 332665. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 332665 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II Odessa Laboratory Manager

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Client Name: Sport Environmental Services, PLLC Project Name: Southwest Royalties

Project ID:Wilderspin BatteryWork Order Number:332665

Report Date: 20-MAY-09 Date Received: 05/13/2009

Sample receipt non conformances and Comments:

None

**Sample receipt Non Conformances and Comments per Sample:** None

Analytical Non Conformances and Comments:

Batch: LBA-759032 BTEX-MTBE EPA 8021B SW8021BM

Batch 759032, 1,4-Difluorobenzene recovered below QC limits . Matrix interferences is suspected; data confirmed by re-analysis Samples affected are: 332665-010,332665-008. 4-Bromofluorobenzene recovered below QC limits Data confirmed by re-analysis. Samples

affected are: 530032-1-BLK.

SW8021BM

Batch 759032, m,p-Xylenes recovered below QC limits in the Matrix Spike. Ethylbenzene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Samples affected are: 332665-008, -009, -010. The Laboratory Control Sample for m,p-Xylenes , Ethylbenzene is within laboratory Control Limits

Batch: LBA-759347 TX1005 SW8015MOD\_NM

Batch 759347, C6-C12 Gasoline Range Hydrocarbons detected in the blank below the MQL but above the SQL; possible laboratory contamination. Samples affected are: 332665-007, -009, -008, -010, -004, -005, -006.



#### **Certificate of Analysis Summary 332665** Sport Environmental Services, PLLC, Midland, TX



**Project Name: Southwest Royalties** Project Id: Wilderspin Battery Date Received in Lab: May-13-09 03:40 pm Debi Moore **Report Date:** 20-MAY-09 Contact: **Project Location: Project Manager:** Brent Barron, II Lab Id: 332665-005 332665-006 332665-007 332665-008 Analysis Requested Field Id: WEF3-003 CEF2-003 CEF3-003 SP1-001 Depth: 5 ft 7 ft 55 ft 0 ft Matrix: SOIL SOIL SOIL SOIL Sampled: May-08-09 00 00 May-08-09 00 00 May-08-09 00 00 May-08-09 00 00 Extracted: Anions by EPA 300 Analyzed: May-14-09 14 10 May-14-09 14 10 Units/RL: RL mg/kg RL mg/kg 50 7 130 218 Chloride 798 Extracted: May-14-09 15 45 BTEX by EPA 8021B Analyzed: May-15-09 00 07 Units/RL: RL mg/kg 0.0010 Benzene ND 0 0022 0 0020 Toluene 0.0036 0.0010 Ethylbenzene 0.0020 m,p-Xylenes 0 0122 o-Xylene 0 0072 0 0010 0 0194 0 0010 Total Xylenes Total BTEX 0 0252 0.0010 Extracted: **Percent Moisture** Analyzed: May-15-09 08 42 May-15-09 08 42 May-15-09 08 42 May-15-09 08 42 Units/RL: % RL % RL % RL % RL 10 47 Percent Moisture 8 10 1 00 10 88 1.00 1 00 1 46 1.00 Extracted: May-18-09 12 04 May-18-09 12 04 May-18-09 12 04 May-18-09 12 04 TPH By SW8015 Mod Analyzed: May-19-09 10 50 May-18-09 17 22 May-18-09 18 12 May-18-09 18 37 Units/RL: mg/kg RL mg/kg RL mg/kg RL mg/kg RL C6-C12 Gasoline Range Hydrocarbons ND 16.3 1130 168 149 168 409 76 1 39 5 3390 10300 C12-C28 Diesel Range Hydrocarbons 163 168 1400 168 76 1 C28-C35 Oil Range Hydrocarbons ND 163 193 168 907 16.8 894 76 1 Total TPH 39 5 163 4713 16397 16.8 11603 76 1 168

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing BRL - Below Reporting Limit

Brent Barron

Odessa Laboratory Director

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Version 1 007



## **Certificate of Analysis Summary 332665** Sport Environmental Services, PLLC, Midland, TX



**Project Name: Southwest Royalties** Project Id: Wilderspin Battery Date Received in Lab: May-13-09 03:40 pm

Contact: Debi Moore			Report Date:	20-MAY-09
Project Location:			Project Manager:	Brent Barron, II
	Lab Id:	332665-009	332665-010	
Analysis Requested	Field Id:	SP2-001	SP3-001	
	Depth:	0 ft	0 ft	
	Matrix:	SOIL	SOIL	
	Sampled:	May-08-09 00 00	May-08-09 00 00	
Anions by EPA 300	Extracted:			
	Analyzed:	May-14-09 14 10	May-14-09 14 10	
	Units/RL:	mg/kg RL	mg/kg RL	
Chloride		49 7 20 5	183 214	
BTEX by EPA 8021B	Extracted:	May-14-09 15 45	May-14-09 15 45	
	Analyzed:	May-15-09 00 29	May-15-09 00 50	
	Units/RL:	mg/kg RL	mg/kg RL	
Benzene		ND 0 0010	ND 0 0011	
Toluene		0 0423 0 0020	ND 0 0021	
Ethylbenzene		0 0526 0 0010	0 0199 0 0011	
m,p-Xylenes		0 2005 0 0020	0 0634 0 0021	
o-Xylene		0 1017 0 0010	0 0916 0 0011	
Total Xylenes		0 3022 0 0010	0 155 0 0011	
Total BTEX		0 3971 0 0010	0 1749 0 0011	
Percent Moisture	Extracted:			
	Analyzed:	May-15-09 08 42	May-15-09 08 42	
	Units/RL:	% RL	% RL	
Percent Moisture		2 34 1 00	6 65 1 00	
TPH By SW8015 Mod	Extracted:	May-18-09 12 04	May-18-09 12 04	
	Analyzed:	May-18-09 19 27	May-19-09 11 14	
	Units/RL:	mg/kg RL	mg/kg RL	
C6-C12 Gasoline Range Hydrocarbons		740 76 8	1250 80 3	
C12-C28 Diesel Range Hydrocarbons		11100 76 8	8290 80 3	
C28-C35 Oil Range Hydrocarbons		946 76 8	623 80 3	
Total TPH		12786 76 8	10163 80 3	

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Odessa Laboratory Director

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- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit.

RL Reporting Limit

\* Outside XENCO's scope of NELAC Accreditation.

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5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
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12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
842 Cantwell Lane, Corpus Christi, TX 78408	(361) 884-0371	(361) 884-9116



## Project Name: Southwest Royalties

York Orders : 332665	5, Samnle: 530032-1-BKS / B	KS Bai	Project IE	<b>):</b> Wilderspir x: Solid	n Battery	
Units: mg/kg	Date Analyzed: 05/14/09 21:36	SU	RROGATE RE	COVERY S	STUDY	
BTE	X by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R  D	Control Limits %R	Flags
1,4-Difluorobenzene		0 0300	0 0300	100	80-120	
4-Bromofluorobenzene		0 0309	0 0300	103	80-120	
Lab Batch #: 759032	Sample: 530032-1-BSD / B	SD Ba	tch: <sup>1</sup> Matri	x: Solid		
Units: mg/kg	Date Analyzed: 05/14/09 21:58	SU	RROGATE RE	ECOVERY S	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount  B]	Recovery %R [D]	Control Limits %R	Flags
1 4-Difluorobenzene		0.0299	0.0300	100	80-120	
4-Bromofluorobenzene		0 0294	0 0300	98	80-120	
Lab Batch #: 759032	Sample: 530032-1-BLK / B	LK Ba	teh: 1 Matri	v. Solid	<u> </u>	
Linits: mg/kg	Date Analyzed: 05/14/09 22:41	SU SU	RROGATE RE	ECOVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
14-Difluorobenzene	Anarytes	0.0261	0.0300	87	80-120	
4-Bromofluorobenzene		0 0198	0 0300	66	80-120	**
Lah Batch #• 759032	Sample: 332665-008 / SMI	) Ra	tch: 1 Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 05/15/09 00:07	SU	RROGATE RI	ECOVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
1,4-Difluorobenzene		0 0214	0 0300	71	80-120	**
4-Bromofluorobenzene		0 0272	0 0300	91	80-120	
Lab Batch #: 759032	Sample: 332665-009 / SMI	Ba	tch: 1 Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 05/15/09 00:29	su	RROGATE RI	ECOVERY	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount  B]	Recovery %R [D]	Control Limits %R	Flags
	Analytes				1	
1,4-Difluorobenzene	Analytes	0 0239	0 0300	80	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B



#### **Project Name: Southwest Royalties**

'ork Orders : 332665	, , ,	D.	Project II	): Wilderspin	1 Battery	
Lab Batch #: 139032	Sample: 332003-0107 SMI Date Analyzed: 05/15/09 00:50	SU	RROGATE RF	x: 500 ECOVERY S	STUDY	
BTE	X by EPA 8021B	Amount Found [A]	True Amount  B]	Recovery %R	Control Limits %R	Flags
	Analytes			ען		
1,4-Dıfluorobenzene		0 0231	0 0300	77	80-120	**
4-Bromofluorobenzene		0 1657	0 0300	552	80-120	**
Lab Batch #: 759032	Sample: 332747-003 S / MS	Bat	tch: I Matri	ix: Soil		
Units: mg/kg	Date Analyzed: 05/15/09 06:54	SU	RROGATE RE	ECOVERY S	STUDY	
BTEX	X by EPA 8021B Analytes	Amount Found [A]	True Amount  B	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene		0 0296	0 0300	99	80-120	
4-Bromofluorobenzene		0 0322	0 0300	107	80-120	
Lab Batch #: 759032	Sample; 332747-003 SD / N	1SD Ba	tch: <sup>1</sup> Matri	ix: Soil	<u>ı                                    </u>	
Units: mg/kg	Date Analyzed: 05/15/09 07:16	SU	RROGATE RE	ECOVERY	STUDY	
BTE	X by EPA 8021B Analytes	Amount Found  A]	True Amount  B]	Recovery %R  D	Control Limits %R	Flags
1,4-Dıfluorobenzene		0 0298	0 0300	99	80-120	
4-Bromofluorobenzene		0 0323	0 0300	108	80-120	
Lab Batch #: 759347	Sample: 530230-1-BKS / B!	KS Ba	tch: 1 Matri	ix: Solid	<u>.                                    </u>	
Units: mg/kg	Date Analyzed: 05/18/09 12:24	SU	<b>RROGATE RE</b>	ECOVERY S	STUDY	
TPH	By SW8015 Mod	Amount Found [A]	True Amount  B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane		106	100	106	70-135	
o-Terphenyl		46.2	50 0	92	70-135	
Lab Ratch #. 759347	Sample: 530230-1-BSD / B	SD Ba	toh: 1 Matri	<u>I</u> iv: Solid	1	
Units: mg/kg	Date Analyzed: 05/18/09 12:48	SU	RROGATE RI	ECOVERY	STUDY	
TPH 1	By SW8015 Mod Analytes	Amount Found [A]	True Amount  B]	Recovery %R  D	Control Limits %R	Flags
1-Chlorooctane		104	100	104	70-135	
o-Terphenyl		45 3	50 0	91	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B All results are based on MDL and validated for QC purposes



## Project Name: Southwest Royalties

Sample: 530230-1-BLK / Bl	LK Bat	Project II ch: <sup>1</sup> Matri	<b>):</b> Wilderspin x: Solid	1 Battery	
Date Analyzed: 05/18/09 13:13	SUI	RROGATE RI	ECOVERY	STUDY	
By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
	91.0	100	91	70-135	
	51 2	50 0	102	70-135	
Sample: 332665-004 / SMP	Bat	ch: <sup>1</sup> Matri	x: Soil	· · · · · · · · · · · · · · · · · · ·	
Date Analyzed: 05/18/09 16:57	SUI	RROGATE RI	ECOVERY	STUDY	
By SW8015 Mod	Amount Found [A]	True Amount  B	Recovery %R 1D1	Control Limits %R	Flags
Апагусея	01.2	100	01	70.125	
	51.6	50.0	103	70-135	
S. 1 222665 005 / SMP			L TOS	10135	
Date Analyzed: 05/18/00 17:22	Bat	RROGATE RI	ECOVERY	STUDY	
By SW8015 Mod	Amount Found	True Amount	Recovery	Control Limits	Flags
Analytes	[A]	B	[D]	70 K	
	89 1	100	89	70-135	
	50 7	50 0	101	70-135	
Sample: 332665-006 / SMP	Bat	ch: <sup>1</sup> Matri	ix: Soil		
Date Analyzed: 05/18/09 18:12	SUI	RROGATE RI	ECOVERY	STUDY	
By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
	88 5	100	89	70-135	
	49 9	50 0	100	70-135	
Sample: 332665-007 / SMP	Bat	tch: 1 Matri	ix: Soil		
Date Analyzed: 05/18/09 18:37	SUI	RROGATE RI	ECOVERY	STUDY	
	Amount	True		Control	
3y SW8015 Mod	Found [A]	Amount [B]	Recovery %R	Limits %R	Flags
By SW8015 Mod Analytes	Found [A]	Amount [B]	Recovery %R  D	Limits %R	Flags
	Sample: 530230-1-BLK / BI Date Analyzed: 05/18/09 13:13 by SW8015 Mod Analytes Sample: 332665-004 / SMP Date Analyzed: 05/18/09 16:57 by SW8015 Mod Analytes Sample: 332665-005 / SMP Date Analyzed: 05/18/09 17:22 by SW8015 Mod Analytes Sample: 332665-006 / SMP Date Analyzed: 05/18/09 18:12 by SW8015 Mod Analytes Sample: 332665-006 / SMP Date Analyzed: 05/18/09 18:12 by SW8015 Mod Analytes	Sample:530230-1-BLK / BLKBatDate Analyzed:05/18/09 13:13SUky SW8015 ModAmount Found [A]Amount Found [A]Analytes91.0Sample:332665-004 / SMPBatDate Analyzed:05/18/09 16:57SUky SW8015 ModAmount Found [A]Found [A]Analytes91.3Sample:332665-005 / SMPBatDate Analyzed:05/18/09 17:22SUBy SW8015 ModAmount Found [A]SUSy SW8015 ModAmount Found [A]SUBy SW8015 ModSample:332665-005 / SMP SuBate Analyzed:05/18/09 17:22SUBy SW8015 ModSuSUSy SW8015 ModSuSUSy SW8015 ModSuSuAnalytes89.150.7Sample:332665-006 / SMP SuBatDate Analyzed:05/18/09 18:12SUBy SW8015 ModAmount Found [A]SUBy SW8015 ModSuSUBy SW8015 ModSuSUBy SW8015 ModAmount Found [A]SuAnalytes88.549.9Sample:332665-007 / SMP BatBatDate Analyzed:05/18/09 18:37SU	Sample:         530230-1-BLK / BLK         Batch:         1         Matri           Date Analyzed:         05/18/09         13:13         SURROGATE         RI           by SW8015 Mod         Amount Found [A]         True Amount [A]         True Amount [B]           Analytes         91.0         100           Sample:         332665-004 / SMP         Batch:         1         Matri           Date Analyzed:         05/18/09         16:57         SURROGATE         RI           By SW8015 Mod         Amount Found [A]         True Amount [A]         IB]         100           Analytes         91.3         100         51.6         50.0           Sample:         332665-005 / SMP         Batch:         1         Matri           Date Analyzed:         05/18/09         17:22         SURROGATE         RI           Sy SW8015 Mod         Amount [A]         True Amount [A]         True Amount [A]         IB]           Analytes         89.1         100         50.7         50.0           Sample:         332665-006 / SMP         Batch:         1         Matri           Date Analyzed:         05/18/09         18:12         SURROGATE         RI           Sy SW8015 Mod	Project ID: WilderspinSample:530230-1-BLK / BLKBateh:1Matrix:SolidDate Analyzed:05/18/09 13:13SURROGATERecoveryky SW8015 ModAmount [A]True [B]Recovery %RAnalytes91.010091Sample:332665-004 / SMPBatch:1Matrix:Bate Analyzed:05/18/09 16:57SURROGATERecovery %RBate Analyzed:05/18/09 16:57SURROGATERecovery %RBate Analyzed:05/18/09 16:57SURROGATERecovery %RAnalytes91.310091Date Analyzed:05/18/09 17:22SURROGATERecovery %RBateh:1Matrix:SoilDate Analyzed:05/18/09 17:22SURROGATERecovery %RBateh:1Matrix:SoilDate Analyzed:05/18/09 17:22SURROGATERecovery %RBateh:1Matrix:SoilDate Analyzed:05/18/09 18:12SURROGATERecovery %RBateh:1Matrix:SoilDate Analyzed:05/18/09 18:12SURROGATERecovery %RBateh:1Matrix:SoilDate Analyzed:05/18/09 18:12SURROGATERecovery %RBateh:1Matrix:SoilDate Analyzed:05/18/09 18:13Amount FoundAmount Amount FoundAmount Amount FoundBateh:1Matrix:SoilD	Sample:         530230-1-BLK / BLK         Bate h:         1         Matrix:         Solid           Date Analyzed:         05/18/09         13:13         SURROGATE         RECOVERY         SUDY           by SW8015 Mod         Amount Found [A]         True Amaount [B]         Recovery %R [D]         Control Limits %R           Analytes         91.0         100         91         70-135           Sample:         332665-004 / SMP 332665-004 / SMP         Batch:         1         Matrix:         Soil           Date Analyzed:         05/18/09         16:57         SURROGATE         Recovery 6%R [D]         Control Limits           Sw8015 Mod         Amount Found [A]         True [B]         Recovery %R [D]         Control Limits           Analytes         91.3         100         91         70-135           Sample:         332665-005 / SMP Batch:         1         Matrix: Soil           Date Analyzed:         05/18/09         170-135         30           Sample:         332665-006 / SMP Batch:         1         Matrix: Soil           Sw8015 Mod         Amount Found [A]         True [D]         Recovery %R [D]         Solid           Sw8015 Mod         Amount Found [A]         True [D]         Recovery %R [D]         Co

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B All results are based on MDL and validated for QC purposes



## **Project Name: Southwest Royalties**

Work Orders : 332665	5, 	_	Project II	D: Wilderspir	n Battery							
Lab Batch #: /5934/	Sample: 332665-009 / SMP	Batch:         1         Matrix:         Soli           7         SURROGATE RECOVERY STUDY										
Units: mg/kg	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags						
	Analytes			[D]								
1-Chlorooctane		85 6	100	86	70-135							
o-Terphenyl		48 2	50 0	96	70-135							
Lab Batch #: 759347	Sample: 332562-004 S / MS	5 Ba	tch: <sup>1</sup> Matri	x: Soil								
Units: mg/kg	Date Analyzed: 05/18/09 20:17	SURROGATE RECOVERY STUDY										
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery ~ %R [D]	Control Limits %R	Flags						
1-Chlorooctane		103	100	103	70-135							
o-Terphenyl		45.8	50 0	92	70-135							
Lab Batch #: 759347	Sample: 332562-004 SD / N	ASD Ba	toh:   Matri	v. Soil	I							
Units: mg/kg	Date Analyzed: 05/18/09 20:42	SU SU	RROGATE RI	ECOVERY	STUDY							
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags						
1-Chlorooctane		106	100	106	70-135							
o-Terphenyl		45 7	50 0	91	70-135							
Lab Batch #: 759347	Sample: 332665-008 / SMP	Ba	tch: 1 Matri	ix: Soil								
Units: mg/kg	Date Analyzed: 05/19/09 10:50		<b>RROGATE RE</b>	ECOVERY	STUDY							
ТРН	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags						
L Chloroostena	Analytes	80.0	100		70.125							
o-Terphenyl		54.5	50.0	90	70-135							
Leb Betch #: 759347	Sample: 332665-010 / SMP		tahı 1 Matri	vi Soil	10 133							
Lau Batel #: 157547	Date Analyzed: 05/19/09 11:14	SU	RROGATE RI	COVERY	STUDY							
TPH	By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags						
1-Chlorooctane		98 1	100	98	70-135							
o-Terphenyl		54 2	50 0	108	70-135	······						

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits, data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] = 100 \* A / B




## Project Name: Southwest Royalties

Work Order #: 332665		Рі	roject ID:		Wilderspin	n Battery
Lab Batch #: 759013	Sample: 759013-	1-BKS	Matr	ix: Solid		
Date Analyzed: 05/14/2009	Date Prepared: 05/14/20	)09	Analy	st: BEV		
<b>Reporting Units:</b> mg/kg	Batch #: 1	BLANK /	BLANK SPI	KE REG	COVERY S	STUDY
Anions by EPA 300	Blank Result	Spike Added	Blank Spike	Blank Spike	Control Limits	Flags
Analytes		[B]	Result [C]	%R [D]	%R	
Chloride	ND	10 0	9 40	94	90-110	

Blank Spike Recovery [D] = 100\*[C]/[B] All results are based on MDL and validated for QC purposes BRL - Below Reporting Limit

Version 1 007







## Project Name: Southwest Royalties

Work Order #: 332665 Analyst: ASA	D	ate Prepai	red: 05/14/200	09			Proj Date Ai	ject ID: \ nalyzed: ()	Vilderspin 1 05/14/2009	Battery		
Lab Batch ID: 759032 Sample: 53003	32-1-BKS	Bate	h #: 1		Matrix: Solid							
Units: mg/kg		BLAN	K/BLANKS	SPIKE / E	BLANK S	PIKE DUP	LICATE	RECOVE	ERY STUD	Y		
BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag	
Analytes		[B]			[E]	Result [F]	[G]					
Benzene	ND	0 1000	0 1032	103	01	0 1006	101	3	70-130	35		
Toluene	ND	0 1000	0 1053	105	01	0 1031	103	2	70-130	35		
Ethylbenzene	ND	0 1000	0 1073	107	01	0 1049	105	2	71-129	35		
m,p-Xylenes	ND	0 2000	0 2286	114	0 2	0 2231	112	2	70-135	35		
o-Xylene	ND	0 1000	0 1133	113	01	0 1104	110	3	71-133	35		
Analyst: BHW	D	ate Prepar	ed: 05/18/200	09			Date A	nalyzed: (	5/18/2009			
Lab Batch ID: 759347 Sample: 53023	0-1-BKS	Bate	h #: 1					Matrix: S	Solid			
Units: mg/kg		BLAN	K/BLANK	SPIKE / H	BLANK S	PIKE DUP	LICATE	RECOVE	ERY STUD	Y		
TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
C6-C12 Gasoline Range Hydrocarbons	ND	1000	1070	107	1000	1080	108	1	70-135	35		
C12-C28 Diesel Range Hydrocarbons	ND	1000	1030	103	1000	1030	103	0	70-135	35		

Relative Percent Difference RPD = 200\*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100\*(C)/[B]Blank Spike Duplicate Recovery [G] = 100\*(F)/[E]All results are based on MDL and Validated for QC Purposes



## Form 3 - MS Recoveries



## **Project Name: Southwest Royalties**

Work Order #: 332665

Lab Batch #: 759013			Pro	ject ID	: Wilderspin	Battery
Date Analyzed: 05/14/2009	Date Prepared:	05/14/2009	9 4	Analyst:	BEV	
<b>QC- Sample ID:</b> 332660-001 S	Batch #:	1		Matrix:	Soil	
Reporting Units: mg/kg	MAT	RIX / MA	TRIX SPIKE	RECO	VERY STĪ	DY
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]	101	1-1		
Chloride	5290	2190	7270	90	80-120	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/Belative Percent Difference [E] = 200\*(C-A)/(C+B)Il Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Version 1 007



Form 3 - MS / MSD Recoveries

## **Project Name: Southwest Royalties**



Work Order # : 332665						Project II	D: Wilders	pin Batte	ry		
Lab Batch ID:         759032         Q           Date Analyzed:         05/15/2009         I	C- Sample ID: Date Prepared:	332747- 05/14/2	-003 S 009	Ba An	tch #: alyst:	l Matrix ASA	k: Soil				
Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
BTEX by EPA 8021B	Parent Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	ND	0 1017	0 0785	77	0 1017	0 0816	80	4	70-130	35	
Toluene	ND	0 1017	0 0721	71	0 1017	0 0775	76	7	70-130	35	
Ethylbenzene	ND	0 1017	0 0490	48	0 1017	0 0637	63	27	71-129	35	X
m,p-Xylenes	0 0035	0 2033	0 1438	69	0 2033	0 1638	79	14	70-135	35	X
o-Xylene	0 0067	0 1017	0 0788	71	0 1017	0 0885	80	12	71-133	35	
Lab Batch ID: 759347 Q	C- Sample ID:	332562	•004 S	Ba	tch #:	1 Matrix	k: Soil				
Date Analyzed: 05/18/2009	Date Prepared:	05/18/2	009	An	alyst:	BHW					
Reporting Units: mg/kg		М	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY S	STUDY		
TPH By SW8015 Mod	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Spiked Sample %R	Spike Added	Duplicate Spiked Sample Result [F]	Spiked Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
C6-C12 Gasoline Range Hydrocarbons	ND	1010	1010	100	1010	1020	101	1	70-135	35	
C12-C28 Diesel Range Hydrocarbons	ND	1010	988	98	1010	1010	100	2	70-135	35	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/BRelative Percent Difference RPD = 200\*[(C-F)/(C+F)] Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit





## **Project Name: Southwest Royalties**

Work Order #: 332665

Lab Batch #: 759013           Date Analyzed: 05/14/2009         D           QC- Sample ID: 332660-001 D           Reporting Units: mg/kg	ate Prepared: 05/1 Batch #: 1 SAMPLE	4/2009 / <b>SAMPLE</b>	Project I Analy Matr DUPLIC	D: Wildersp st: BEV ix: Soil ATE REC	in Battery
Anions by EPA 300 Analyte	Parent Sample Result  A	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	5290	5070	4	20	
Lab Batch #: 759004 Date Analyzed: 05/15/2009 D QC- Sample ID: 332666-001 D	ate Prepared: 05/1 Batch #: 1	l 5/2009 I	Analy Matr	st: BEV ix: Soil	
Reporting Units: %	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
Percent Moisture Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	191	193	1	20	

Spike Relative Difference RPD 200 \* | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes BRL - Below Reporting Limit

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#### Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

Client	Sport Env.
Date/ Time	5 13 09 15 40
Lab ID #	332465
Initials	GL

#### Sample Receipt Checklist

				Client Initials
#1	Temperature of container/ cooler?	(Yes)	No	3.0 °C
#2	Shipping container in good condition?	Yes	No	
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	<not present?<="" td=""></not>
#4	Custody Seals intact on sample bottles/ container?	Yes	No	CNot.Present
#5	Chain of Custody present?	Ves>	No	
#6	Sample instructions complete of Chain of Custody?	(Yes)	No	
#7	Chain of Custody signed when relinquished/ received?	(Yes>	No	
#8	Chain of Custody agrees with sample label(s)?	Yes	No	JD written on Cont / Dd
#9	Container label(s) legible and intact?	Yes	No	Not Applicable
#10	Sample matrix/ properties agree with Chain of Custody?	(Yes)	No	
#11	Containers supplied by ELOT?	(Yes)	No	
#12	Samples in proper container/ bottle?	(Yes)	No	See Below
#13	Samples properly preserved?	(Yes)	No	See Below
#14	Sample bottles intact?	Ves	No	
#15	Preservations documented on Chain of Custody?	(Yes)	No	
#16	Containers documented on Chain of Custody?	(Yes)	No	
#17	Sufficient sample amount for indicated test(s)?	(Yes)	No	See Below
#18	All samples received within sufficient hold time?	Yes	No	See Below
#19	Subcontract of sample(s)?	Yes	No	Not Applicable>
#20	VOC samples have zero headspace?	(Yes)	No	Not Applicable

#### Variance Documentation

-

Date/ Time

Contact Regarding

11

!

Corrective Action Taken.

Check all that Apply

#### See attached e-mail/ fax

Contacted by

Client understands and would like to proceed with analysis Cooling process had begun shortly after sampling event

#### Gracie Avalos

From:
Sent:
To:
Subject:

Chuck Daniels [chuck@sportenvironmental.com] Wednesday, May 20, 2009 9:39 AM gracie avalos@xenco.com SWR Wilderspin ٠

I confirm that sample point CEF2-003, sample depth needs to be changed to 7 feet

Chuck Daniels 432-661-5969

**`**- -

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Southwest Royalties, Inc. Wilderspin Federal Battery S-11, T-21S, R-27E Eddy County, New Mexico

## HYDROGEOLOGICAL REPORT

Wilderspin Federal Battery

Southwest Royalties Inc. Wilderspin Federal Battery Oil Spill S-11, T-21S, R-27E 32.496, -104.162667 Eddy County, NM

Ami	Amigo Input Parameters											
Model Parameter	Value	Source of Value										
Climate	Arid, Hot	Pearl, NM Station (1946 – 1992)										
Distance (ft) to potential receptor (water well)	NA	No water well within 1 mile of site (NMOSE & USGS Databases)										
Source Width	64 ft	Site Data (conservatively used Maximum diameter of site)										
Maximum Length of Spill in Direction of Groundwater Flow	128 ft	Site Data (conservatively used Maximum diameter of site)										
Background Chloride Concentration in Aquifer	712 mg/L	Average of 30 closest samples (New Mexico Water and Infrastructure Data System)										
Aquifer Porosity	25 %	Sandy soils typically range 25-50%; Lower value is more conservative										
Depth to Groundwater	147 ft	Depth to groundwater (interpolation between two nearest water wells)										
Aquifer Thickness	10 ft	Unknown. Conservative value as thinner aquifers allow less dilution.										
Slope of Water Table	0.001 ft/ft	Unknown. Conservative value as a flatter water table allows less dilution.										
Hydraulic Conductivity	10 ft/d	Unknown. Conservative value as a smaller hydraulic conductivity allows less dilution.										
Longitudinal Dispersivity	12.8	Professional Judgment; 10% of spill length										
Transverse Dispersivity	1.28	Professional Judgment; 10% of longitudinal value										
Average Chloride Load	1.63 kg/m <sup>2</sup>	Calculated from site data using Massload spreadsheet										
Plant Uptake Trigger	1%	Professional Judgment Conservative Assumption										
Surface Layer Lithology	Med. Sand	Lithology observed on site										
Soil Profile at Depth (Ratio - Caliche : Medium Sand )	1:5	Closest lithologic match to Quaternary Alluvial Deposits										

References: Office of State Engineers for well logs within a 5 mi radius.

Mass load calculated using MASSLOAD for AMIGO.



User input (not both)	Depth to Water Meters Feet	aletter 147	4480 56
User Input (optional)	User provided moist bulk density (rho_m)	kg/M^3	
			1550 kg/m^3 - Moist bulk density used in calculations
Hear Inpute (antional)	Dry Bulk Density (rho, 1415 is default value) =	1415 kg/m^3	
User inputs (optional)	Vol Moist Content (Theta_v, 0 135 is default value) =	0 135	
	Calculated moist bulk density (rho_m) =	1550 kg/m^3	

	1		If a Composite S	ample from a De	ptn interv	val			Grab	Samples			
	Sample	- Jak Zriestin	Feet	17 8 . 30		Meters		. Z	1	Z	Z	CH. CTAS.	
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	(increasing	Top of	"Bottom'of		Top of	Bottom of					Assigned		
	depth)	Sample	Sample	Ave Depth	Sample	Sample	Ave Depth	Feet	l	Meters	depth in cm	maka	
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User Input	Boring 2		0 00	0 00	
(Optional)	Boring 3	]	0 00	0 00	
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Dro Aroa	Boring 5		0 00	0 00	
FIU Alea	Boring 6		0 00	0 00	
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	Boring 10		0 00	0 00	
	Sum of weights	100		1	
Output for AMIGO	Averaged Chloride	noles	1.69	kg/m^2	

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Southwest Royalties Inc. Wilderspin Federal Tank Battery S-11, T-21S, R-27E Eddy County, NM

## **Introduction**

A review of available literature regarding the geology and hydrology in the area was performed to characterize the local and regional hydrogeology of the Wilderspin Federal tank battery site operated by Southwest Royalties. The land use in the area is primarily used for oil and gas exploration as well as mining of potash and other salts containing high levels of chloride which are present on the surface and at shallow depths.

## **Geologic Setting**

The geologic map depicted as Figure 1 shows the surface geology of the site to consist of Quaternary eolian (Qe) sands which were deposited in topographically low areas. Beneath the Quaternary Eolian sand are Quaternary Alluvium (Qa) and/or older alluvial deposits (Qoa). The older alluvial deposits include scattered lacustrine, playa, and alluvial deposits of the Gatuna Formation. An unconformity exists at the base of the Quaternary deposits as they are underlain by Permian-aged Salado Formation (Psl). The Salado Formation consists of evaporate sequences (mostly halite and potash) which have been commercially mined in this area of Eddy County. It is important to note that the Wilderspin Federal Tank Battery site is close to surficial salt deposits of the Salado Formation where it outcrops less than a mile to the south and west of the site. Alkali Lake, a natural playa lake within the Salado Formation, is located less than two miles northwest of the site.

## **Hydrologic Setting**

Based on database information obtained from the New Mexico State Engineer Office (NMSEO) website, there are no water supply wells located within one mile from the site. A water well located approximately 1.6 miles west and another 2 miles northeast appear to be completed within the Alluvial Deposits (Qoa) with reported water table depths of 120 ft and 186 ft, respectively, as shown in Figure 2. Linear interpolation of those values results in a water table depth of approximately 147 ft beneath the site.

No water quality data for the site is available but, based on the proximity of the Salado Formation as an outcrop and immediately underlying any water-bearing alluvium, dissolved solids are likely excessive such that the groundwater is not suitable for human consumption, livestock watering or irrigation use, which may explain the lack of water wells in the area. Well yields are also expected to be low. Some wells exist because they were initially drilled for oil and gas exploration and later converted for brine water supply for drilling operations which would be the only beneficial use for shallow groundwater in the area. Water well records of nearby wells are included in Attachment A.





Southwest Royalties Inc. Wilderspin Federal Tank Battery S-11, T-21S, R-27E Eddy County, NM

## **References**

Hendrickson, G. E., 1952, *Geology and Ground-Water Resources of Eddy County, New Mexico*, New Mexico Bureau of Mines and Mineral Resources, Ground-Water Report 3.

Kelley, Vincent C., 1971, *Geology of the Pecos country, southeastern, New Mexico*, New Mexico Bureau of Mines and Mineral Resources, Memoir 24.

New Mexico Bureau of Geology and Mineral Resources, 2003, *Geologic Map of New Mexico*, 1:500,000

Richey, Steven F., 1985, *Geohydrology of the Delaware Basin and Vicinity, Texas and New Mexico*, U. S. Geological Survey Water-Resources Investigations Report 84-4077.

## ATTACHMENT A

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## WATER WELL RECORDS OBTAINED FROM

## NEW MEXICO OFFICE OF THE STATE ENGINEER DATABASE

North Cedar Hills Unit No. 1 194381

## SANTA FE

## WELL RECORD

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

Section 1

Section 1		(A) Owner of well Humble Oil and	Refining Co.
		Street and Number P. O. Box 1650	)
		City Hobbs	State <u>New Mexico</u>
		Well was drilled under Permit No. C- NU 1/1/1/14 SE 4 of Section (B) Drilling Contractor Abbott Bro	-1333 and is located in the 5 Twp. 21S Rge. 27E others License No. WD-46
	0	Street and Number P. U. Box 537	State New Hardon
		City 40000	State New Merico
		Drilling was commenced May 4	1966
		Drilling was completed May11	19 <i>66</i>
(Plat of 640 ac	eres)		

Section 2

#### PRINCIPAL WATER-BEARING STRATA

). ).	Depth	in Feet	Thickness in	Description of Water-Bearing	Formation
NO.	From	To	Feet		い で あ
1	350	363	13	anhydrite, broken lime	1.55
2					
3	1				
4					THE
5		1			7.77 <b>F</b>
<b>C</b>					P. C

Section 3				RECOR	U OF CAS			
Dia Pounds		Threads	D	Depth		Tupe Shoe	Perforations	
in.	ft.	in	Top	Bottom	reet	Type Shoe	From	То
7	20	10	0	312	312	Open	попе	
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					·········			

Section 4

#### RECORD OF MUDDING AND CEMENTING

Depth From	in Feet	Diameter Hole in in.	Tons Clay	No. Sacks of Cement	Methods Used

Section 5

## PLUGGING RECORD

Name of Plugging Contractor		License No	····
Street and Number			
Ton's of Clay used	Tons of Roughage used	Type of roughage	
Plugging method used	ار بر این	Date Plugged	19
Plugging approved by:	*/ ``·(	Cement Plugs were placed as	s follows:

Basin Supervisor	No.	Depth From	of Plug	No. of Sacks Used
FOR USE OF STATE ENGINEER ONLY				
Date Received JENICHE TUME				
12 :8 MA 82 YAM 8361				
File No. C-1333 Use Qua	1	L	ocation No.	21.27.5.411

Section 6

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LOG OF WELL

Depth in Feet		Thickness				
From	То	in Feet	Color	Type of Material Encountered		
0	1	1		soil		
1	30	29		caliche		
30	180	150		gravel and lime		
180	181	1		water sand, light		
181	250	69	red	shale and gravel		
250	300	50	red	shale		
300	310	50	grey	lime		
310	350	40		lime, broken		
350	363	13	•·	anhydrite, broken lime		
363	400	37	·	broken lime		
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The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

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Murell abbots Well Driller

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Form	WR-23
x 01 111	111-200

## North Ced Hills STATE ENGINEER OFFICE

194387

## SANTA FE

## WELL RECORD , PLUGGING

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the ne ac re

Section	1
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Section 1	L									
Г <b></b>	· //		(A)	Owner	of well	Humbl	e Oil & Refi	ining Compa	ny	
			Stre	et and :	Number.	P. O.	Box 1650			
			City		Hobb	8			ew Mexico	
			Well	l was d	rilled ur	der Perr	nit No. C-133.	3and	is located in the	
					VE	SE 1	4 of Section 5		Rge. 27E.	
		<u></u>	(B)	Drillin	g Contra	actor		Licer	ise No	
	.	0	) Stre	et and	Number.					
			City					State		
1		1	Drill	ling wa	as comm	enced				
۲			Dril	ling wa	s comple	eted				
() 	-lat of 640 a	cres)	1		11		Made 1 days	ut _ f 11		
Elevatio	n at top of	casing in	n ieet abo	ove sea	level		lotal dep	th of well		
State wi	iether wel	l is shalle	ow or art	esian			Depth to wat	er upon comple	tion	
Section 2	2			PRINC	IPAL WA	ATER-BEAN	RING STRATA			
No	Depth in	Feet	Thicknes	ss in		D	escription of Water-	Bearing Formatio	n	
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Section	3				RECOR	D OF CA	SING		ICE	
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	<u> </u>									
						1			1	
Section	1									
		Diama		Town	No Se	otra of		······		
From	To	- Hole ir	n in.	Clay	Cen	nent		Methods Used		
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				<b>_</b>						
Section a	5				PLUGO	SING REC	CORD			
Name of	f Plugging	Contrac	tor	A 2	bott 1	Brothe	r8	License No	WD-46	
Street a	nd Numbe	r <i>P. O</i>	Box	637		City	Hobbe	State New	Nextoo	
Tons of	Clay used		Ton	s of Ro	ughage 1	used	Тур	e of roughage		
					-	-		, <b>– –</b>		

Depth of Plug

Use  $0 \omega \rho$  Location No2/27.5.411

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No. of Sacks Used

No.

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Hungh A Basin Supervisor

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File No. U-1333

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FOR USE OF STATE FINGINEER ONLY

STILL ENGINE STILLS

1.1 14

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Date Received 34 DZ NUF 1961

S	ection	6

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LOG OF WELL

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The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Well Driller

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 محمد محمد محمد محمد محمد محمد محمد محمد	IMPOBTANT-BEAD INSTBUCTIONS ON BACK BEFORE FILLING OUT THIS FORM
	APPLICATION FOR PERMIT SUIT
	To Appropriate the Underground Waters of the State of New Mexico
-	CARLSBAD UNDERGROUND WATER BASIN
	Application No. <u>C-507</u> Book C-3 Date Received September 4, 1953
-	1. Name of applicant R. O. Dinwiddle
I	Postoffice address R. C. BOX 689
, ×	2 Source of water supply Artegian from Yates Sand Herizon
1 1	(state whether artesian or shallow ground water basin)
е. Х	located in (name of underground stream, valley, artesian basin, etc.)
	a. The well is 3035 located in the SW 14, NE 14, NW 27 Fast
	or section Township CL NUMYM, Range C Range N.M.
	4. Description of well: driller Beadle & Yates: depth 25% drilled
	diamenter (outside) of casing
	Electric Pewered Turbine
-	
	5. Quantity of water to be appropriated and beneficially used 3 acre feet per annum (feet depth of acre feet per acre)
	forDemestic purp
•	6. Acreage to be irrigated <u>laGre maximum</u> , a
1.2.7	located and described as follows (describe only lands to be irrigated):
	Acres Subdivision Soc. Twp. Range Irrigated Owner
	Does net apply
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	(Note: lecation of well and acreage to be brigated must be shown on ghat on reverse side.)
	(Note: leastion of well and acreage to be irrigated must be shown on gfat on reverse side.)  7. Time required to commence construction
	(Note: lecation of well and acreage to be irrigated must be shown on giat on reverse side.)  7. Time required to commence construction. Neffe. Time required to complete the works. 1 Year Time required to fully apply water to behalicial use. 1 Year
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	Date returned for c	orrection			Date of app	oroval	April 1	1, 1957	
	This application	n is approved :	for		r (3 a	•		acre feet of water	•
	subject to all prior	valid and exist	ting rights t	o the use of	the waters	of said under	ground sou	urce and provided that	:
	the applicant comp	lies with all rul	les and regu	lations of th	e State Eng	neer vertaini	ng to the d	rilling of wells	
	Appropriatio	n of water	to be l	imited a	t all tim	es to 3°a	cre fee	t per annum for	
	domestic pur	poses and	the irri	gation o	f not mor	e than 1	acre of	non-commercial	
	garden.								$\frown$
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	Works shall be	completed and	proofs filed	on or befor	e	April	JU, 193	<u>u</u>	
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	This is to certif	fy that I have	examined th	ne above app	lication for	permit to app	prop <mark>riate</mark> tl	he underground waters	3
	of the State of Ne	w Mexico and	hereby app	rove the sam	me subject to	the foregoin	g provision	s and conditions.	
	Witness my ha	nd and seal th	uis1	lth	-day of	Apri	1	, A.D., 19 <u>57</u>	•
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SOUTHWESTERN PUBLISHING CO., SANTA FE. N. M

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File Number:
2-16838
NEW MEXICO OFFICE OF THE STATE ENGINEER APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES
1. APPLICANT Name: UNIT PETROLEUM Work Phone: 505-885-4195
Contact: MIKE BURTON Home Phone:
Address: 1108 WEST PIERCE
City: StateNM Zip: 88220
2. LOCATION OF WELL (A. B. C. or D required, E or F if known)
A. JW 1/4 NW 1/4 SE 1/4 Section: 3 Township: 21S Range: 27E N.M.P.M. in County.
B. X =feet, Y =feet, N.M. Coordinate SystemGrant.
U.S.G.S. Quad Map
C. Latitude:dms Longitude:dms
D. East (m), North (m), UTM Zone 13, NAD (27 or 83)
E. Tract No, Map No of the Hydrographic Survey
F. Lot No, Block No of Unit/Tract of the Of the County.
G. Is this well within a municipality? if yes, where?
H. Give State Engineer File Number if existing well: C-1142
I. On land owned by (required): BLM
3. USE OF WATER (check use applied for) — One household, non-commercial trees, total of one acre. DIALTER REQUIRED INFITER REQUIRED SFE CONDITION OF APPROVAL No. 3, 5A
Livestock watering.
Note: If any of the following items are marked, give the name and nature of business or use under item 5 of the additional statements or explanations section.
More than one household, non-commercial trees, lawns and gardens not to exceed a total of one acre.
Drinking and sanitary purposes and the irrigation of non-commercial trees, shrubs and lawns not to exceed one acre in conjunction with a commercial operation.
X Prospecting, mining or drilling operations to discover or develop natural resources.
Construction of public works, highways and roads.
Trn Desc:       File Number:       C-1142(1-1)         Log Due Date:       Trn Number:       299731         Form: wr-01       page 1 of 4

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File Number: NEW MEXICO OFFICE OF THE STATE ENGINEER APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES 4. WELL INFORMATION (Change, Repair, Drill, Test, Supplement) Name of well driller and driller license number: Approximate depth \_\_\_\_\_ feet; Outside diameter of casing \_\_\_\_\_ inches. \_\_\_\_ Change Location of existing well or replacement well \_\_\_\_ Repair or Deepen: \_\_\_\_ Clean out well to original depth \_\_\_\_ Deepen well from \_\_\_\_ to \_\_\_\_ feet \_\_\_\_ Other \_\_\_\_ \_\_\_\_ Drill and test a well for \_\_\_\_\_ use. \_\_\_\_ Supplemental well 5. ADDITIONAL STATEMENTS OR EXPLANATIONS: ANATIONS: Project is Vates State #2 **ACKNOWLEDGEMENT FOR NATURAL PERSONS** (I, We) MIKE BURTON \_\_\_\_\_ affirm that the (Please Print) foregoing statements are true to the best of (my, our) knowledge and belief. Mich Burton Applicant Signature Applicant Signature \_\_\_\_\_ Trn Desc: Log Due Date: Form: wr-01 File Number: \_\_\_\_\_ Trn Number: \_\_\_\_\_ page 2 of 4

## NEW MEXICO STATE ENGINEER OFFICE APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES

## GENERAL CONDITIONS OF APPROVAL (A thru I)

- A The maximum amount of water that may be appropriated under this permit is 3 acre-feet in any year.
- B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated. A licensed driller shall not be required for the construction of a driven well; provided, that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter (Section 72-12-12).
- C Driller's well record must be filed with the State Engineer within 10 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.
- D The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.
- E If the well under this permit is used at any time to serve more than one household or livestock in a commercial feed lot operation, or for drinking and sanitation purposes in conjunction with a commercial operation, the permittee shall notify the State Engineer Office in writing.
- F In the event this well is combined with other wells permitted under Section 72-12-1 New Mexico Statutes Annotated, the total outdoor use shall not exceed the irrigation of one acre of non-commercial trees, lawn, and garden, or the equivalent outside consumptive use, and the total appropriation for household and outdoor use from the entire water distribution system shall not exceed 3 acre-feet in any year.
- G If artesian water is encountered, all rules and regulations pertaining to the drilling and casing of artesian wells shall be complied with.
- H The amount and uses of water permitted under this Application are subject to such limitations as may be imposed by the courts or by lawful municipal and county ordinances which are more restrictive than applicable State Engineer Regulations and the conditions of this permit.

Trn Desc: <u>C 01142 (T-1)</u> Log Due Date: \_\_\_\_\_ Form: wr-01 File Number: <u>C 01142</u> Trn Number: <u>289731</u>

page: 1

## NEW MEXICO STATE ENGINEER OFFICE APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES

#### GENERAL CONDITIONS OF APPROVAL (Continued)

I The permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

## SPECIFIC CONDITIONS OF APPROVAL

- 3 Appropriation and use of water under this permit shall not exceed a period of one year from the date of approval.
- 5A A totalizing meter shall be installed before the first branch of the discharge line from the well and the installation shall be acceptable to the State Engineer; the Engineer shall be advised of the make, model, serial number, date of installation, and initial reading of the meter prior to appropriation of water; pumping records shall be submitted to the District Supervisor for each calendar month on or before the 10th day of the following month.

Meter report will be submitted when project is terminated if less than thirty days and upon completion of the project.

#### ACTION OF STATE ENGINEER

This application is approved for the use indicated, subject to all general conditions and to specific conditions listed above.

Witness my hand and seal this 09 day of Dec A.D., 2003

John R. D Antonio, Jr., P.E., State Engineer

Mike Stapleton

The amount, uses and locations of domestic water wells permitted under 72-12-1 (NMSA) are subject to such limitations as may be imposed by the courts or by lawful municipal and county ordinances which are more restrictive than applicable State Engineer Regulations and the conditions of this permit.

Trn Desc: <u>C 01142 (T-1)</u> Log Due Date: \_\_\_\_\_ Form: wr-01 File Number: <u>C 01142</u> Trn Number: <u>289731</u> John R. D Antonio, Jr., P.E. State Engineer



Roswell Office 1900 WEST SECOND STREET ROSWELL, NM 88201

## STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER

Trn Nbr: 289731 File Nbr: C 01142 (T-1) Well File Nbr: C 01142

Dec. 09, 2003

UNIT PETROLEUM C/O MIKE BURTON 1108 WEST PIERCE CARLSBAD, NM 88220

Greetings:

The well driller's record for the above numbered well has been received in this office indicating your well has been completed.

Your permit was granted with the condition that a meter be installed and meter readings submitted to this office. A copy of your permit is enclosed for your information.

Per Condition 5A, please advise this office within 30 days, on the attached form, of the make, model, serial number, date of installation, and initial reading of the meter prior to appropriation of the water.

If you have any questions, please feel free to contact us.

Sincerely,

M. (1/UNi); (1) Mike Stapleton (505) 622-6467

> Enclosure cc: Santa Fe Office

wellcon5

# 196997 WR-16

145.

## APPLICATION TO APPROPRIATE UNDERGROUND WATERS IN ACCORDANCE WITH SECTION 75-11-1 NEW MEXICO STATUTES

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(Three Acre Feet Per Annum)

1.	Name and Address of Applicant: File No. C-1142
	Gerald Elmore
	Box 696
	Carlsbad, New Mexico
2.	Describe well location under one of the following subheadings
	a. <u>1/1 NW 1/2 SE 1/4</u> of Sec. <u>3</u> Twp. <u>21 S. Rge 27 E. N M. P. M., in</u> County
	b. Tract No of Map No Of the District
	c Lot No of Block No of the Subdivision, of record in County.
	d. (Describe location by direction and distance from known land marks)
3	Give street address or route and box No. of property upon which well is to be located, if possible:
4	Name of driller, if known:
5	Approximate depth of well (if known) 100feet; outside diameter of casing 7inches
6	Use of water (check appropriate box or boxes):
	Household, trees, lawn and non-commercial garden not to exceed 1 acre.
	X Livestock watering.
	Drinking and sanitary purposes or the irrigation of non-commercial trees, shrubs and lawing in conjunction with a commercial operation
	Prospecting, mining or drilling operations to discover or develop natural resources. $\frac{1}{2}$
	Construction of public works, highways and roads.
	If any of the last three were marked, give name and nature of business under Remarks. (Item 7)
7	Remarks:
	I. <u>Gerald Elmore</u> affirm that the foregoing statements are true to the best of my knowledge and belief and that development shall not commence until approval of the permit has been obtained.
	By: July 8, 1963
	ACTION OF STATE ENGINEER
Th	is application is approved for the use indicated, subject to all general conditions and to the specific conditions numbered
dril	$1 \approx 4$ on the reverse side hereof. This permit will automatically expire unless this well is like or driven and the well record filed on or beforeUly 8, 1964
s i	E Reynolds, State Engineer

By Allhum Mile Delbert W, Nelson Office Supervisor, District II

Date: July 8, 1963 \_\_\_\_\_

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#### GENERAL CONDITIONS OF APPROVAL

- A The maximum amount of water that may be appropriated under this permit is 3 acre feet in any period of one year.
- B. Well shall be drilled only by a driller licensed in the State of New Mexico in accordance with Section 75-11-13 New Mexico Statutes. A licensed driller shall not be required for the construction of a driven well; provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter (Section 75-11-13).
- C Driller's log must be filed in office of the State Engineer within 10 days after well is drilled or driven Failure to file log within that time shall result in automatic cancellation of the permit. Upon request of the permittee, log forms will be provided by the State Engineer.
- D. Diameter of casing limited to 7 inch outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.
- E. Any use of water from the well other than as indicated shall automatically cancel this permit unless prior approval is obtained from the State Engineer.

SPECIFIC CONDITIONS OF APPROVAL (Applicable only when so indicated on the other side of this form)

- 1 Depth of well in no event to exceed the thickness of the valley fill or Ogaliala formation.
- 2. Well to be constructed to artesian well specifications and State Engineer Office to be notified before casing is landed or cemented
- 3. Appropriation and use of water under this permit limited for a definite period of not to exceed one year from the date of approval.
- 4. Limited to household, trees, lawn and non-commercial garden not to exceed one acre
- 5 A totalizing meter approved by the State Engineer shall be installed on the discharge line before the first branch line prior to the appropriation of water and pumping records shall be submitted to the District Supervisor (a) for each calendar month, on or before the 30th day of the following month (b) on the 10th of January. April, July and October of each year for the three preceding calendar months (c) for each calendar year on or before the 30th day of January of the following year.
- 6 Well to be plugged upon completion of permitted use and plugging report filed within 10 days.
- 7. Final approval for the use of said well dependent upon a leakage test to be made by the State Engineer Office

#### GENERAL INSTRUCTIONS

Application shall be executed in triplicate and forwarded with a \$1.00 filing fee to the appropriate office of the State Engineer

A separate application must be filed for each well to be drilled or used.

If well to be used is an existing well to be rotained for uses as indicated, an explanation (and file number, if possible) should be given under Remarks. (Item 7).

Applications for appropriation, well logs and request for information in the following basins should be addressed to the State Engineer at the office indicated:

Rio Grande, Bluewater and Estancia Basins District No. 1, 1841 Lomas Blvd., N.E., Albuquerque, New Mexico

Roswell, Lea, Portales, Carlsbad, Hondo, Penasco and Jal Basins District No. 2, Box 1717, Roswell, New Mexico

Mimbres, Hot Springs, Virden Valley, Animas, Playas, Gila-San Francisco, San Simon, Lordsburg and Nutt-Hockett Basins District No 3, Box 844, Deming, New Mexico

1-19597 22-•••••••

- 352257

Revised May 1993

	Eddy Cour	ty Carlsbad		0
	······································	BASIN NAME		
claration No C-3268		Date received	pril 27, 2005	
•		STATEMENT		
Name of Declarant	-stor Ballo	<u></u>		
Mailing Address	-2 North	Co-cl		
County of Fordy		, Stale of	10 Mexico	
Source of water supplyS	hallow			
Describe well location under one	of the following subheadings	(arresian or snallow wate	r aquuer)	
a SF & Nj	<u> </u>	f Sec Twg	215 Rge 277	_ N.M.P.M., ir
b Traci No	of Map No		of the	
c. X 🖬	fee, Y =	feet, N.M. C	oordinate System	Zone
in the				Grant
On land owned by	1-stor 13a	lard / Phi	ite	<u> </u>
Description of well date drilled _		dniller	depth 44	feet
outside dismeter of casing		capacity	gal. per min.; present capacity	
gal per min ; pumping bit	feet; static water	: level	_ feet (above) (below) land surface;	
make and type of pump	- sup pump	- <u></u>		<b></b>
make, type, horsepower, etc., of p	ower plant			
Fractitional or percentage interest	claimed in well			
Quantity of water appropriated an	d beneficially used(acre fee	t per acre)	acre fert per annum)	· Anna
for hutering 1	Jouschell use Fair o	AL		purposes
Acreage actually irrigated		acres, located and desc	ribed as follows (describe only lands acti	ally unigated)
Subdivision	Sec.	A Twp. Range Irrig 	:res gated Owner	
				<u> </u>
				<u> </u>
				<u> </u>
(N	ote: location or well and acreage:	acinalià il li li da sua	wh on plot on reverse side.) / ອິປ	المسمح والمعا ملاحد
Water was first applied to benefic	month	day	year	since that un
has been used tully and continue	usiy on all of the above describe	d lands of for the above de	cribed purposes except as lonows.	
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Additional statements of explana	10AS			
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				<u>e</u>
				NJ L
<u> </u>	<u> </u>	<u> </u>		
	Sc/1a-J	red in accordance with the i	being fürst duly sworn netructions on the reverse side of this form Il of the items contained therein and that t	n upon my oat n and submitte
$(\omega / -5f.9 - f.9)$ epose and say that the above is a fu peridence of ownership of a valid up the best of my knowledge and belt	nderground water right, that I have	ve carefully read each and a		2
$(\omega - 5f \cdot 3 - 6)$ epose and say that the above is a function of ownership of a valid up the best of my knowledge and believes the best of my kno	nderground water right, that I ha ief.	we carefully read each and a	<i>A</i> •••	daalaaraa
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John R. D Antonio, Jr., P.E. State Engineer



Roswell Office 1900 WEST SECOND STREET ROSWELL, NM 88201

#### STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER

Feb. 16, 2006

WINSTON BALLARD 1819 2 N CANAL CARLSBAD, NM 88220

Trn Nbr: 352257 File Nbr: C 03268

Greetings:

Enclosed is your copy of Declaration of Owner of the Water Right numbered above, which has been accepted for filing.

Under New Mexico Law, a Declaration is only a statement of declarant's claim. Acceptance for filing does not constitute approval or rejection of the claim.

Sincerely,

Mike Stapleton (505) 622-6521

Enclosure cc: Santa Fe Office

declare

File Number:

# NEW MEXICO OFFICE OF THE STATE ENGINEER APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS N ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES EWBOURNE OIL IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES

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1. APPLICANT MEWBOURNE OIL	March Phase 505-885-4195
Contact: SCOTT GREGORY	Home Phone:
Address: 1108 WEST PIERCE	
CARLSBAD	-
City:	StateNM Zip: 88220
A LOCATION OF WELL (A. D. C. and manifed R of Fishmann)	
A. <u>SW 1/4 NW 1/4 SE 1/4 Section: 3</u> Township	21S Range:27E N.M.P.M. County.
B. X = feet, Y = feet,	eet, N.M. Coordinate System Grant.
C. Latitude:dms Longitude:	sds
D. East (m), North (m), UTM 2	Zone 13, NAD (27 or 83)
E. Tract No, Map No of the	Hydrographic Survey
F. Lot No, Block No of Unit/Tract Subdivision recorded in	of the County.
G. Is this well within a municipality? if yes,	where?
H. Give State Engineer File Number if existing we	C-1142
n, dive bedte ingineer tite number it existing we	····
I. On land owned by (required): <b>BLM</b>	
3. USE OF WATER (check use applied for) One household, non-commercial trees, lawn and total of one acre.	garden not to exceed a
Livestock watering.	
Note: If any of the following items are marked of business or use under item 5 of the addition explanations section.	d, give the name and hature onal statements or
More than one household, non-commercial trees, exceed a total of one acre.	, lawns and gardens not to
Drinking and sanitary purposes and the irrigat trees, shrubs and lawns not to exceed one acre commercial operation.	tion of non-commercial e in conjunction with a
X Prospecting, mining or drilling operations to natural resources.	discover or develop
Construction of public works, highways and roa	ads.
Trn Desc: Fi.	le Number: $(-1142(7-2))$
Log Due Date: T.	rn Number: <u>291801</u>
rorm: wr-U1 page 1 of 4	

File Number: **NEW MEXICO OFFICE OF THE STATE ENGINEER APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES** 4. WELL INFORMATION (Change, Repair, Drill, Test, Supplement) Name of well driller and driller license number: Approximate depth feet; Outside diameter of casing inches. Change Location of existing well or replacement well Repair or Deepen: \_\_\_\_ Clean out well to original depth \_\_\_\_ Deepen well from \_\_\_\_ to \_\_\_\_ feet \_\_\_\_ Other \_\_\_\_ Drill and test a well for \_\_\_\_\_\_use. Supplemental well 5. ADDITIONAL STATEMENTS OR EXPLANATIONS: Com1. located in Sec1 T215 R21E 660F56 1550 FEL Applicant agrees to have agent letter, land + well owner permission on file with NMSED priter to any diversion it permit is approved. **ACKNOWLEDGEMENT FOR NATURAL PERSONS** (I, We) SCOTT GREGORY affirm that the (Please Print) foregoing statements are true to the best of (my, our) knowledge and belief.

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Applicant Schature

Applicant Signature

Trn Desc: \_\_\_\_\_ Log Due Date: \_\_\_\_\_ Form: wr-01

File Number: \_\_\_\_\_\_

page 2 of 4

## NEW MEXICO STATE ENGINEER OFFICE APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES

#### **GENERAL CONDITIONS OF APPROVAL (Continued)**

I The permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

#### SPECIFIC CONDITIONS OF APPROVAL

- 3 Appropriation and use of water under this permit shall not exceed a period of one year from the date of approval.
- 5A A totalizing meter shall be installed before the first branch of the discharge line from the well and the installation shall be acceptable to the State Engineer; the Engineer shall be advised of the make, model, serial number, date of installation, and initial reading of the meter prior to appropriation of water; pumping records shall be submitted to the District Supervisor for each calendar month on or before the 10th day of the following month.

5(d) METER REPORT WILL BE SUBMITTED WHEN PROJECT IS TERMINATED IF LESS THAN THIRTY DAYS AND UPON COMPLETION OF THE PROJECT.

#### ACTION OF STATE ENGINEER

This application is approved for the use indicated, subject to all general conditions and to specific conditions listed above.

Witness my hand and seal this <u>05</u> day of <u>Jan</u> A.D., <u>2004</u>

John R. D Antonio, Jr., P.E., State Engineer Ev: Mula Manuf

Mike Stapleton

The amount, uses and locations of domestic water wells permitted under 72-12-1 (NMSA) are subject to such limitations as may be imposed by the courts or by lawful municipal and county ordinances which are more restrictive than applicable State Engineer Regulations and the conditions of this permit.

File Number: <u>C 01142</u> Trn Number: <u>291801</u>

## NEW MEXICO STATE ENGINEER OFFICE APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES

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#### **GENERAL CONDITIONS OF APPROVAL (A thru I)**

- Δ The maximum amount of water that may be appropriated under this permit is 3 acre-feet in any year.
- в The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated. A licensed driller shall not be required for the construction of a driven well; provided, that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter (Section 72-12-12).
- С Driller's well record must be filed with the State Engineer within 10 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.
- D The casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.
- Е If the well under this permit is used at any time to serve more than one household or livestock in a commercial feed lot operation, or for drinking and sanitation purposes in conjunction with a commercial operation, the permittee shall notify the State Engineer Office in writing.
- F In the event this well is combined with other wells permitted under Section 72-12-1 New Mexico Statutes Annotated, the total outdoor use shall not exceed the irrigation of one acre of non-commercial trees, lawn, and garden, or the equivalent outside consumptive use, and the total appropriation for household and outdoor use from the entire water distribution system shall not exceed 3 acre-feet in any year.
- G If artesian water is encountered, all rules and regulations pertaining to the drilling and casing of artesian wells shall be complied with.
- Η The amount and uses of water permitted under this Application are subject to such limitations as may be imposed by the courts or by lawful municipal and county ordinances which are more restrictive than applicable State Engineer Regulations and the conditions of this permit.

Trn Desc: C 01142 (T-2) Log Due Date: Form: wr-01

File Number: C 01142 Trn Number: 291801
John R. D Antonio, Jr., P.E. State Engineer



Roswell Office 1900 WEST SECOND STREET ROSWELL, NM 88201

### STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER

Trn Nbr: 291801 File Nbr: C 01142

Jan. 05, 2004

MEWBOURNE OIL C/O SCOTT GREGORY 1108 WEST PIERCE CARLSBAD, NM 88220

Greetings:

Enclosed is your copy of the 72-12-1 Permit which has been approved. Your attention is called to the Specific and the General Conditions of Approval of this permit.

Sincerely,

( Mike Stapleton (505) 622-6467

Enclosure

cc: Santa Fe Office

wr\_01app

Section	Т	R	Formation	Date	Chlorides (mg/L)	Location (qtr/qtr)
19	21S	27E	OAL	04/20/60	920	21S.27E.19.43142A
19	21S	27E	OAL	11/10/54	1090	21S.27E.19.32444
26	21S	27E	OAL	06/14/71	549	21S.27E.26.232442
29	21S	27E	OAL	09/08/59	170	21S.27E.29.43413
30	21S	27E	OAL	07/01/87	290	21S.27E.30.33332
30	21S	27E	OAL	05/01/92	329	21S.27E.30.33332
31	21S	27E	OAL	01/26/54	455	21S.27E.31.333343
31	21S	27E	OAL	06/27/62	561	21S.27E.31.421114
32	21S	27E	OAL	04/07/55	1110	21S.27E.32.112243
14	20S	27E	OAL	10/27/55	4	20S.27E.14.24434
14	20S	27E	OAL	11/21/85	10	20S.27E.14.24434
14	20S	27E	OAL	06/21/55	14	20S.27E.14.24434
18	21S	28E	OAL	08/27/87	46	21S.28E.18.13333
18	21S	28E	OAL	07/18/97	90	21S.28E.18.13333
18	21S	28E	OAL	04/02/92	110	21S.28E.18.13333
15	22S	28E	OAL	07/17/87	396	22S.28E.15.3413334
15	22S	28E	OAL	07/17/97	410	22S.28E.15.3413334
15	22S	28E	° OAL	12/17/85	460	22S.28E.15.341333
15	22S	28E	OAL	07/17/97	590	22S.28E.15.341333
15	22S	28E	OAL	04/22/92	690	22S.28E.15.3413334
15	22S	28E	OAL	04/22/92	1030	22S.28E.15.341333
29	22S	28E	OAL	07/17/97	610	22S.28E.29.13322
29	22S	28E	OAL	05/12/92	780	22S.28E.29.13322
30	22S	28E	OAL	05/12/92	1130	22S.28E.30.44333A
30	22S	28E	OAL	08/19/87	1210	22S.28E.30.44333A
30	22S	28E	OAL .	08/19/87	1704	22S.28E.30.12243
30	22S	28E	OAL	07/17/97	1750	22S.28E.30.12243
30	22S	28E	OAL	05/12/92	2600	22S.28E.30.12243
32	22S	28E	OAL	07/21/53	948	22S.28E.32.14121
32	22S	28E	OAL	05/14/81	1310	22S.28E.32.33333A

http://octane.nmt.edu/waterquality/data/gwatersearch.asp

Southwest Royalties, Inc. Wilderspin Federal Battery S-11, T-21S, R-27E Eddy County, New Mexico

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### SITE PHOTOGRAPHS Taken April 2, April 6, 7, 8, 27 and May 8, 2009 Wilderspin Federal Battery

Southwest Royalties, Inc. – Wilderspin Federal Battery

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Initial Site Visit Photographs taken April 2, 2009 (p. 1 of 5)



Southwest Royalties, Inc. – Wilderspin Federal Battery Initial Site Visit Photographs taken April 2, 2009 (p. 2 of 5)



Southwest Royalties, Inc. – Wilderspin Federal Battery Initial Site Visit Photographs taken April 2, 2009 (p. 3 of 5)



Southwest Royalties, Inc. – Wilderspin Federal Battery Initial Site Visit Photographs taken April 2, 2009 (p. 4 of 5)



# Southwest Royalties, Inc. – Wilderspin Federal Battery Initial Site Visit Photographs taken April 2, 2009 (p. 5 of 5)





Southwest Royalties, Inc. – Wilderspin Federal Battery Photographs taken April 6-7, 2009 (p. 1 of 3)



Southwest Royalties, Inc. – Wilderspin Federal Battery Initial Site Visit Photographs taken April 6-7, 2009 (p. 2 of 3)



Southwest Royalties, Inc. – Wilderspin Federal Battery Photographs taken April 6-7, 2009 (p. 3 of 3)



Southwest Royalties, Inc. – Wilderspin Federal Battery

Excavation Site Photographs taken April 8, 2009 (p. 1 of 5)



West side of battery looking north.



Back side of battery.



West side of battery.



Looking west in between tanks.

Southwest Royalties, Inc. – Wilderspin Federal Battery Excavation Site Photographs taken April 8, 2009 (p. 2 of 5)



West side of battery.



East side of battery looking south.



Looking south in between tanks.



West side of battery.

Southwest Royalties, Inc. – Wilderspin Federal Battery Excavation Site Photographs taken April 8, 2009 (p. 3 of 5)



Looking east between tanks.



Looking north between tanks.



Looking east between tanks.



Looking north next to first tank.

### Southwest Royalties, Inc. – Wilderspin Federal Battery Excavation Site Photographs taken April 8, 2009 (p. 4 of 5)



Wall of southwest steel tank.



Looking south between tanks.



Looking north between tanks.



Bottoms of north tanks.

Southwest Royalties, Inc. – Wilderspin Federal Battery

Excavation Site Photographs taken April 8, 2009 (p. 5 of 5)



Bottom of southeast steal tank.



Bottoms of southeast tanks.



Looking south between tanks.



Bottoms of east tanks.

### Southwest Royalties, Inc. – Wilderspin Federal Battery Excavation Site Photographs taken April 27, 2009 (p. 1 of 4)



Back side of battery.

Looking west in between tanks. Southwest Royalties, Inc. – Wilderspin Federal Battery

Excavation Site Photographs taken April 27, 2009 (p. 2 of 4)



Southwest Royalties, Inc. – Wilderspin Federal Battery Excavation Site Photographs taken April 27, 2009 (p. 3 of 4)



### Southwest Royalties, Inc. – Wilderspin Federal Battery Excavation Site Photographs taken April 27, 2009 (p. 4 of 4)







## Southwest Royalties, Inc. – Wilderspin Federal Battery Excavation Site Photographs taken May 8, 2009 (p. 1 of 2)



Southwest Royalties, Inc. – Wilderspin Federal Battery Excavation Site Photographs taken May 8, 2009 (p. 2 of 2)



