LEO DROZDOFF, *Administrator*

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations and Reclamation
Facsimile 684-5259

STATE OF NEVADA
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director*

Air Pollution Control
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Waste Management
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Federal Facilities
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Corrective Actions
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ndep.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
Las Vegas Office
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

December 10, 2004

Legal Copy Cats & Printing
300 4th Street
Las Vegas, Nevada 89101

RE: **Copying Job**
BMI and AmPac Projects

Dear Sir/Madam:

- The accompanying files are the property of the State of Nevada, Division of Environmental Protection (NDEP). They are **ORIGINAL** official state case files, and are irreplaceable.
- Copies of the accompanying files have been requested by **Ms. Crowley**.
- Please make the number of sets of copies as requested by **Ms. Crowley** in the same order as they have been presented to you. Please maintain the page-to-page order of the files.
- Please assure that the exact order of the files and their contents are maintained throughout the process. This is very important.
- Please separate the copies from the originals.
- Please contact **Ms. Crowley** with any questions regarding copy format.
- When the copying job has been completed, please contact the undersigned. All reproduction costs shall be billed to Ms. Susan Crowley, Kerr-McGee Chemical LLC, PO Box 55, Henderson, Nevada 89009; telephone (702) 651-2234. We would like the copy job to be completed **by Thursday, December 16, 2004** if at all possible.

- The Nevada Division Case Officer responsible for these files is Brian Rakvica. He can be reached in the Las Vegas Office at 486-2870. Please feel free to call **Ms. Crowley** with any questions.

Sincerely,

Brian A. Rakvica
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP-Las Vegas Office

CC: FOIA request file

Mike Dutton 12/10/04

Acknowledged By **Date**

Todd Croft

To: Brian Rakvica
Subject: AMPAC Documents to Legal Copy Cats; 12/10/04; Kerr-McGee Request

Brian:

The following documents were picked up on 12/10/04 (afternoon) by Legal Copy Cats for copying for Kerr-McGee (Susan Crowley):

1) Hydrogeologic Investigation - 2003, Phase I Drilling; 03/16/04; Kleinfelder

2) Hydrologic Investigation - 2003/2004, Phase I & II Drilling; 06/01/04; Briefing Package; Kleinfelder

3) Perchlorate IsoContours in the Shallow Quaternary Aquifer, Henderson, NV, "Plate 5", Revised Sept. 9, 2004; 09/23/04; Kleinfelder (includes cover letter)

4) MW-TWC Soil Perchlorate Contamination ...; 12/02/04; Kleinfelder (includes cover letter)

5) Revised Report, Hydrogeologic Investigation - 2004, Phase II Drilling; 09/10/04; Kleinfelder (includes cover letter)

6) Groundwater Monitoring Report ....April 2004; Global Hydrogeology; (includes cover letter)

7) American Pacific Corporation, April 2004 Well Survey ... July 30, 2004; GES; (includes cover letter)

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

ENSR INTERNATIONAL

Letter of Transmittal

ATTENTION:

Mr. Brian Rakvica, P.E.
State of Nevada
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119

DATE:

December 30, 2004

04020-023-100

REMARKS:

On behalf of Kerr-McGee Chemical, LLC, enclosed for your review is the Draft Conceptual Site Model Report.

Thank you,

David Gerry
ENSR

Cc: Susan Crowley – Kerr-McGee
Todd Craft- NDEP
Tom Reed – Kerr-McGee
Jeff Johnson - NDEP

1220 Avenida Acaso
Camarillo, CA 93012
(805) 388-3775
FAX: (805) 388-3577

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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
333 W. Nye Lane, Room 138
Carson City, Nevada 89706

December 21, 2004

Mr. Rick Kellogg
Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89105

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009

Mr. Sam Chamberlain
Pioneer Companies, Inc.
700 Louisiana St, Suite 4300
Houston, TX 77002

Mr. Joe Kelly
Montrose Chemical Corp of CA
600 Ericksen Ave NE, Suite 380
Bainbridge Island, WA 98110

Mr. George Crouse
Syngenta Crop Protection, Inc.
410 Swing Road
Greensboro, NC 27409

Mr. Craig Wilkinson
Titanium Metals Corporation
PO Box 2128
Henderson, NV 89009

Re. **BMI Plant Sites and Common Areas Projects, Henderson, Nevada**
Coordination of Sampling and Mapping

Dear Sirs and Madam:

It is the belief of the NDEP that the remediation of the BMI Site, as a whole, can best be served if several minor changes are implemented. These suggested changes are described below:

1. **Sampling** – Quarterly sampling is conducted for a number of constituents by each of the companies. For the purposes of comparability, it is suggested that the companies discuss a quarterly time frame in which this sampling can be conducted at each of the sites. This time frame should allow adequate time for sample collection, laboratory analysis, data review and reporting to coincide with the existing deadlines for quarterly reporting.

2. **Mapping** – For the ease of review and to develop a complex-wide understanding of contaminant fate and transport, it is requested that regional maps be developed at the same scale and orientation for each of the companies. The NDEP requests that plates and figures of a regional scale be developed at a scale of 1"=1000'. For plates and figures that include only the plant site area and immediate vicinity it is requested that a scale of 1" =300' be used.

3. **Document Submittal** – The NDEP has received a number of requests for various documents to be copied over the past 18 months. Due to the limited resources of the NDEP and in the spirit of cooperation, it is requested that the each of the BMI Companies listed above include the remainder of the BMI Companies on the CC list for all submittals to the NDEP.

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410 Swing Road
Greensboro, NC 27409

Mr. Craig Wilkinson
Titanium Metals Corporation
PO Box 2128
Henderson, NV 89009

Re. **BMI Plant Sites and Common Areas Projects, Henderson, Nevada** – *Public Involvement*

Dear Sirs and Madam:

The Nevada Division of Environmental Protection (NDEP) is providing this correspondence to remind you of requirements for Public Involvement. On May 10, 2004 the NDEP issued a letter requiring an update to BMI Company Fact Sheets and public involvement planning. The letter included a response deadline of June 15, 2004. With the exception of BRC's response on Public Involvement Plan improvements for the Common Areas, responses to the NDEP's letter have not been received. Please contact the undersigned **by January 15, 2005** to set a schedule that will address each of the items included in the May 10th letter.

Should you have any questions or concerns, please do not hesitate to contact me at 775-687-9373.

Sincerely,

Jennifer L. Carr, P.E., C.E.M.
Remediation Branch Supervisor
Bureau of Corrective Actions

Cc: Mr. Todd Croft, NDEP, BCA, Las Vegas
Mr. Jeff Johnson, NDEP, BCA, Carson City
Mr. Brian Rakvica, NDEP, BCA, Las Vegas
Ms. Brenda Pohlmann, Environmental Programs Mgr, City of Henderson, 240 Water Street, Henderson, NV 89015
Mr. Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, 1333 New Hampshire Ave., N.W., Washington, DC 20036
Mr. Paul Sundberg, 3846 Estate Drive, Stockton, California 95209
Mr. Lee Erickson, Stauffer Management Company, 1800 Concord Pike, Hanby 1, Wilmington, DE 19850-5437
Mr. Christopher Sylvia, Pioneer Americas LLC, 8000 Lake Mead Drive, Henderson, Nevada 89015
Mr. Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015
Mr. Mitch Kaplan, US Environmental Protection Agency, Region 9, RCRA Corrective Action Office, 75 Hawthorne Street, San Francisco, CA 94105-3901
Ms. Carrie Stowers, Clark County Comprehensive Planning, PO BOX 551741, Las Vegas, NV, 89155

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Mr. Craig Wilkinson
Titanium Metals Corporation
PO Box 2128
Henderson, NV 89009

Re. **BMI Plant Sites and Common Areas Projects, Henderson, Nevada** - *Document Distribution*

Dear Sirs and Madam:

The Nevada Division of Environmental Protection (NDEP) is providing this correspondence to remind you of requirements for document distribution. Please ensure that one copy of all documents prepared by your company is transmitted to both Jeff Johnson in the NDEP Carson City office as well as Brian Rakvica in the NDEP Las Vegas office. Please also transmit one copy of all documents to Brenda Pohlmann at the City of Henderson. Your timely transmittal of documents to each party listed herein will prevent the NDEP from incurring reproduction expenses which are subsequently billed back to you.

Should you have any questions or concerns, please do not hesitate to contact me at 775-687-9373.

Sincerely,

Jennifer Carr

Jennifer L. Carr, P.E., C.E.M.
Remediation Branch Supervisor
Bureau of Corrective Actions

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Mr. Christopher Sylvia, Pioneer Americas LLC, 8000 Lake Mead Drive, Henderson, Nevada 89015
Mr. Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

AGENDA
December 9, 2004
Perchlorate Project Status Meeting

1) New FBR Biological Treatment System Discussion (and site visit towards the end of the meeting):
- System Operation, Optimization, and Performance Test Status – Keith Bailey
- Analytical Results for Discharge Monitoring – Keith Bailey
- Water Quality & Clarity Discussion (Consideration of Flow Adjustments) – Keith Bailey / Todd Croft
- Outfall Relocation Discussion and Tentative Schedule – Keith Bailey / Susan Crowley
- NPDES Permit Status/Schedule/Components – Jim Hogan / John Tinger

2) Current Surface Water Data & Trends:
- Northshore Road Perchlorate Mass Data – Todd Croft / Larry Bowerman
- Las Vegas Wash – Peggy Roefer / Joe Leising /Todd Croft
  (Are the wash gravels clearing consistent w/ the McGinley & Assoc. Model?)
- Lake Mead – Peggy Roefer
- Colorado River – Todd Croft / Larry Bowerman
- Erosion Control Structure Construction Schedule and Anticipated Impacts for 2004 & 2005 – Peggy Roefer / Todd Croft

3) Third Quarter 2004 Performance Report – Perchlorate Remediation:
- Performance of the Various Extraction Systems – Susan Crowley
- Athens Road Capture Efficiency & Draw Down – Susan Crowley
- ARP & Down Gradient Monitoring Well Data - Susan Crowley
- Seep Area Capture Efficiency Estimate, and Estimate of How Much Mass Continues to Enter Las Vegas Wash from the Seep Area – Keith Bailey / Larry Bowerman
- Future Considerations for the Seep Area Well Field – Keith Bailey / Todd Croft
- Perchlorate Concentrations in the Vicinity of MW-K7 & MW-K8 – Todd Croft

4) Athens Road Well Field Efficiency:
- Additional MWs (Athens Road / Sunset Road Vicinity); Need to include in Sampling – Todd Croft

5) Seep Area Well Adjustment Criteria:
- New Extraction Well Placement & Schedule – Susan Crowley
- Throttling back of Exterior Wells & Impacts to Las Vegas Wash Mass Loading (i.e. PC-97)– Keith Bailey / Larry Bowerman

6) Other Related Issues:
- Reduction in Resin Inventory – Keith Bailey
- IX Decommissioning Elements (FBR Performance Assurance Needed) – Keith Bailey / Todd Croft
- May 2004 Perchlorate Map – Todd Croft
- Well Abandonment (PC-105, 109, 113, & 114) near COH RIBs?

7) Other

8) Tour of the FBR Treatment System

KERR-MCGEE / NDEP / EPA ClO_4 Update
December 9, 2004

ATTENDEES

Name	Representing	Phone Number / email
SUSAN CROWLEY	Kerr-McGee	702-651-2234 / scrowley@kmg.com
Keith Bailey	Kerr-McGee	405 270-3651 kbailey@kmg.com
TODD GROFF	NDEP	(702) 486-2871 TGROFF@NDEP.
Pat CORBETT	KERR MCGEE	405/270 3774
BRIAN RAKVICA	NDEP	brakvica@ndep.nv.gov 702 486 2870
Ed KRISH	ENSR	405-359-1604
JIM HOGAN	NDEP	775-687-9434
MITCH KAPLAN	EPA REGION 9	415-972-3359
Gerald Smart	UWNA	702-289-3184
Larry Bowerman	US EPA	415 972-3339
JEFF LAMBETH	Veolia Water	702-566-6001
BRAD DOUGHERTY	AIG CONSULTANTS	201 631 7245
John Tinger	US EPA R9	415 972 3518 / Tinger.John@EPA.GOV
Joe Leising	SNWA	leisingj@snwa.c. 702-822-3373
Peggy Roefs	SNWA	702-822-3359

12/09/04
Thursday

Kerr-McGee Perchlorate Project @ pg 1 of
Status Meeting

(1) 1) 35 day Performance Tests (10/03 started)
2) 200 ppm clay & 400 ppm chlorate & ___ nitrate
3) ~20 ppm GW-11 Pond water - dropped ~ 1 million gallons recently
H2O2 working well
lime system problem
~15-24 NTU
~990 gpm currently
New well ~ 16ppm avg

* optimization test to start soon to reduce total flow to ~ 950 gpm

4) outfall relocation
BOR to Δ property description in right-of-way
5) NPDES permit process (new application)
likely to look at analyte list & frequency
likely to meet w/ NDEP-BOWPC-CC after submittal of new application.
6) see permit => NDs count as zero

(2) (1) Provided info
(2) SNWA - for samples Tuscany Drain
~ 4.4 ppm & ~ 1/2 CFS
(3) Have gone through de stratification

12/09/04
Thursday
pg 1 of

(4) Erosion control structure
Landfill – 9 lbs/day
–

Powerline – Amenity LADPW
Anticipate ~20 lbs/day back to wash

(3) 3rd Q Performance Report
* new seep area extraction well to go on-line in January
* KM abandoned several wells in COH RIB area → redevelopment

(4) Done

(5) Done

(6) Other
- Resin reduction ⇒ Todd said ok to reduce resin inventory (KM to phase out over 4-6 months)
-

AGENDA
December 9, 2004
Perchlorate Project Status Meeting
9:30 AM

12/9/04

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- May 2004 Perchlorate Map – Todd Croft
- Well Abandonment (PC-105, 109, 113, & 114) near COH RIBs?

7) Other

8) Tour of the FBR Treatment System

12/9/04

1. FBR update
   - performance test complete (35 day)
     avg = 3.5 ppb (w/ ND = 0)
     ND = 4, 8, 9 and higher
   - runng @ ~ 990 gpm
     ~ 200 ppm ccly
     ~ 400 ppm chlride } destry ~ 4 tons/day
     ~ nitrate
   - effluct clarity - optimized

incl 20 gpm from GW-71
plus on-site GWTS

- waiting on a lime system repair
- review maintainability issues
- clarity = 15-24 ntu
- disc. clarity improvements (thru reduced flow) @ Seep area

intent: avg flow: 950 gpm
can turn back off to ~ 940-950 gpm

PC-121 - less than 10 ppm
- poly very hard
Seep - 72 gpm (< 4 ppm)

(Q)

new eastern well ~ avg 16 ppm
~ flow? - TBD
~ accomodate by reducing flow in wells - not all pulling in water

- agreed to try reduced flow

noted: Seep area WF conc coming down from 3rd Q 2004

Outfall Reloc
- US BOR waiting on this issue

NPDES Permit

new application ~~[illegible]~~ to be submitted soon

KM revision proposal @ frequency of analysis + analyte list

perhaps annual for some components

re: km

→ ND's count as zero's per tle permit

#2

NS Road -

breakthru curve -

- noted effects of rainfall on [redacted] load
- noted [redacted] issues w/ USGS gage data since 10/26/04 = suspect

WB curve

LVW

avg ~ 134 ppb [redacted] in Wash

Lm-8 ~ 132 ppb

Lm-4 ~ 41 ppb

deep ~ usually below detection

4

Tuscany Drain → 4400 ppb // approx 0.5 CFS w/ ICW
- will start sampling regularly
- approx 10-20 #/day

MW in wash gravels
- downstream of Pebco
- upstream of C-1 channel

Lake

both intakes now @ 600'
highest conc = 8 ppb in finished water
X-section from wash to dam

Erosion Control

LF weir - (approx 9#/d)
under construction - complete by end of Dec

Powerline - design complete
- waiting on R-O-W
- substantial de-watering using infiltration basins
(approx 20 #/d to wash)

Upper Div weir - should not be an issue

5

- disc. SCOP pipeline
  - not known what is done w/ Henderson POTW [redacted]
  - 30 MGD wastewater to renew plw
    20 MGD urban runoff

3RD Q report

- two new wells - western side of slurry wall
- new deep area well operation - mid-January
- wells PC-105, 109, 113/114 - removed bc "redundant"
- pump test - run for @ least 24 hours
  - water discharged to ground surface
-

Reduction in Resin Inv.

- proposal: over next 6 months eliminate the inventory
  - NDEP agrees

contingency #1 → to GW-11 pond (about 7 days capacity)

contingency #2

6

IX decomiss

- NDEP would like a contingency plan first

-

-

noted NRDC inquiry

revised Appa

NAS report - delayed to mid-Janug

KERR-MCGEE / NDEP / EPA ClO_4 Update
December 9, 2004

ATTENDEES

Name	Representing	Phone Number / email
SUSAN CROWLEY	Kerr-McGee	702-651-2234 / SCrowley@kmg.com
Keith Bailey	Kerr-McGee	405 270-3651 kbailey@kmg.com
Todd Croft	NDEP	(702) 486-2871 TCROFT@NDEP.
Pat Corbett	Kerr McGee	405/270 3774
Brian Rakvica	NDEP	702 486 2870 brakvica@ndep.nv.gov
Ed Krisht	ENSR	405-359-1604
Jim Hogan	NDEP	775-687-9434
MITCH KAPLAN	EPA REGION 9	415-972-3359
Gerald Smart	UWNA	702-289-3184
Larry Bowerman	US EPA	415 972-3339
JEFF LAMBETH	Veolia Water	702-566-6001
BRAD DOUGHERTY	AIG CONSULTANTS	201 631 7245
John Tinger	USEPA R9	415 972 3518 / Tinger.John@EPA.GOV
Joe Leising	SNWA	702-822-3373 leisingj@snwa.c.
Peggy Roelfs	SNWA	702-822-3359

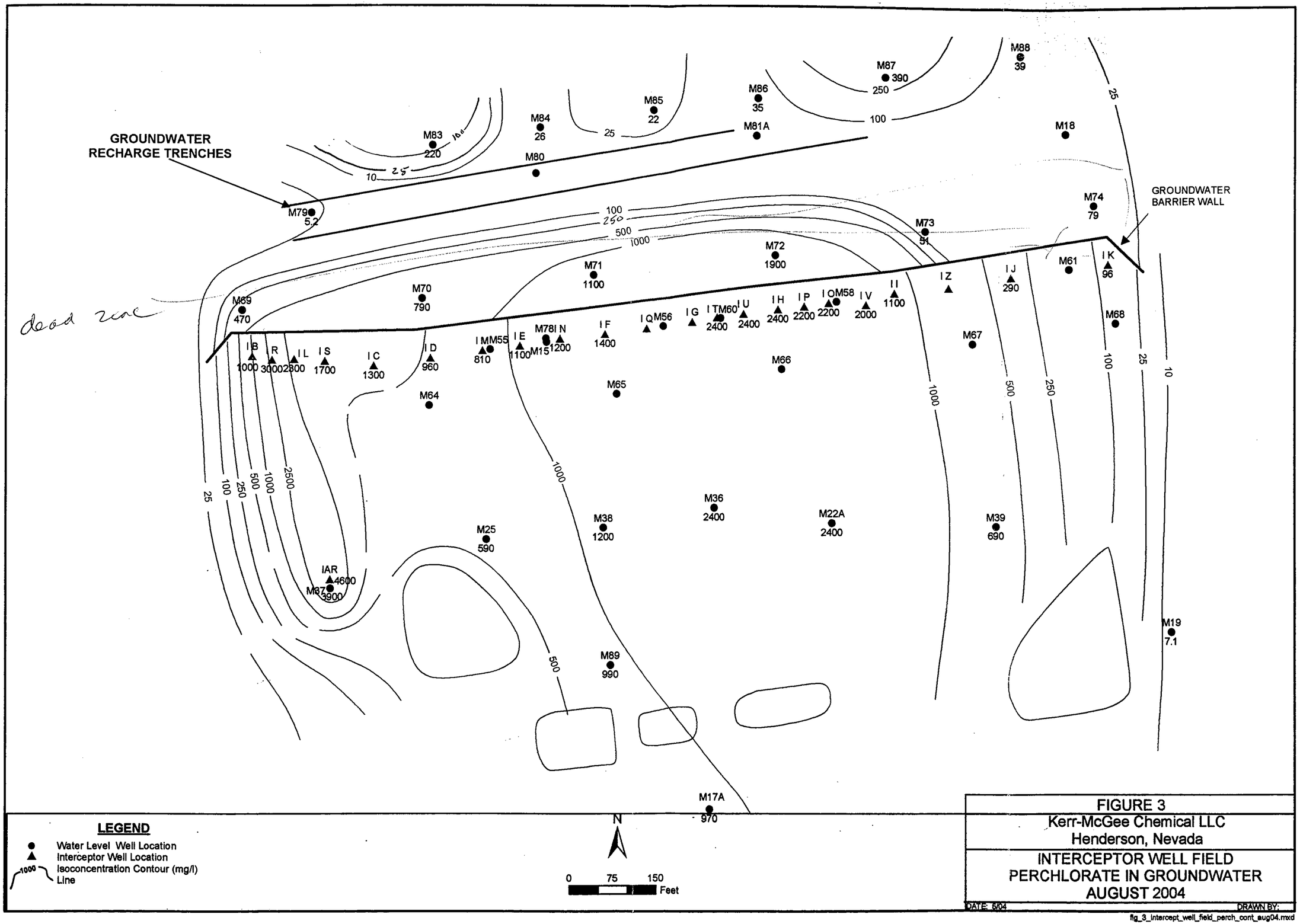
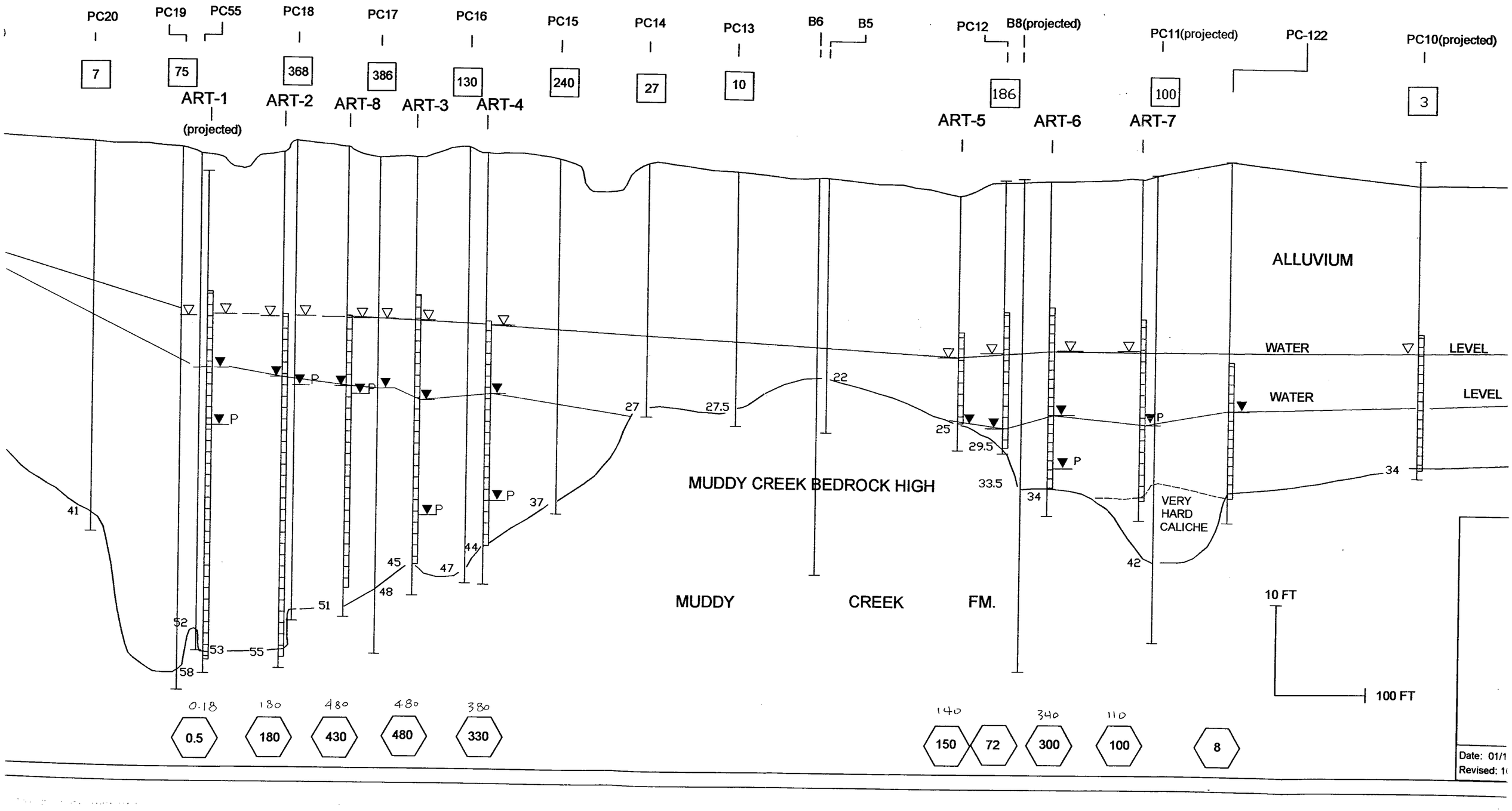


FIGURE 3
Kerr-McGee Chemical LLC
Henderson, Nevada
INTERCEPTOR WELL FIELD
PERCHLORATE IN GROUNDWATER
AUGUST 2004

DATE: 5/04 DRAWN BY:

fig_3_intercept_well_field_perch_cont_aug04.mxd



Date: 01/1
Revised: 1

828000 828500 829000 829500 830000

26728500 26728000 26727500

MUDDY CREEK FM BEDROCK HIGH

ARP-1 6.0
ARP-2 6.2
ARP-3 6.1
MW-K4 6.1
ARP-4 6.0
ARP-5 6.2
ARP-7 5.9

ART-1 5.8
ART-2 7.5
PC18 7.2
ART-8 7.6
PC101R 7.3
PC17 7.5
ART-3 8.9
ART-4 7.5
PC55 6.6
MW-K2

ART-5 6.8
ART-6 7.5
PC12 6.8
ART-7 7.8
PC 122 6.6

L637 0.9
L635 1.4
PC 123 1.1

1 2 3 4 5 6 7 8

PLATE:4
NET DRAWDOWN
AT THE ATHENS ROAD WELL FIELD
APRIL 30, 2002 TO AUGUST 10, 2004

— 6 — FEET OF NET DRAWDOWN

• ACCESSIBLE WELLS (MAY , 2004)

1 inch = 150 feet
1: 1,800

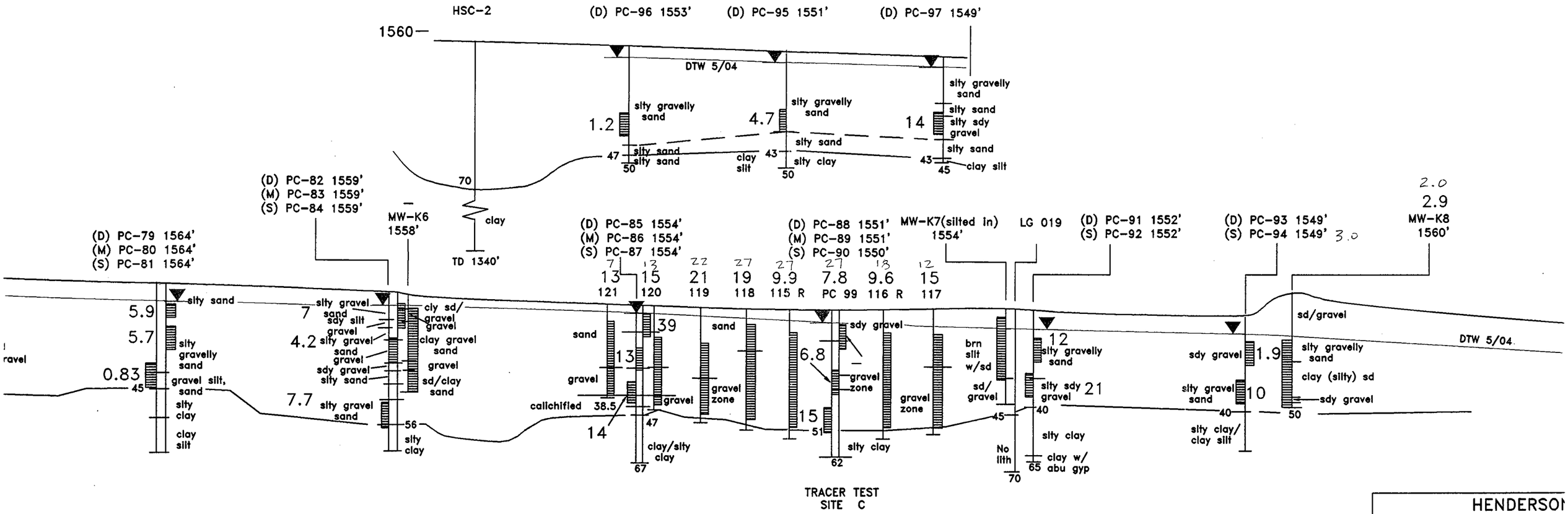
0 150 300 Feet

N

DATE: 2/5/04
REVISED: 10/18/04

Nevada East (NAD83)

SEEP 6.0



TRACER TEST SITE C

▼ = Water levels as of 5/04

27 = Perchlorate concentration (ppm) as of May 2004

SEE PLATE 1 FOR LOCATION

T. 21 S. R. 62 E. Sec. 36 | Sec. 31 T. 21 S. R. 63 E.

HENDERSON

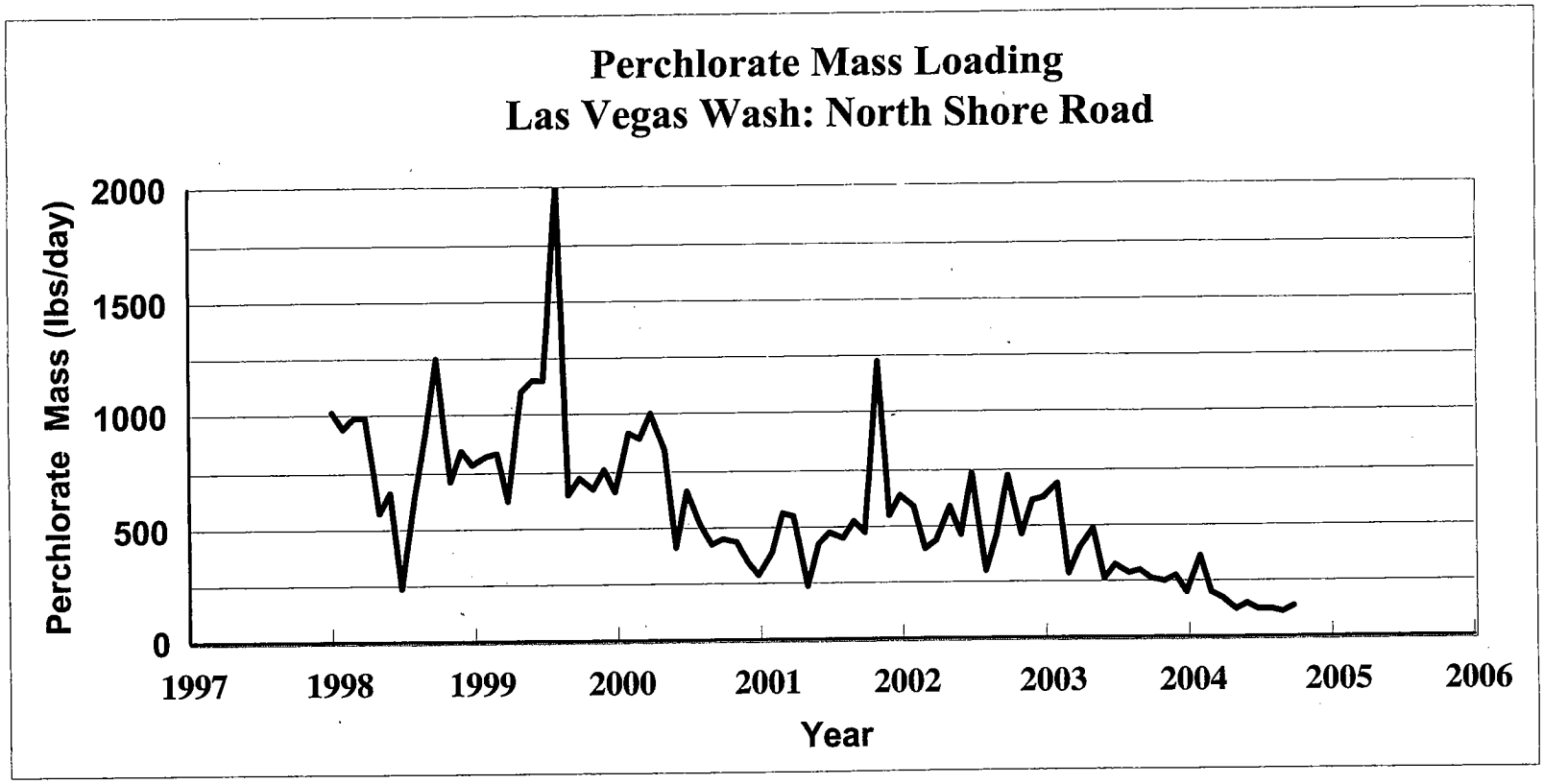
HYDROGEOLOGIC

EAST-WEST TH

LOWER F

1"=200' (H)
1"= 40' (V)

North Shore Road Mass Loading Graph



- Measures total perchlorate load in Las Vegas Wash entering Lake Mead.
- Mass loading declined in 2000 after seep capture began in November 1999, and has declined further in 2003 and 2004 after Athens Road Wells began operation in October 2002 and five new seep area wells began operation in March 2003.
- Modeling of the Las Vegas Wash gravels predicts that perchlorate mass loading will decrease to about 100 pounds per day by October 2004 (assuming 90% control of perchlorate releases).

On-Site Collection Area

Collection Wells - Upgradient of Slurry Wall

Date	Average ClO_4 Concentration On-Site (ppm)	Average Flow Rate (gpm)	**Monthly Mass ClO_4 Removed On-Site (lbs)**
Oct-02	1,890	60.9	**43,459**
Nov-02	1,758	53.5	**34,366**
Dec-02	1,560	68	**40,053**
Jan-03	1,673	72	**45,481**
Feb-03	1,618	53.8	**29,686**
Mar-03	1,593	55	**33,060**
Apr-03	1,564	52.2	**29,860**
May-03	1,735	54.5	**35,668**
Jun-03	1,515	59.5	**32,955**
Jul-03	1,495	56.8	**32,064**
Aug-03	1,495	50.6	**28,562**
Sep-03	1,575	50.2	**28,873**
Oct-03	1,520	54.2	**31,085**
Nov-03	1,300	59.9	**28,464**
Dec-03	1,350	58.4	**22,780**
Jan-04	1,325	56.7	**21,673**
Feb-04	1,300	56.5	**25,941**
Mar-04	1,325	57.7	**28,863**
Apr-04	1,325	53.8	**26,031**
May-04	1,275	58.2	**27,109**
Jun-04	1,400	58.3	**29,806**
Jul-04	1,380	59.5	**30,020**
Aug-04	1,370	56.6	**28,342**
Sep-04	1,450	55.5	**29,420**
Oct-04	1,500	58.7	**32,161**
Nov-04			

Monitoring Wells - Downgradient of Slurry Wall

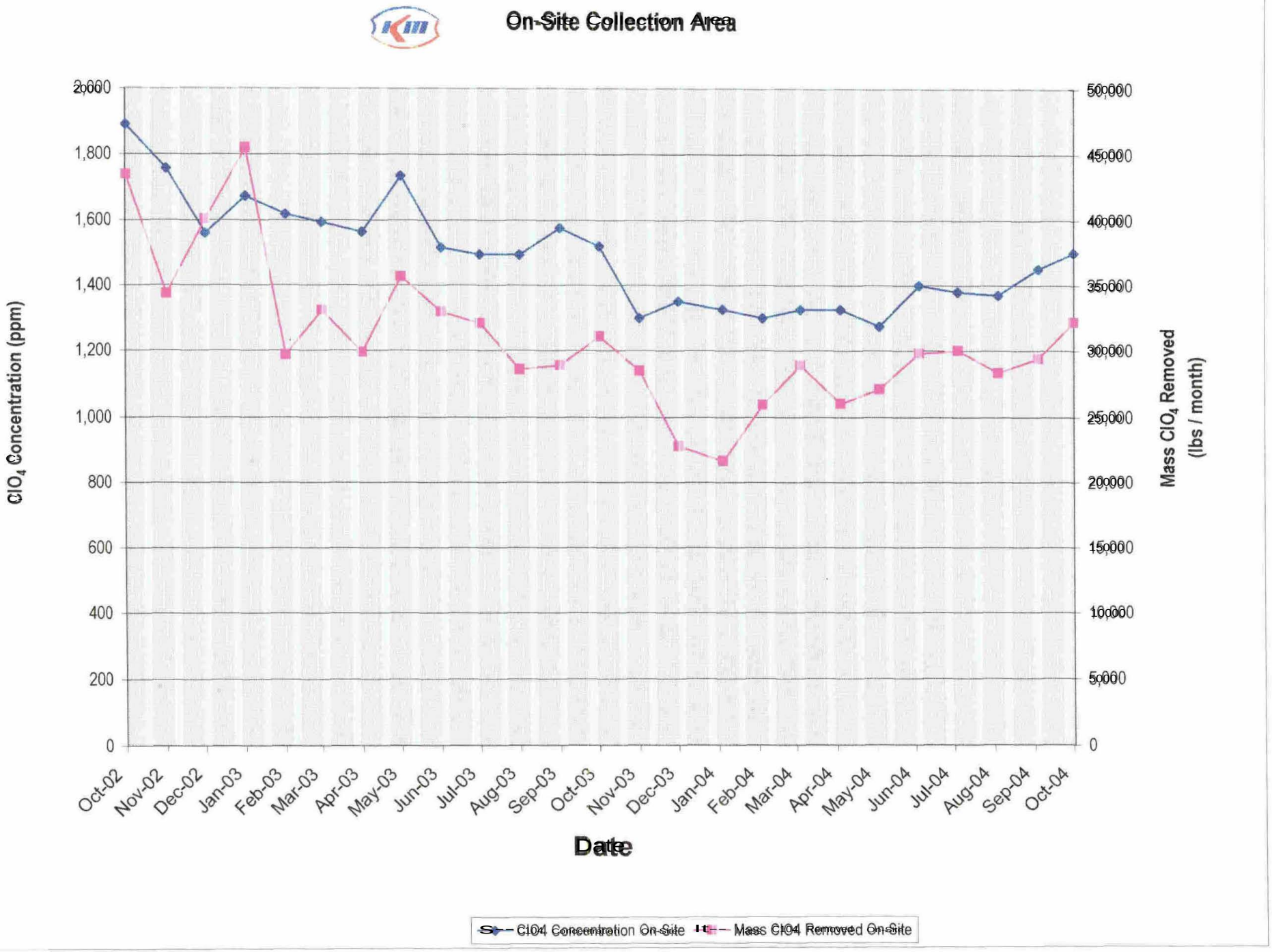
Date	M-100 ClO_4 Concentration (ppm)
May-99	1300
Jun-99	1200
Jul-99	1300
Aug-99	1200
Jan-00	890
Feb-00	1000
Mar-00	940
Apr-00	990
May-00	1600
Jun-00	920
Jul-00	830
Aug-00	850
Sep-00	1000
Oct-00	840
Nov-00	850
Dec-00	1100
Jan-01	860
Feb-01	900
Mar-01	880
Apr-01	910
May-01	1100
Jun-01	1000
Jul-01	1100
Aug-01	1100
Sep-01	1200
Oct-01	1000
Nov-01	1000
Dec-01	1000
Jan-02	1000
Feb-02	910
May-02	610
Sep-02	350
Dec-02	340
Jan-03	230
Apr-03	220
Jul-03	200
Nov-03	160
Feb-04	180
May-04	140
Aug-04	110
Nov-04	

Athens Road Collection Area

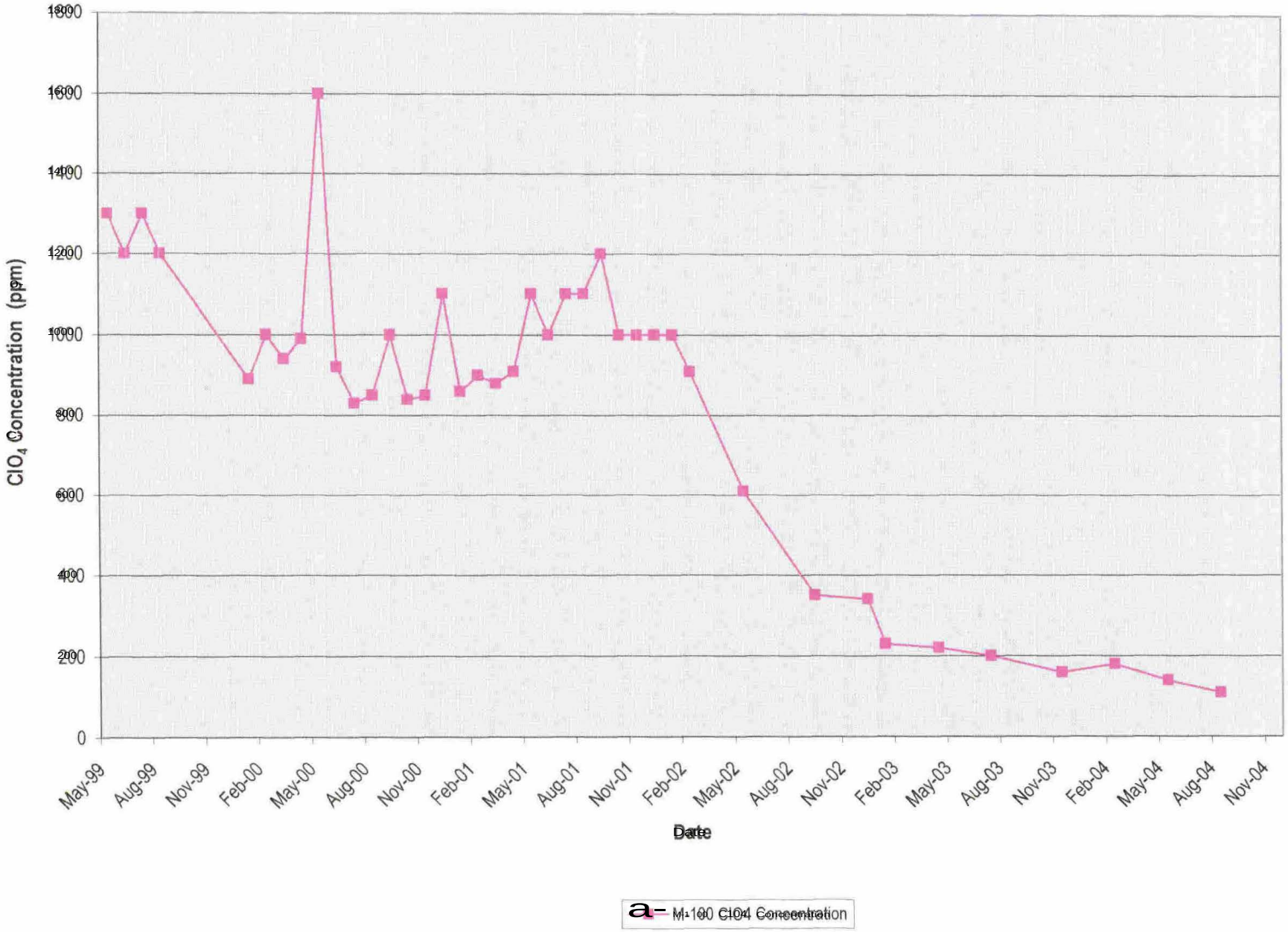
Collection Wells

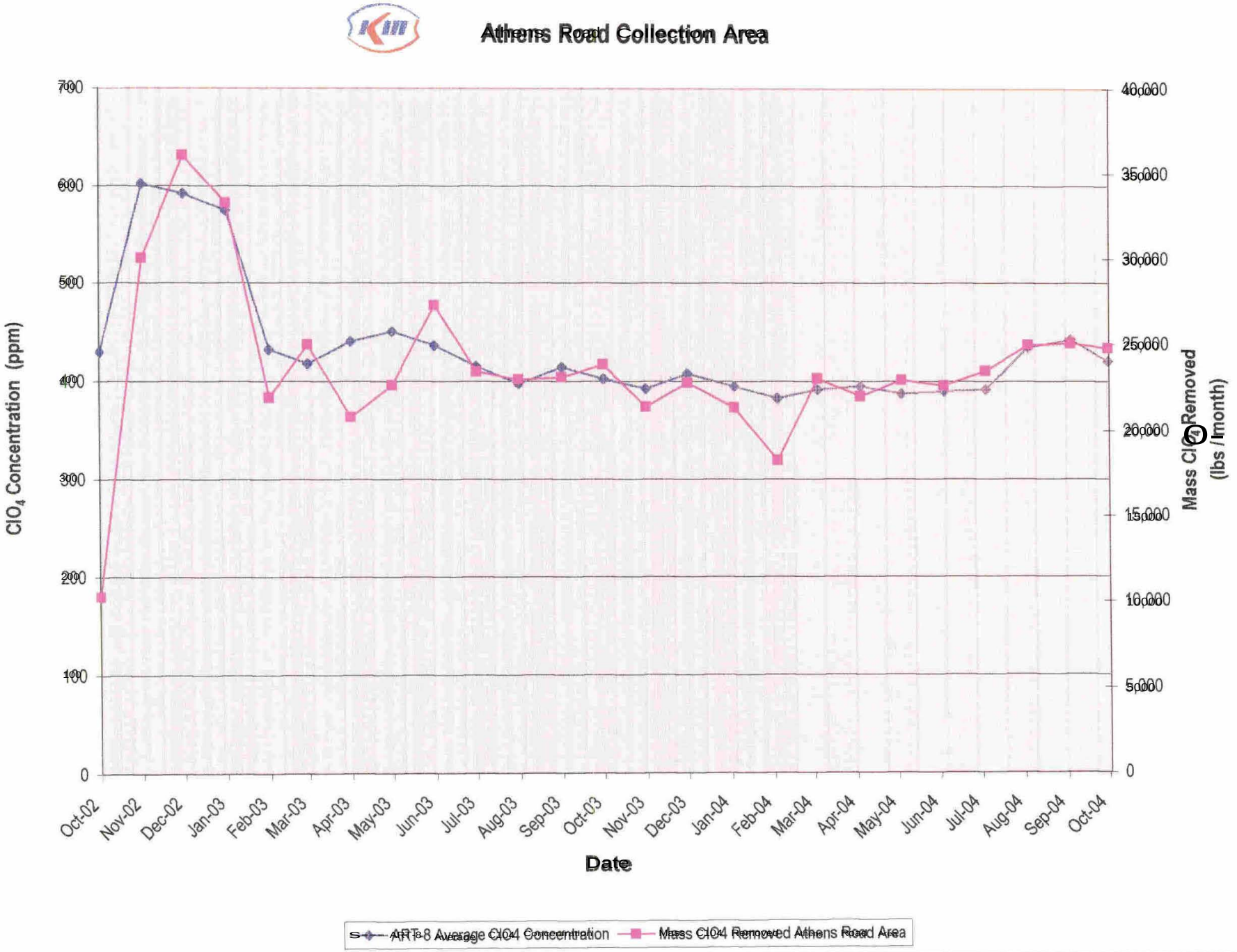
Date	ART-8 Average ClO_4 Concentration (ppm)	Average Athens Road Field Flow Rate (gpm)	**Monthly Mass ClO_4 Removed Athens Road Area (lbs)**
Oct-02	429	250.8	**10,259**
Nov-02	602	266	**30,043**
Dec-02	592	250.4	**36,071**
Jan-03	575	239.3	**33,299**
Feb-03	432	236.9	**21,932**
Mar-03	418	247	**24,977**
Apr-03	440	237	**20,816**
May-03	450	241	**22,633**
Jun-03	436	217	**27,253**
Jul-03	415	225	**23,422**
Aug-03	398	226	**22,959**
Sep-03	414	227	**23,092**
Oct-03	403	230	**23,836**
Nov-03	393	228	**21,409**
Dec-03	408	230	**22,780**
Jan-04	395	220	**21,357**
Feb-04	383	228	**18,276**
Mar-04	392	240	**23,020**
Apr-04	395	228	**22,000**
May-04	388	238	**22,936**
Jun-04	390	237	**22,631**
Jul-04	392	244	**23,466**
Aug-04	434	235	**24,946**
Sep-04	442	252	**25,040**
Oct-04	420	243	**24,772**
Nov-04			

Monitoring Wells			Seep Collection Area					Monitoring Area - Seep	
			Collection Wells		Surface Stream	Combined Seep Area		Monitoring Wells	
Date	ARP-3 ClO4 Concentration (ppm)	MW-K5 ClO4 Concentration (ppm)	Date	Wells Average Flow Rate (gpm)	Stream Average Flow Rate (gpm)	Combined Average ClO_4 Concentration (ppm)	**Monthly Mass ClO_4 Removed - Seep Area (lbs)**	Date	PC-97 ClO_4 Concentration (ppm)
Oct-02	500	0.59	Oct-02	191	132	125.9	**15,354**	Oct-02	77
Nov-02	670	1	Nov-02	203	271	70.7	**12,653**	Nov-02	110
Dec-02	627	1.43	Dec-02	241	201	38.7	**6,459**	Dec-02	119
Jan-03	660	160	Jan-03	337	174	53.8	**10,380**	Jan-03	120
Feb-03	430	10.2	Feb-03	395	156	76.7	**15,957**	Feb-03	86
Mar-03	440	100	Mar-03	427	164	68.3	**19,510**	Mar-03	50
Apr-03	410	85	Apr-03	602	107	58.9	**20,548**	Apr-03	63
May-03	340	82	May-03	656	72	55.6	**21,689**	May-03	60
Jun-03	200	110	Jun-03	784	5.5	42.5	**20,637**	Jun-03	51
Jul-03	420	74	Jul-03	806	0.3	33.8	**18,062**	Jul-03	49
Aug-03	380	44	Aug-03	838	0.1	29.2	**14,367**	Aug-03	34
Sep-03	310	46	Sep-03	819	0	31.2	**12,485**	Sep-03	20
Oct-03	270	47	Oct-03	822	0	32.8	**11,475**	Oct-03	12
Nov-03	220	45	Nov-03	848	3.2	29.9	**10,113**	Nov-03	9.3
Dec-03	210	36	Dec-03	814	7.9	29	**9,837**	Dec-03	7.2
Jan-04	240	9.5	Jan-04	837	11.7	29.2	**9,457**	Jan-04	5.5
Feb-04	190	61	Feb-04	804	57.5	29.3	**9,032**	Feb-04	4.1
Mar-04	160	90	Mar-04	732	82.4	29.4	**6,860**	Mar-04	6.2
Apr-04	130	32	Apr-04	694	78.9	16.3	**4,516**	Apr-04	11
May-04	140	29	May-04	717	18.2	14.4	**3,792**	May-04	14
Jun-04	110	27	Jun-04	709	0.1	19.2	**4,703**	Jun-04	12
Jul-04	120	28	Jul-04	704	0		**6,053**	Jul-04	7.4
Aug-04	140	33	Aug-04	685	0		**6,229**	Aug-04	5.5
Sep-04	130	24	Sep-04	649	0		**5,074**	Sep-04	4.1
Oct-04	100	32	Oct-04	690	0		**5,549**	Oct-04	4
Nov-04			Nov-04					Nov-04	

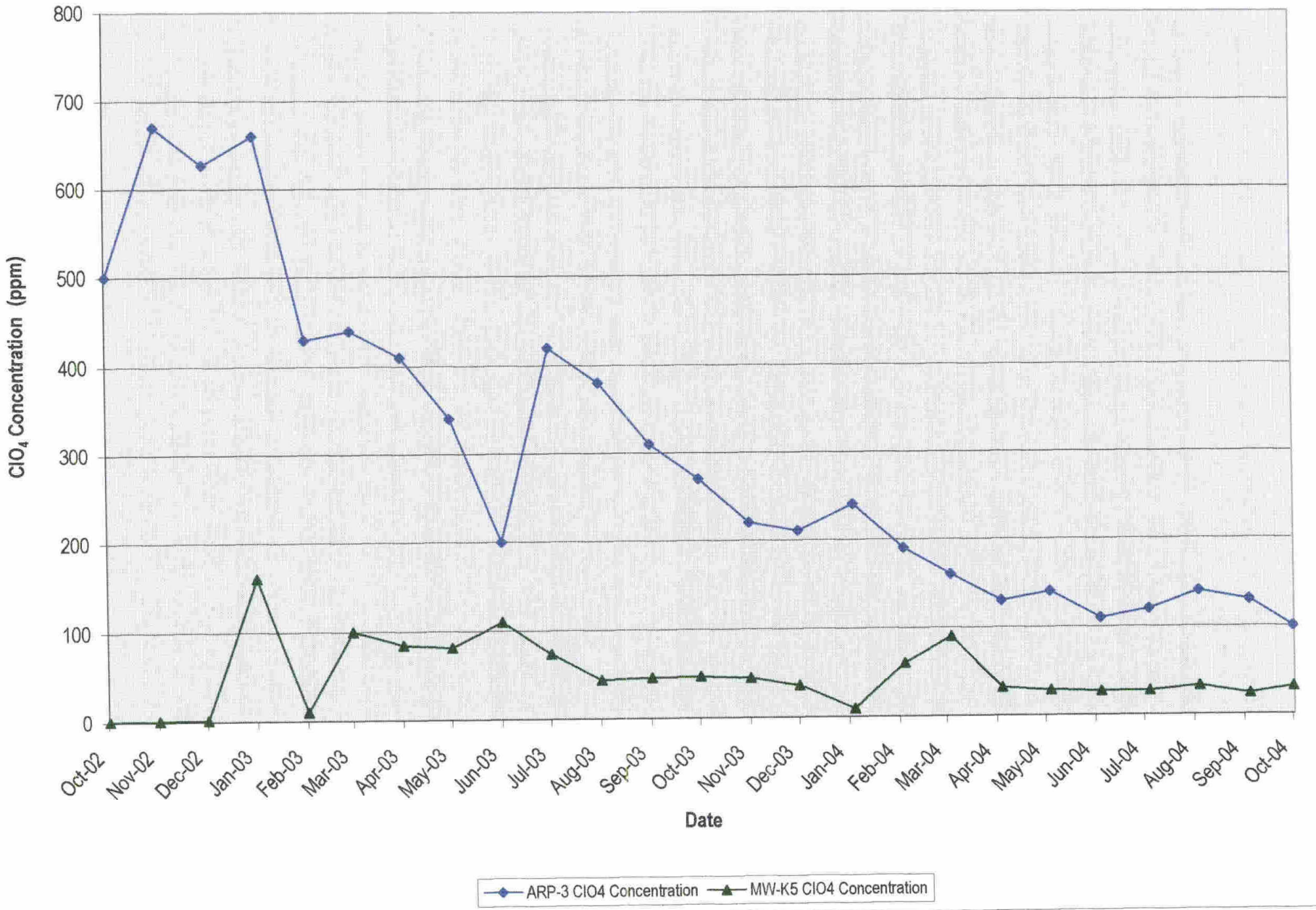

On-Site Collection Area
ClO_4 Concentration (ppm)
Mass ClO_4 Removed (lbs / month)
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Oct-02
Nov-02
Dec-02
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Date
ClO4 Concentration On-Site
Mass ClO4 Removed On-Site

On-Site Collection Area Monitoring Wells



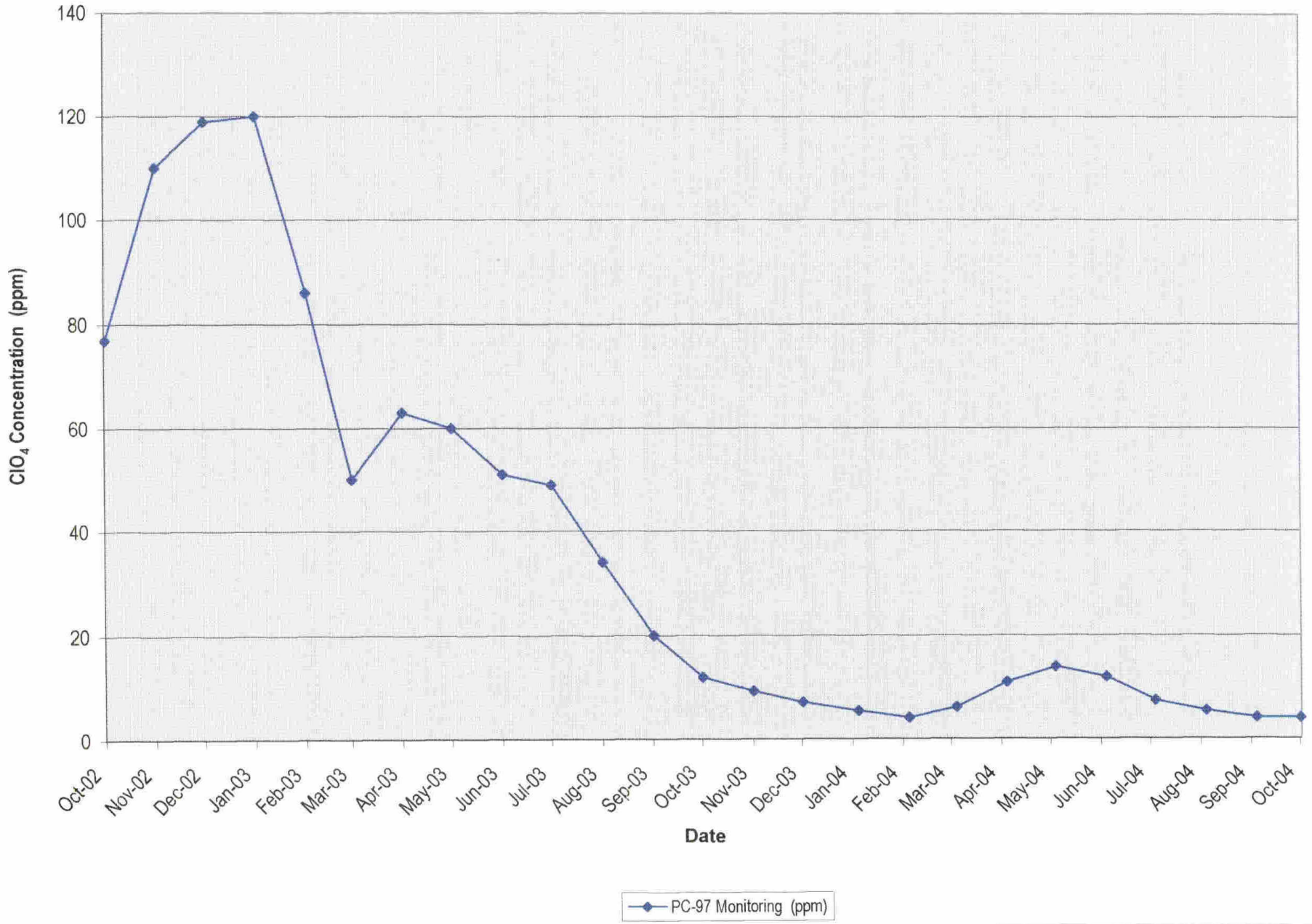

Athens Road Collection Area
ClO4 Concentration (ppm)
Mass ClO4 Removed (lbs /month)
Date
0
100
200
300
400
500
600
700
5,000
10,000
15,000
20,000
25,000
30,000
35,000
40,000
Oct-02
Nov-02
Dec-02
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
ART-8 Average ClO4 Concentration
Mass ClO4 Removed Athens Road Area

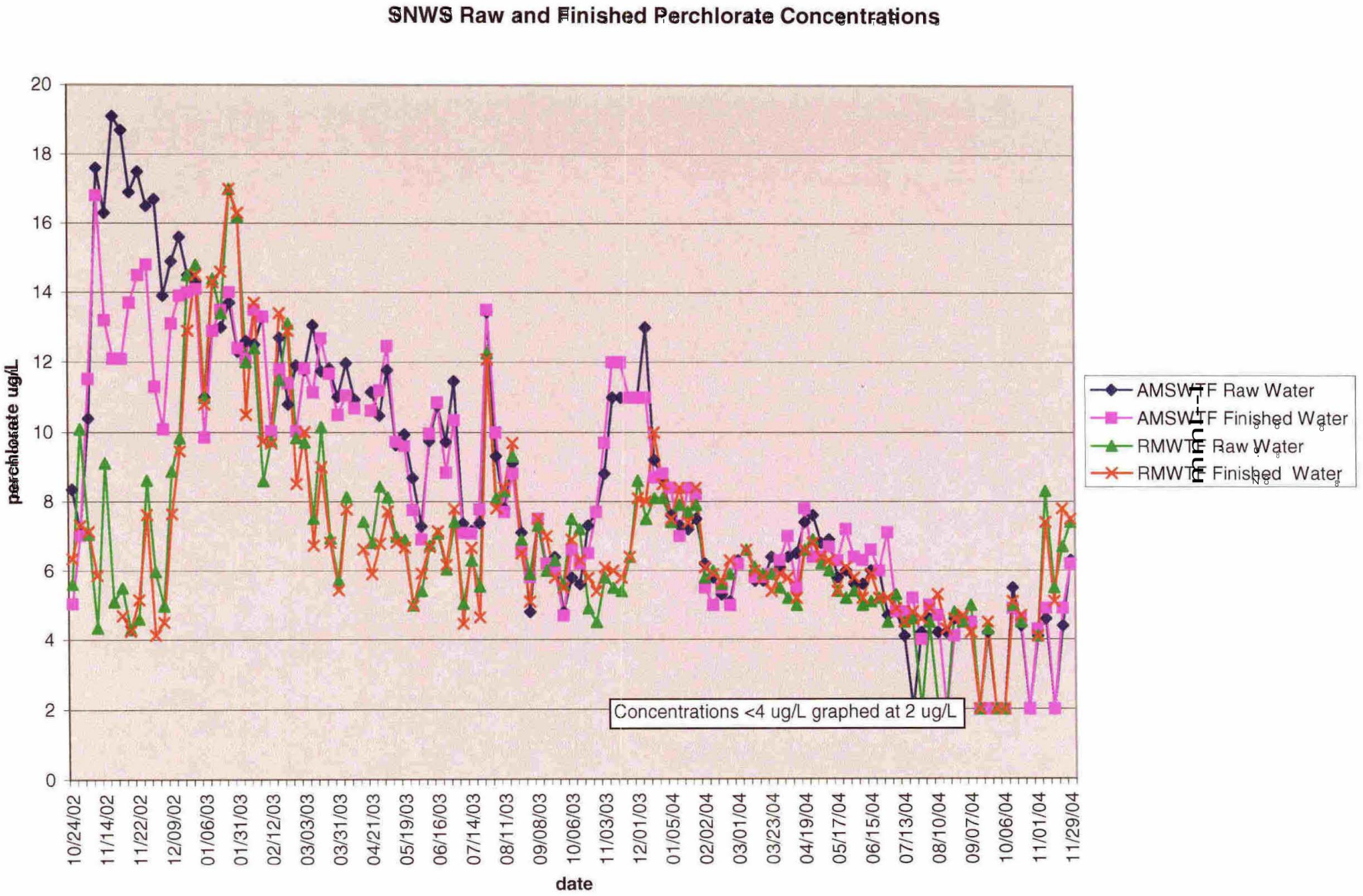
Groundwater Monitoring - Between Athens Road and the Seep Area

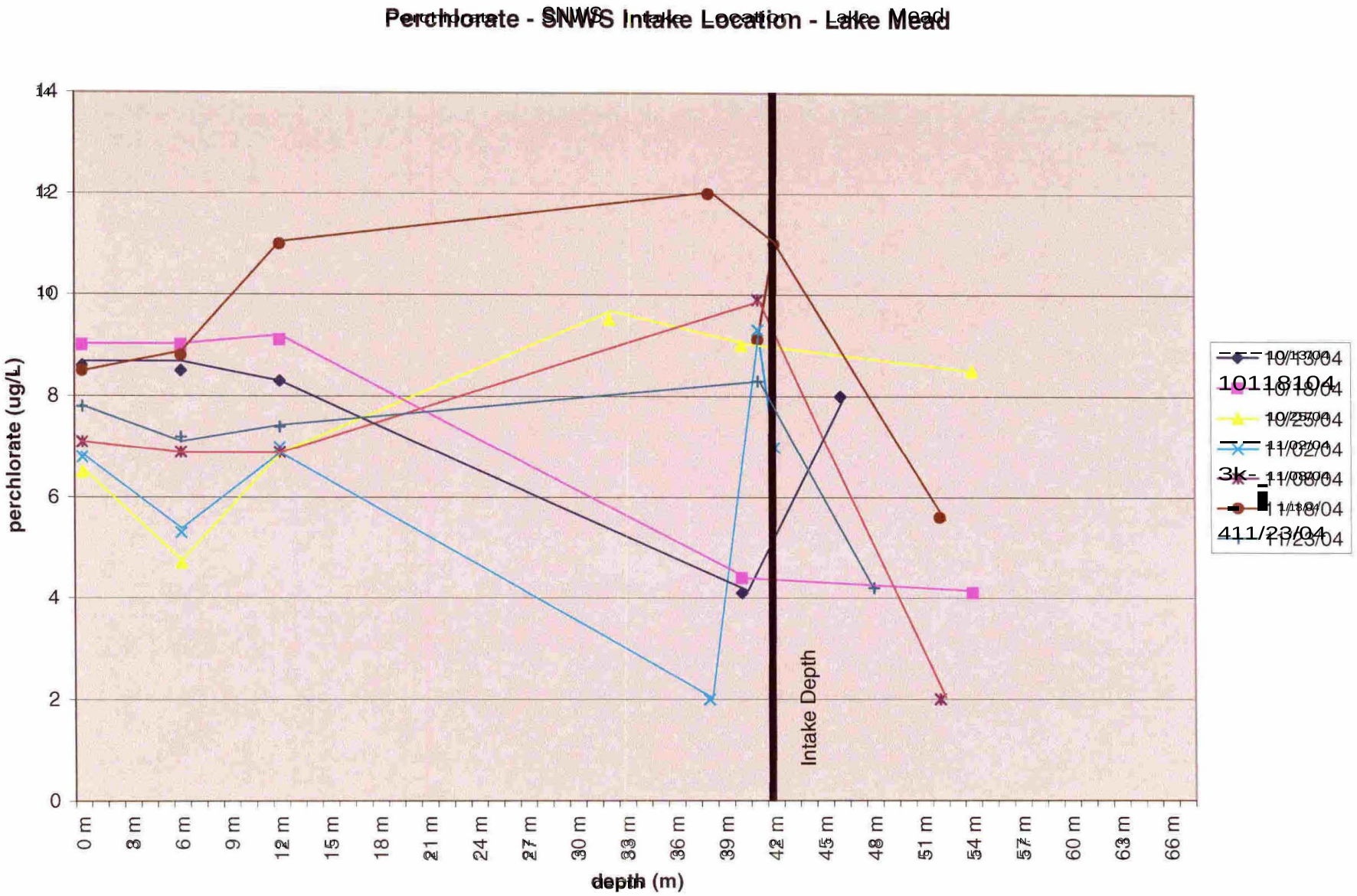



Seep Area ClO4 Removal Rate
ClO4 Concentration (ppm)
ClO4 Mass Removed (lbs / month)
Date
0
20
40
60
80
100
120
140
0
5,000
10,000
15,000
20,000
25,000
Oct-02
Nov-02
Dec-02
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
ClO4 Concentration Combined Seep Area
Mass ClO4 Removed

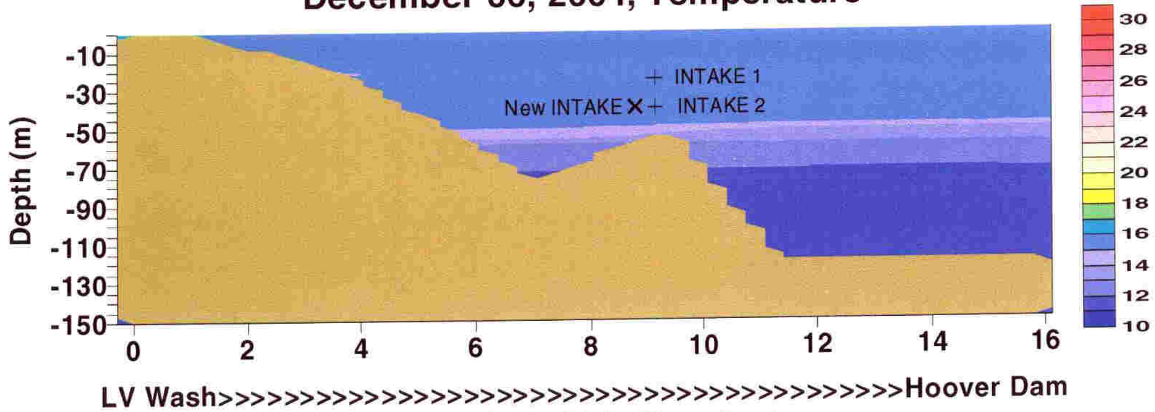
Seep Area Groundwater Monitoring



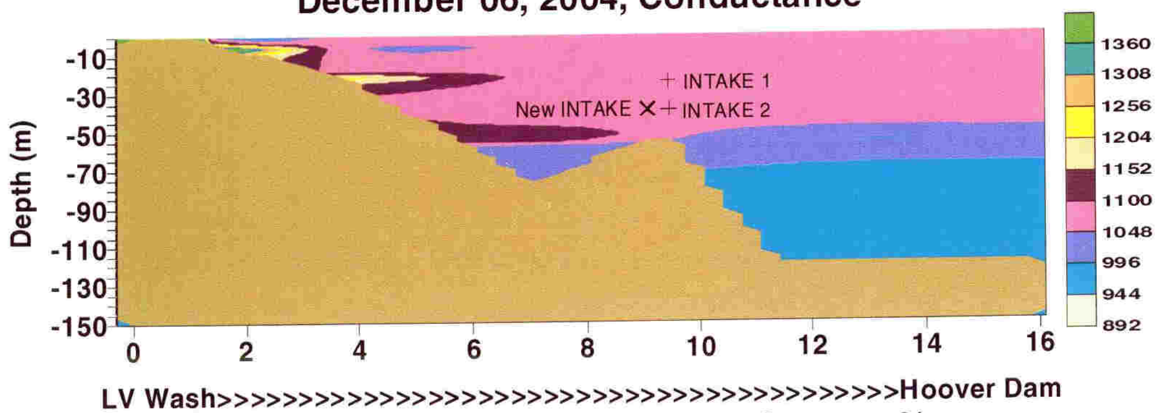

SNWS Raw and Finished Perchlorate Concentrations
perchlorate ug/L
20
18
16
14
12
10
8
6
4
2
0
10/24/02
11/14/02
11/22/02
12/09/02
01/06/03
01/31/03
02/12/03
03/03/03
03/31/03
04/21/03
05/19/03
06/16/03
07/14/03
08/11/03
09/08/03
10/06/03
11/03/03
12/01/03
01/05/04
02/02/04
03/01/04
03/23/04
04/19/04
05/17/04
06/15/04
07/13/04
08/10/04
09/07/04
10/06/04
11/01/04
11/29/04
date
Concentrations <4 ug/L graphed at 2 ug/L
AMSWTF Raw Water
AMSWTF Finished Water
RMWTF Raw Water
RMWTF Finished Water


Perchlorate - SNWS Intake Location - Lake Mead
perchlorate (ug/L)
depth (m)
Intake Depth
0
2
4
6
8
10
12
14
0 m
3 m
6 m
9 m
12 m
15 m
18 m
21 m
24 m
27 m
30 m
33 m
36 m
39 m
42 m
45 m
48 m
51 m
54 m
57 m
60 m
63 m
66 m
10/13/04
10/18/04
10/25/04
11/02/04
11/08/04
11/18/04
11/23/04

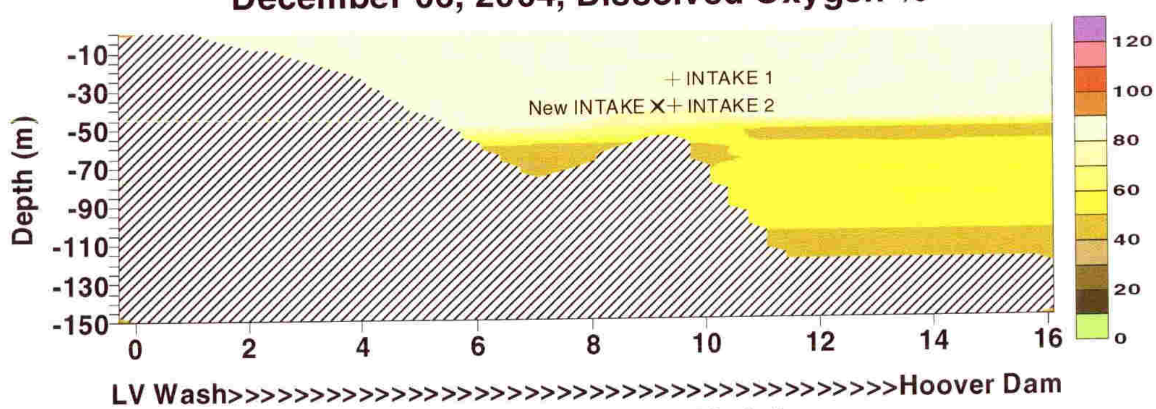
December 06, 2004, Temperature



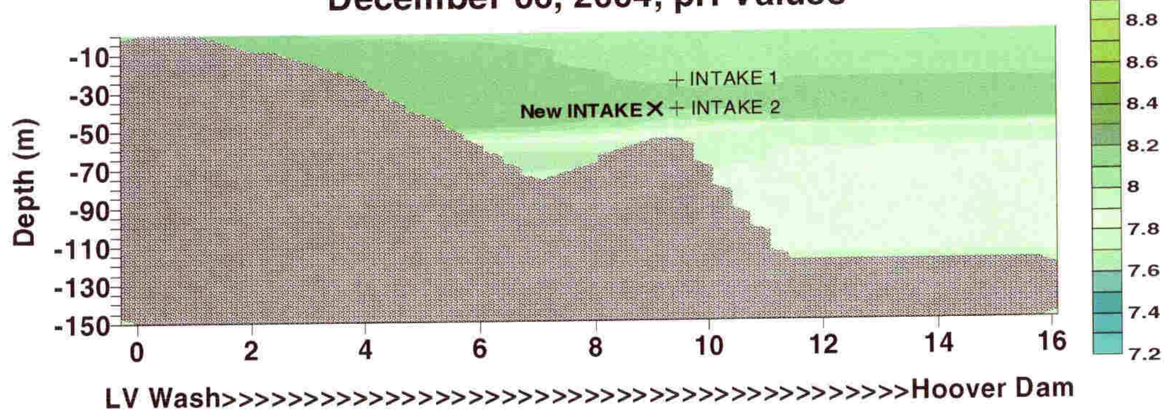
December 06, 2004, Conductance

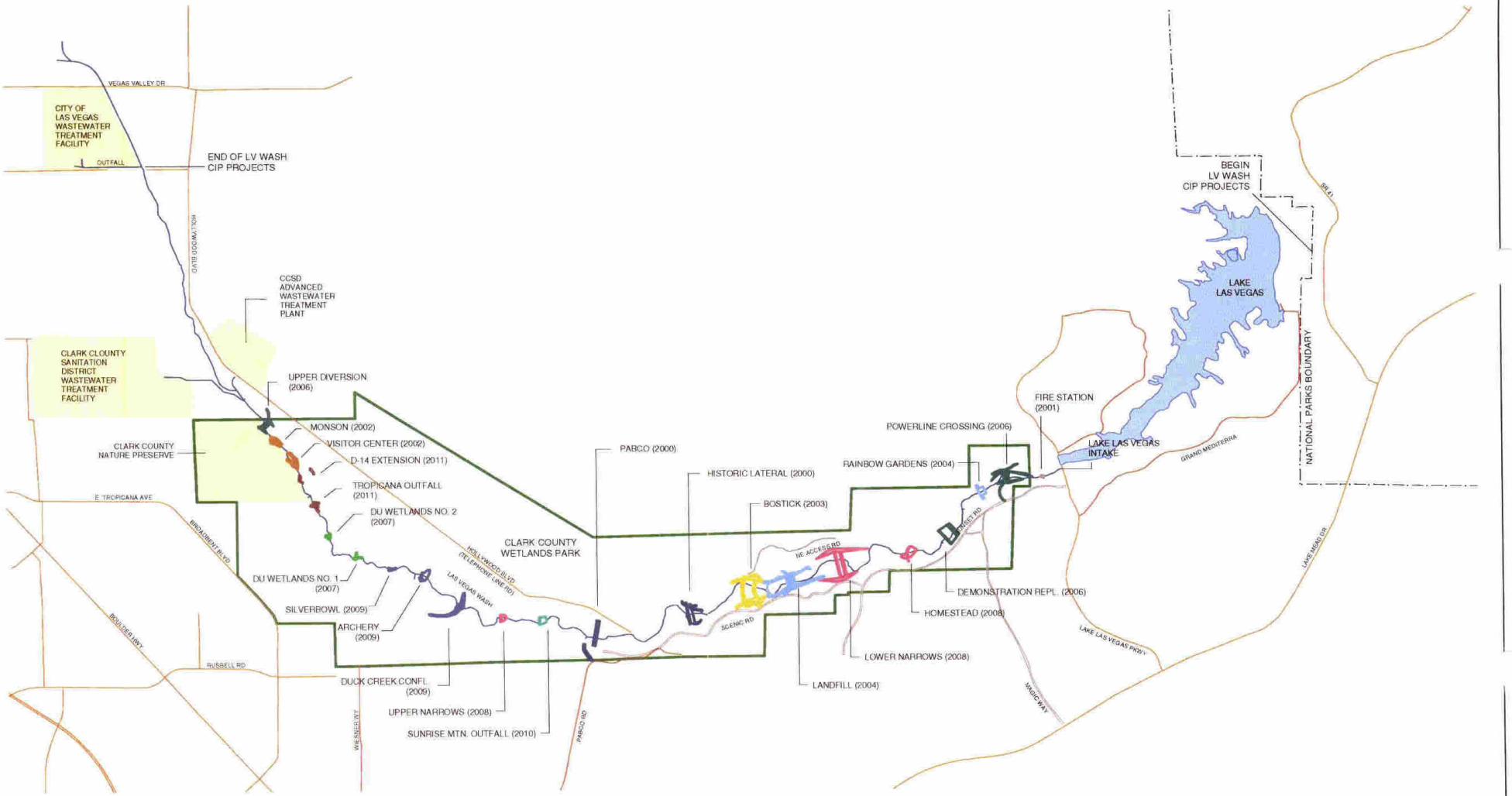


December 06, 2004, Dissolved Oxygen %



December 06, 2004, pH Values





Southern Nevada Water Authority

1900 E. Flamingo Rd., Ste. 170
Las Vegas, NV 89119
Phone: (702) 862-3400 / www.SNWA.com

SNWA LAS VEGAS WASH CAPITAL IMPROVEMENTS PLAN, GRADE CONTROL STRUCTURES

Project Construction Completion Year

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

N W E S

Feet 0 500 1,000 2,000 3,000 4,000

1 Inch = 3000 Feet

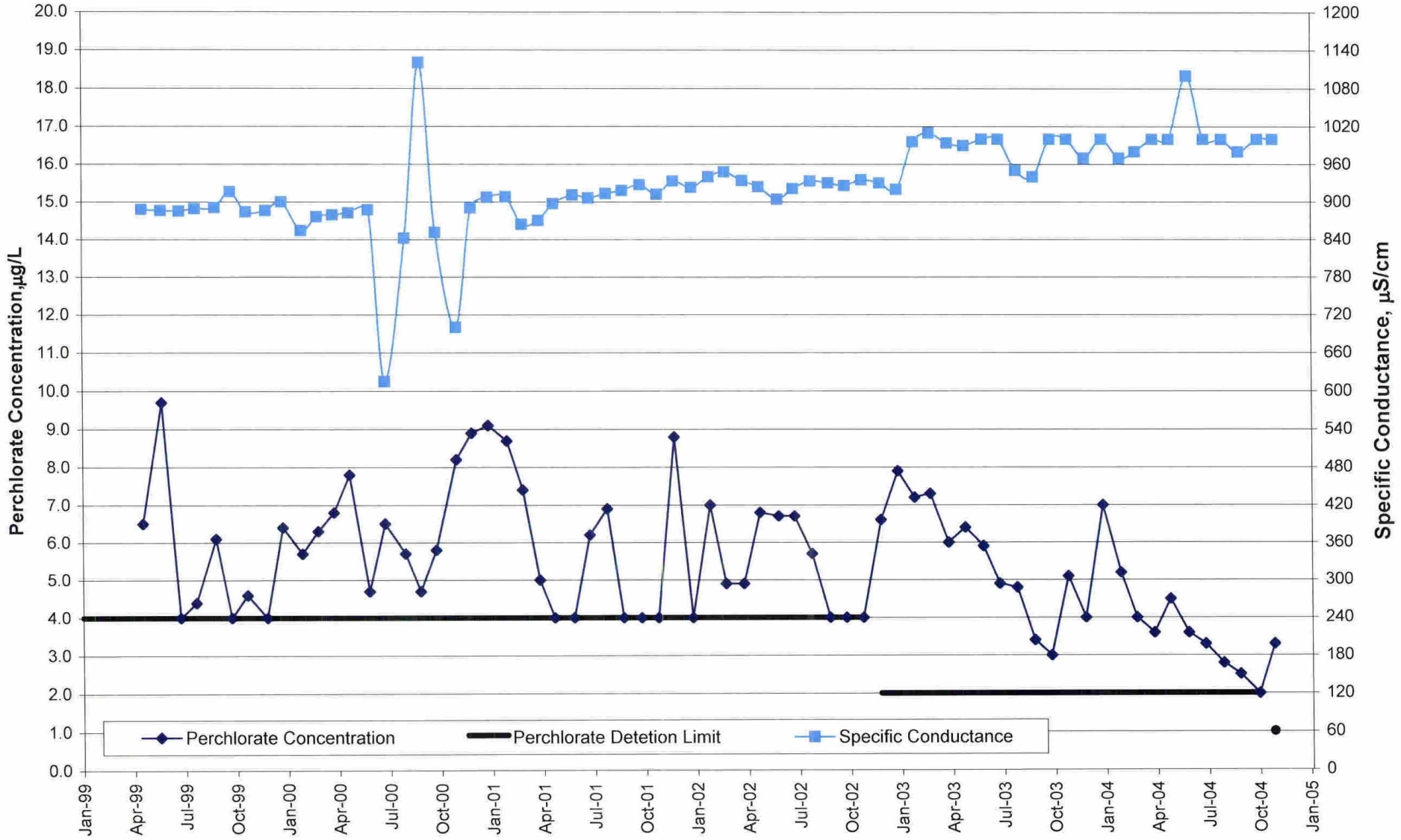
FIGURE: WFE-010

14 OCT 2004

Willow Beach Sampling Point East bank of Colorado River approximately 11 mile downstream of Hoover Dam (Lake Mead)			
Date	**Perchlorate Concentration ug/L**	**Specific Conductance uS/cm**	**Perchlorate Concentration Detection Limit ug/L**
01/20/99			4
05/06/99	6.5	888	4
06/09/99	9.7	886	4
07/12/99	**4.0**	885	4
08/09/99	4.4	889	4
09/13/99	6.1	891	4
10/11/99	**4.0**	916	4
11/08/99	4.6	884	4
12/13/99	**4.0**	886	4
01/10/00	6.4	900	4
02/14/00	5.7	854	4
03/13/00	6.3	876	4
04/10/00	6.8	879	4
05/08/00	7.8	882	4
06/12/00	4.7	887	4
07/10/00	6.5	615	4
08/15/00	5.7	842	4
09/11/00	4.7	1120	4
10/09/00	5.8	851	4
11/14/00	8.2	700	4
12/11/00	8.9	890	4
01/10/01	9.1	907	4
02/12/01	8.7	908	4
03/12/01	7.4	864	4
04/11/01	5.0	870	4
05/07/01	**4.0**	897	4
06/11/01	**4.0**	911	4
07/09/01	6.2	906	4
08/09/01	6.9	913	4
09/07/01	**4.0**	918	4
10/09/01	**4.0**	927	4
11/08/01	**4.0**	912	4
12/07/01	8.8	933	4
01/08/02	**4.0**	923	4
02/08/02	7.0	940	4
03/08/02	4.9	948	4
04/09/02	4.9	934	4
05/08/02	6.8	924	4
06/10/02	6.7	904	4
07/08/02	6.7	921	4
08/08/02	5.7	933	4
09/09/02	**4.0**	930	4
10/08/02	**4.0**	926	4
11/07/02	**4.0**	935	4
12/09/02	6.6	930	2

Willow Beach Sampling Point East bank of Colorado River approximately 11 mile downstream of Hoover Dam (Lake Mead)			
Date	**Perchlorate Concentration ug/L**	**Specific Conductance uS/cm**	**Perchlorate Concentration Detection Limit ug/L**
01/08/03	7.9	920	2
02/07/03	7.2	996	2
03/07/03	7.3	1010	2
04/08/03	6.0	994	2
05/08/03	6.4	990	2
06/09/03	5.9	1000	2
07/08/03	4.9	1000	2
08/08/03	4.8	950	2
09/08/03	3.4	940	2
10/08/03	3.0	1000	2
11/07/03	5.1	1000	2
12/08/03	4.0	970	2
01/08/04	7.0	1000	2
02/09/04	5.2	970	2
03/08/04	4.0	980	2
04/08/04	3.6	1000	2
05/07/04	4.5	1000	2
06/08/04	3.6	1100	2
07/08/04	3.3	1000	2
08/09/04	2.8	1000	2
09/08/04	2.5	980	2
10/12/04	2.0	1000	2
11/08/04	3.3	1000	1

Perchlorate Concentration & Specific Conductance
Colorado River - Willow Beach AZ Sampling Point



Notes: * Perchlorate concentration & Specific Conductance sampled on or about the 8th of each month.
* Willow Beach AZ sampling point is located along the east bank of the Colorado River approximately 11 miles downstream from Hoover Dam (Lake Mead).
* Approximate location: 35° 52' 26" N by 114° 39' 43" W

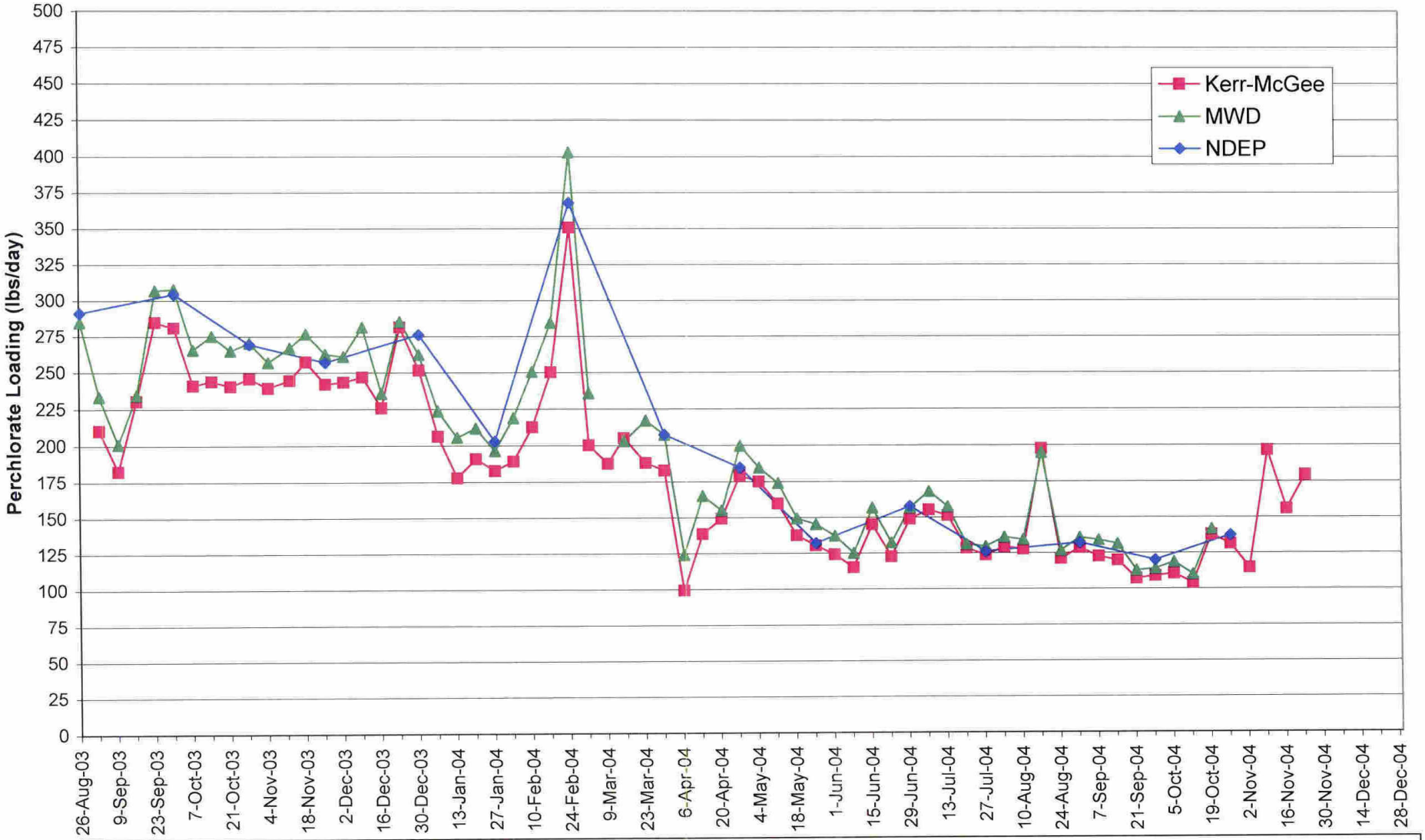
Northshore Road Sampling Point
Weekly Sampling Data
Las Vegas Wash downstream of Lake Las Vegas at or near Northshore Road
Real-Time Flow Values

			MWD		Kerr-McGee		NDEP	
USGS Gage Notes	Sample Date/Time	Real Time Flow Rate (cfs)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)
Gage # 09419790	8/26/03 9:15	200	264	285	--	--	270	291
	9/2/03 9:00	721	60	233	54	210	--	--
Gage Data from 9:30 am used	9/9/03 9:35	133	280	201	254	182	--	--
	9/16/03 9:30	158	275	234	270	230	--	--
	9/23/03 9:15	218	261	307	242	285	--	--
	9/30/03 9:15	209	273	308	249	281	270	304
	10/7/03 9:30	201	245	266	222	241	--	--
	10/14/03 9:45	209	244	275	216	244	--	--
	10/21/03 9:15	209	235	265	213	240	--	--
	10/28/03 9:30	192	261	270	237	246	260	269
	11/4/03 9:00	209	228	257	212	239	--	--
Sample collected on Wed. due to Veteran's Day	11/12/03 9:00	223	222	267	203	244	--	--
	11/18/03 9:00	227	226	277	210	257	--	--
	11/25/03 14:45	280	174	263	160	242	170	257
	12/2/03 9:00	223	217	261	202	243	--	--
	12/9/03 9:30	223	234	282	205	247	--	--
	12/16/03 9:30	209	209	236	200	226	--	--
	12/23/03 9:30	246	215	285	212	281	--	--
	12/30/03 9:00	256	190	262	182	251	200	276
	1/6/04 8:15	192	216	224	199	206	--	--
	1/13/04 9:15	163	234	206	202	178	--	--
	1/20/04 8:45	188	209	212	188	191	--	--
	1/27/04 9:00	171	213	197	198	183	220	203
	2/3/04 7:45	205	198	219	171	189	--	--
	2/10/04 9:15	214	217	251	184	212	--	--
	2/17/04 9:30	256	206	285	181	250	--	--
	2/24/04 8:45	359	208	403	181	351	190	368
	3/2/04 8:30	205	213	236	181	200	--	--
	3/9/04 8:45	179	--		194	187	--	--
	3/15/04 8:30	171	220	203	222	205	--	--
	3/23/04 9:30	175	230	217	199	188	--	--
	3/30/04 9:30	183	210	207	185	183	210	207
	4/6/04 9:15	100	230	124	184	99	--	--
	4/13/04 9:15	171	179	165	150	138	--	--
	4/20/04 9:15	183	157	155	151	149	--	--
	4/27/04 9:15	214	173	200	155	179	160	185
	5/4/04 9:00	205	167	185	158	175	--	--
	5/11/04 9:30	192	168	174	154	160	--	--
	5/18/04 9:00	171	162	149	149	137	--	--
	5/25/04 8:45	175	154	145	138	130	140	132

Weekly Sampling Data
Las Vegas Wash downstream of Lake Las Vegas at or near Northshore Road
Real-Time Flow Values

			MWD		Kerr-McGee		NDEP	
USGS Gage Notes	Sample Date/Time	Real Time Flow Rate (cfs)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)
	6/1/04 9:30	163	156	137	141	124	--	--
	6/8/04 8:45	159	146	125	134	115	--	--
	6/15/04 9:45	171	170	157	157	145	--	--
	6/22/04 8:45	167	147	132	136	123	--	--
	6/29/04 8:00	209	139	157	132	149	140	158
	7/6/04 9:45	201	155	168	143	155	--	--
	7/13/04 9:30	196	149	158	143	151	--	--
	7/20/04 8:30	179	136	131	133	128	--	--
	7/27/04 9:15	167	144	130	137	123	140	126
	8/3/04 8:15	183	138	136	131	129	--	--
	8/10/04 10:15	163	153	135	145	128	--	--
	8/17/04 8:45	463	78	195	79	197	--	--
	8/24/04 9:00	159	148	127	141	121	--	--
	8/31/04 9:00	175	144	136	136	128	140	132
	9/7/04 9:15	167	149	134	136	123	--	--
	9/14/04 9:15	167	146	132	133	120	--	--
	9/21/04 8:30	155	135	113	128	107	--	--
	9/28/04 8:30	159	133	114	127	109	140	120
	10/5/04 8:45	155	142	119	132	110	--	--
	10/12/04 9:00	147	139	110	131	104	--	--
	10/19/04 8:45	192	137	142	133	138	--	--
	10/26/04 9:15	196			124	131	130	137
	11/2/04 10:00	167			127	114	--	--
	11/9/04 7:45	438			83	196	--	--
	11/16/04 9:00	209			138	156	--	--
	11/23/04 9:00	239			139	179	--	--

Perchlorate Loading - Las Vegas Wash - Northshore Road Sampling Point
Real-Time Flow Values



Notes: * NDEP: Perchlorate concentration sampled on the last Tuesday of each month.

* MWD and Kerr-McGee: Perchlorate concentration sampled every Tuesday.

* Northshore Road sampling point positioned approximately one-half mile upstream from confluence of Las Vegas Wash and Lake Mead.

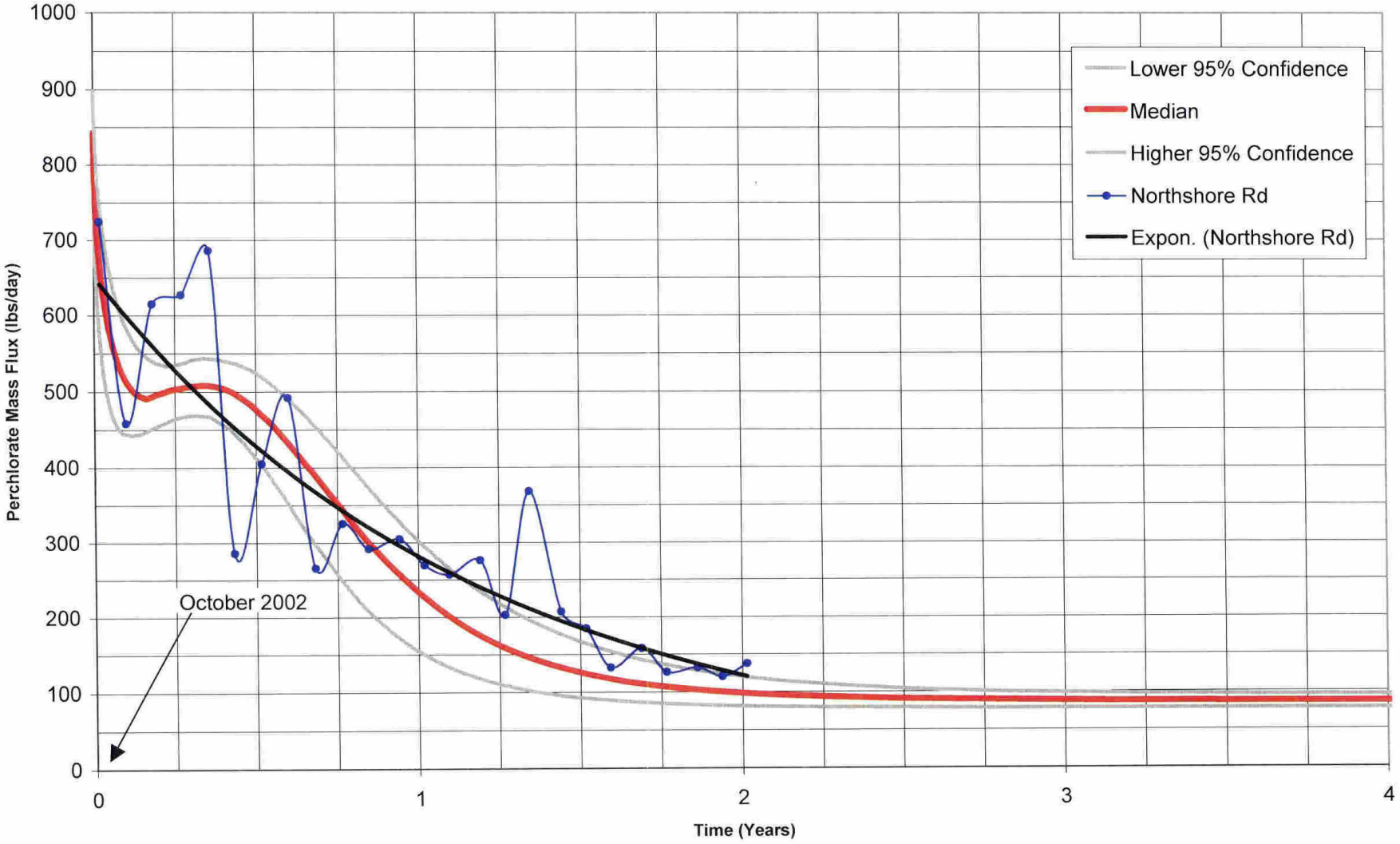
* Northshore Road sampling point should measure all perchlorate inputs entering the Colorado River System from the Las Vegas Valley via Las Vegas Wash.

* Approximate Location: 36°07' 20" N by 114°54' 15" W

NDEP Sampling Data

USGS Gage Notes	Sample Date/Time	Time (Years) T=0 @ Oct 2002	Real Time Flow Rate (cfs)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)
	10/22/02 0:00	0.000			
	10/28/02 9:30	0.018	213	630	725
	11/26/02 9:30	0.097	177	480	459
	12/26/02 9:20	0.179	215	530	615
	1/28/03 9:30	0.270	197	590	627
Gage # 09419800 No discharge data available for 11:30; 4 AM data used	2/28/03 11:30	0.355	326	390	686
	3/28/03 9:15	0.431	115	460	285
No discharge data available on or near sampling time. **See note on right**	4/28/03 9:30	0.516	150	500	405
	5/28/03 9:30	0.598	228	400	492
	6/27/03 9:15	0.681	214	230	266
	7/28/03 9:30	0.765	274	220	325
	8/26/03 9:15	0.845	200	270	291
	9/30/03 9:15	0.941	209	270	304
	10/28/03 9:30	1.018	192	260	269
	11/25/03 14:45	1.095	280	170	257
	12/30/03 9:00	1.190	256	200	276
	1/27/04 9:00	1.267	171	220	203
	2/24/04 8:45	1.343	359	190	368
	3/30/04 9:30	1.439	183	210	207
	4/27/04 9:15	1.516	214	160	185
	5/25/04 8:45	1.593	175	140	132
	6/29/04 8:00	1.689	209	140	158
	7/27/04 9:15	1.765	167	140	126
	8/31/04 9:00	1.861	175	140	132
	9/28/04 8:30	1.938	159	140	120
	10/26/04 9:15	2.015	196	130	137

Breakthrough Curve: 90% Efficient Model Results, Mass



Toxin from '88 Nevada explosion is tainting food

Rocket fuel: Perchlorate in the Colorado River is getting into lettuce and milk, says the FDA

By Patty Henetz
The Salt Lake Tribune

Residue from a rocket fuel plant destroyed in an explosion nearly 17 years ago near Henderson, Nev., continues to pollute the lower Colorado River, whose waters irrigate much of the lettuce consumed in the United States.

Now the Food and Drug Administration has confirmed earlier studies showing perchlorate contamination from that plant and other sites around the nation is concentrating in lettuce and milk.

The agency's results, released this week on the FDA Web site from tests conducted in August, underscore earlier studies by the Environmental Working Group, university researchers and California journalists, but they are the first to document nationwide contamination of food.

The FDA reported finding perchlorate in 217 of 232 samples of milk and lettuce in 15 states. Most of the samples were taken in California, Nevada and Arizona. Nearly all the samples showed perchlorate levels higher than the 1 part per billion the federal Environmental Protection Agency has identified in a preliminary risk assessment as acceptable for drinking water.

That standard currently is under review by the National Academy of Sciences, which is expected to issue its evaluation in January.

Massachusetts has adopted the 1 ppb standard. California has set a preliminary safety standard of 6 ppb. Utah has no standard. State law says only that Utah's standard can't be more stringent than whatever the EPA adopts.

Perchlorate is the explosive component of rocket fuel. It is used to manufacture fireworks, gunpowder and highway flares. It also is used in tanning and leather finishing, rubber, paint and enamel production.

The lower Colorado River supplies most of Southern California's drinking water and irrigates over a million acres of farmland in California and Arizona, where much of the nation's winter produce is grown. Irrigation water used for alfalfa production is the most likely source of perchlorate contamination in milk.

FDA researchers say perchlorate at high doses disrupts thyroid gland functions. The biggest risks are to children and fetuses. Results include delayed development, mental retardation, hearing loss and motor skills impairment. Chronic lowering of thyroid hormones due to high perchlorate exposure may also result in thyroid tumors.

Even so, Bill Walker, EWG's West Coast vice president, said people shouldn't stop eating greens or drinking milk, because the foods' health benefits generally outweigh the perchlorate risk.

"The people we really think are getting the raw deal are the lettuce growers and dairymen," he said. "It's not their fault their products are contaminated with rocket fuels — or that their markets could be damaged by these findings."

The FDA emphasized that the data are exploratory and limited in scope, and that perchlorate levels don't necessarily translate to perchlorate exposure.

The Environmental Working Group, a research group with offices in California and Washington, D.C., has identified 162 sites in 36 states that use or manufacture perchlorate.

Twelve are in Utah.

The major pollution of the Colorado River started on May 4, 1988, when a series of explosions at the Kerr-McGee perchlorate manufacturing plant, PEPCON, at Henderson killed two employees and left a long-lasting legacy of perchlorate leaching into Lake Mead.

The Environmental Protection Agency estimates 500 pounds of perchlorate per day flows from the lake into the river.

ISSUED
12/6/04

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: November 30, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Alan Tinney, Leo Drozdoff, Valerie King, Jim Hogan

RE: KM Meeting on November 30, 2004 at 9:00 AM via telephone

1. Attendance:
   a. NDEP: Brian Rakvica, Todd Croft, Alan Tinney, Jim Najima, Jim Hogan
   b. KM: Keith Bailey, Susan Crowley
2. Reviewed FBR system operations.
   a. System is still running at ~1,000 gpm. GWTS and pond GW-11 are still operating in the same manner.
   b. KM has completed the performance test. Assuming that ND's are equal to zero, the average concentration for the test is 3.5 ppb. It was noted that most NDs have a detection limit of 4 ppb. At least one had a detection limit of 8 ppb.
   c. KM noted that the clarity has been running 15-20 ntu.
   d. NDEP noted that the discharge was slightly cloudy and asked that KM review if there was anything that could be done to improve the discharge clarity. KM noted that they would like to try to cut the flow rate back to ~950 gpm to increase the residence time in the DAFs. KM noted that for the purposes of the performance test they were pumping heavily from well PC-121 (located on the western edge of the Seep Area well field).
   e. KM noted that they had a brief diversion to pond GW-11 on 11/29/04 due to increased turbidity.
   f. KM stated that the presence of increasing amounts of white algae might be due to the changes in temperature.
   g. KM noted that the discharge D.O. concentration has been 2.5-4.0 mg/L and that the hydrogen peroxide system is working well.
3. Discussed discharge relocation.
   a. KM noted that BOR has received their application and should be reviewing it shortly. Preliminary indications from BOR indicate that this should not be a problem.
4. Discussed Quarterly Meeting.
   a. Todd will issue an agenda shortly.
   b. KM requested that the following items be included in the agenda: reduce the resin inventory for the IX systems; and discussion of the NPDES permit application.
5. Other discussions.

a. It was noted that the FDA has released their data on perchlorate testing of milk, vegetables, etc.
b. It was noted that the new NDEP permit writer is Jim Hogan.
c. KM noted that they would be installing a new well on the east side of the Seep Area well field. This well should be operational by early January.
d. KM noted that they have been experiencing some analytical interference. KM is working with the labs to verify if this could be p-CBSa. KM is also communicating with SNWA (Shane Snyder) on this issue.

6. Next meeting: December 9, 2004 at 9:30 AM at KM. Next tele-conference on January 6, 2005 at 9:00 AM. Call-in number: 405-270-2641.

LEO DROZDOFF, *Administrator*

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations and Reclamation
Facsimile 684-5259

STATE OF NEVADA
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Facsimile 687-6396

Federal Facilities
Facsimile 687-6396

Corrective Actions
Facsimile 687-8335

ndep.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
Las Vegas Office
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

November 30, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Kerr-McGee Response to NDEP's 10-26-04 Comments

Dear Ms. Crowley,

The NDEP has received and reviewed KM's correspondence identified above and provides comments in Attachment A. The NDEP requests that KM respond to these issues in the next semi-annual report.

If there is anything further or if there are any questions please do not hesitate to contact me.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP-Las Vegas Office

ATTACHMENT A

1. Comment #1
    a. In a November 8, 2004 telephone conference with KM, it was noted that there may have been some errors in the concentrations that were reported. This issue was not addressed in KM's response, however, the data presented in Table 1 appears to be revised. This issue should be documented and explained in KM's response. The revised data presented in Table 1 shows that the concentrations of total chromium in the discharge for the months of May and June 2004 are within the range of historic concentrations. The data presented for September 2004, however, shows a sharp increase in total chromium concentration (approximate three fold increase) over recent discharge concentrations. In general, the data presented in Table 1 shows a decrease in hexavalent chromium concentration and an increase in total chromium concentration versus previously reported values. The increase in total chromium concentration in September 2004 (and any other unexpected data) as well as the revisions made to the data should be discussed in the forthcoming semi-annual report.
    b. The NDEP understands and appreciates the purpose of pond GW-11 and agrees that the contents of the pond should not be expected to meet MCLs. The MCLs were being used by the NDEP as a metric for comparison of discharge concentrations of chromium from the groundwater treatment plant (GWTP).
2. Comment #2, Over the next several reports, it is anticipated that the monitoring network will be refined (expanded) to determine the breadth of the chromium plume and to provided better definition to the iso-concentration contours. Until the chromium plume is defined adequately, it is again requested that KM provide a regional chromium iso-concentration map and potentiometric surface map with each semi-annual report.
3. Comment #5
    a. The NDEP does not fully concur with KM's explanation for the decrease in chromium concentrations in the plume. The NDEP does concur with KM's statement that dispersion and dilution are likely playing a role in the decrease of chromium concentrations in the northern portions of the plume. The NDEP does not have any information to substantiate KM's statement that natural chemical reduction or bio-degradation are taking place. As requested previously, if KM has information to substantiate this statement it is requested that this information be provided to the NDEP. It is requested that statements without a technical basis be omitted from future submittals.
    b. The NDEP concurs with KM's approach to capture and remediate chromium at the Athens Road well field and the on-site well field. The NDEP appreciates that KM is evaluating the capture system to achieve maximum capture of the plume. As characterization progresses it may be necessary to revise the approach to chromium remediation.

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Alan Tinney, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

November 29, 2004

Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA – *Characterization of GW-11 Pond Contents*
Kerr-McGee Response to NDEP Comments of October 26, 2004

Dear Mr. Rakvica:

Kerr-McGee Chemical LLC (Kerr-McGee) has undertaken an Environmental Conditions Assessment (ECA) as directed by Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004, Kerr-McGee has characterized the GW-11 pond contents and supplied that information to the NDEP on September 16, 2004. NDEP commented on the characterization work on September 20 and Kerr-McGee provided responsive information October 18, 2004. NDEP provided additional comment dated October 26, 2004. Kerr-McGee and NDEP discussed the October 26th comments in a teleconference and resolved all but a schedule for submission of additional analytical for the pond contents, which is provided here. The samples for the additional analytical have been taken and submitted to a certified laboratory, MWH in Monrovia, CA. Results are expected within approximately 4 weeks and will be forwarded to NDEP before December 31, 2004.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Hand Carried to NDEP, mailed to other recipients

Cc:
Tom Reed
Ed Krish, ENSR
Don Shandy
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Al Tinney, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

November 29, 2004

Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee Response to NDEP's 9-10-26-04 Comments re the *Kerr-McGee Semi-annual Performance Report - Chromium Mitigation Program – January to June 2004*

Dear Mr. Rakvica:

Semi-annually, Kerr-McGee Chemical LLC (Kerr-McGee) provides Nevada Division of Environmental Protection (NDEP) an evaluation of chromium remedial progress in the vicinity of the Henderson facility. The last evaluation, "*Semi-annual Performance Report – Chromium Mitigation Program January to June 2004*" (Semi-annual Report), was submitted to NDEP in July 2004. In correspondences dated September 8 and October 26 of 2004, NDEP provided comments to Kerr-McGee regarding this report. Kerr-McGee has reviewed these comments and offers the following responses to the October 26th NDEP comments, included in Attachment A. The NDEP comments are italicized for ease of reference.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Hand Carried

CC:
Tom Reed
Ed Krish, ENSR
Don Shandy
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Brad Douerghty
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Al Tinney, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

Attachment

ATTACHMENT A

Kerr-McGee Response to NDEP October 26, 2004 Comments on the
"Semi-annual Performance Report – Chromium Mitigation Program
Henderson Facility, Nevada
January – June, 2004"

NDEP Comment 1:

KM response to Comment #2, the NDEP would like to note that the original comment deals with the issue of the total outflow concentrations from the groundwater treatment system (GWTS) to pond GW-11 exceeding the USEPA MCL of 0.1 mg/L. KM's response addresses the existing consent order and UIC permit which does not answer the NDEP's original question. This USEPA MCL corresponds to the discharge limit specified in KM's NPDES permit. There is also a limit of 0.01 mg/L specified for hexavalent chromium in the existing NPDES permit. Water from the GW-11 pond is eventually discharged via this NPDES permit and it is the belief of the NDEP that the performance of the chromium system directly relates to this NPDES permit.

The NDEP understands that the existing concentrations in the NPDES discharge are within permit limitations, however, the NDEP would like to understand the following: is the system operating as expected? Have any changes been made to the treatment system that would cause this increase in discharge concentration? Are any future modifications or repairs anticipated that will reduce the concentration of chromium in the discharge?

It is the understanding of the NDEP (based on KM's response) that KM's solution to the elevated levels of chromium in the discharge of the treatment system is as follows: the flow from GW-11 is re-run through the chromium treatment system prior to addition to the FBRs and the chromium concentrations are further reduced by the addition of large volumes of lower concentration water from the Seep area and Athens Road well field. If this understanding is not correct please provide clarification.

Please explain the increase in discharge concentration in the months of May and June 2004 from the GWTS to pond GW-11. Also, if any more current data (for average total chromium for the treated outflow as labeled in Table 4 of the semi-annual report) is available please provide that information as well.

Kerr-McGee Response:

The GW-11 pond was constructed to provide equalization in advance of groundwater treatment for perchlorate reduction. In addition to the collected on-site groundwater which had been remediated to reduce hexavalent chromium and was awaiting perchlorate reduction, at NDEP's request, large volumes of water from the Seep area were impounded while perchlorate reduction technologies were constructed. Since the pond acts as an intermediate holding area until the water can be treated and discharged, Kerr-McGee believes that application of MCLs to the pond contents is not appropriate. Under such logic, if and when an MCL is promulgated for perchlorate, the use of the pond for equalization of collected groundwater containing high concentrations of perchlorate prior to biological treatment would be precluded.

NDEP is correct that GW-11 pond water is being processed through the GWTP to ensure chromium reduction to the trivalent state before this portion of the feed matrix is added to the remaining matrix and fed to the biological treatment, the fluidized bed reactors (FBRs). To optimize the valence state reduction Kerr-McGee received NDEP approval to supplement the original electrolytic ferrous ion reduction process with a direct addition of ferrous ion to the chromium reduction (GWTP) process. This process augmentation has performed very well. Please see the attached Table 1. Note hexavalent chromium concentrations in the GWTP discharge have dropped since establishment of the process augmentation and are consistently lower than the non-augmented process. Kerr-McGee is evaluating the

possibility of utilizing the ferrous ion direct addition as the primary mechanism for chromium reduction. Please see the Kerr-McGee response to NDEP comment # 6.

Table 1. GWTP Discharge Chromium Values
(MWH - Certified Laboratory)

MONTH	AVE. Cr VI TREATED OUTFLOW (mg/L)	AVE. TOTAL Cr TREATED OUTFLOW (mg/L)
9/03	0.03	0.14
10/03	0.06	0.16
11/03	0.009	0.20
12/03	0.03	0.26
1/04	0.01	0.23
2/04	0.009	0.16
3/04	0.004	0.12
4/04	0.001	0.14
5/04	0.00	0.13
6/04	0.00	0.14
7/04	0.00	0.22
8/04	0.007	0.16
9/04	0.01	0.65

Note that while it represents a small portion of the overall flow to the perchlorate reduction process, the chromium treated flow from the GWTP (which includes pond water and the groundwater collected from the on-site well) is an important portion of the overall matrix treated in the perchlorate remediation process. This flow represents the highest perchlorate mass contribution for remedial efforts. Over the last several quarters, as the GWTP discharge has been steadily shifted from the pond to the feed matrix of the FBR's, the discharge from the FBR's, has consistently met the approved NPDES Discharge Permit NV 0023060 limits for both hexavalent and total chromium.

NDEP Comment 2:

KM response to Comment #4, the NDEP concurs that it is not necessary to sample non-KM wells outside the vicinity of the site plume. As the plume is better defined, it may become necessary to sample non-KM wells that are not currently sampled. The NDEP also requests that KM provide the chromium iso-concentration maps and the potentiometric surface maps with both semi-annual reports.

Kerr-McGee Response:

Once data usability has been verified, Kerr-McGee may add groundwater chromium analytical data collected by other parties to our periodic chromium plumes maps to define plume edges as necessary.

For the Athens Road area, Kerr-McGee will be providing chromium iso-concentration and potentiometric maps in the next semi-annual chromium mitigation performance report, to cover July to December 2004. Analytical information will be provided from the groundwater monitoring program which, in the Athens Road area, has been instituted to follow developing groundwater changes in the relatively new collection field area. A wide network of monitor wells are currently sampled quarterly to determine both chromium and perchlorate values.

For the on-site area, quarterly sampling was required by the 1986 Consent Order between Kerr-McGee and NDEP and was used initially to follow developing changes in the collection well field area, both to predict the hexavalent chromium concentrations which would be collected and treated by the electrolytic ferrous ion reduction process as well as to confirm the recharged treated groundwater was having the expected positive effect. After many years, and as the on-site chromium remediation system matured, the groundwater chromium concentration did not change appreciably from quarter to quarter and the quarterly sampling was primarily used to confirm past information. In mid-1993 Kerr-McGee completed a comprehensive review of the on-site groundwater interception system utilizing a wider network of monitor wells (than required by the 1986 Consent Order) sampled in the second quarter of that year. From that point on, Kerr-McGee has on an annual basis, utilized a more comprehensive annual sampling (than required in the 1986 Consent Order) to develop chromium iso-concentration maps (Plate 1 in the January to June Semi-Annual Report). Quarterly on-site well sampling schedules for the third, fourth, and first quarters are intended to re-affirm information used to develop the annual iso-concentration map.

NDEP Comment 3:

KM response to Comments #5 and #6, the NDEP agrees with the proposed installation of additional wells. It is suggested that soils data be collected and analyzed in any locations where wells are drilled. Please include well M29 in the next round of sampling to provide further delineation of the chromium plume in the vicinity of Unit 6. Also, it appears that the plume is not well defined in the vicinity of wells M100, M111, and H38. Please review the feasibility of including some or all of these wells in the next round of sampling. There also appears to be a large data gap between the Athens Road well field and the northern extent of the data presented on plate 1. There are a number of wells in this area that may be suitable for sampling. It is also requested that KM carefully review the plume maps and review the sufficiency of the data used to develop the iso-concentration contours. If additional sampling is needed to define the plume it is suggested that additional wells be included in the next round of sampling.

Kerr-McGee Response:

Kerr-McGee will be installing the proposed wells in December 2004 and will be collecting lithologic information during the drilling. Kerr-McGee does not believe that collecting soil analytical data from these locations would be useful at this time. Soil analytical sampling for the site would be better managed through a comprehensive site soil investigation work plan that would determine the proper locations based on known source areas, the area-specific constituents for analysis, and the appropriate depth intervals for sampling. Kerr-McGee envisions an overall soil sampling program in conjunction with the ECA process which will be designed to adequately address NDEP soil concerns.

Wells M-29, M-100, M-111, and H-38 will be included in the next annual sampling event. In addition, Kerr-McGee will sample the Kerr-McGee wells between the north facility boundary (the northern extent of Plate 1) and Athens Road area during the next annual sampling event. These wells include PC-28, PC-31, PC-40, PC-64, PC-65, PC-66, and PC-67.

NDEP Comment 4:

KM Response to Comment #7, the NDEP disagrees with the contention that the operation of the chromium remediation system (and the perchlorate remediation system) is not a driving issue behind the design of the capture systems. The NDEP will accept KM's position, however, please be advised that future modifications to the treatment system should not be limited by pond capacity. It is understood that the operation of the perchlorate remediation system is eventually intended to accept the entire existing flow rate from the existing chromium treatment system.

Kerr-McGee Response:

Comment noted. The perchlorate remediation system **is currently treating** the treated discharge from the GWTP including **all** water from the on-site interceptor well line and an additional 15-20 gpm of water from the GW-11 pond. A small quantity of treated water from the GWTP, 1-2 gpm, is allowed to flow back to the pond to maintain equalization tanks at optimal high levels needed for process control. This should not be interpreted by NDEP as Kerr-McGee having insufficient treatment plant capacity, but instead as responsibly establishing a safeguard against tank overflows.

NDEP Comment 5:

KM response to Comment #8, the NDEP does not have any information to suggest that a reducing environment exists and is converting the KM hexavalent chromium plume to trivalent chromium. Also, this response does not address the issue of the total chromium plume and it's migration towards the Las Vegas Wash. If KM is aware of a natural attenuation mechanism for the reduction of hexavalent chromium to trivalent chromium, it is requested that this information be presented to the NDEP.

Kerr-McGee Response:

Kerr-McGee has not quantified the natural attenuation potential of the groundwater regime downgradient from the facility for the chemical reduction, irreversible sorption, or biodegradation of hexavalent to trivalent chromium. However, a comparison of the perchlorate and chromium plumes between the north boundary of the facility and the Athens Road recovery system indicates that some form of natural attenuation is acting on the chromium. The perchlorate plume at the north boundary has a concentration of about 1000 mg/L. As the perchlorate plume enters the Athens Road recovery system, it has a maximum concentration of around 400 mg/L, which equates to a 60% reduction in concentration over that distance. Perchlorate is a conservative tracer constituent in groundwater, and this 60% reduction in concentration is primarily due to dilution and dispersion in the groundwater system. The chromium plume ranges from about 5 mg/L at the north boundary to around 1 mg/L as it enters the Athens Road recovery system, equaling an 80% reduction in concentration in this same distance. In addition to dilution and dispersion, the chromium groundwater plume is being reduced in concentration by the natural retardation. The retardation of the chromium slows the movement of the plume and may allow the potential of natural chemical reduction, sorption, or biodegradation to take place.

Even though a form of natural attenuation is occurring with the chromium plume, Kerr-McGee does not expect natural attenuation to adequately remediate the plume downgradient from the facility. Kerr-McGee has cut off the upgradient source of the chromium with a slurry wall and recovery wells, and is in the ongoing process of evaluating the system to achieve maximum capture of the plume. Kerr-McGee has also installed a groundwater recovery system in the Athens Road area which captures and treats the residual downgradient portion of the chromium plume. This is facilitated by on-site fresh water recharge downgradient of the on-site slurry wall which has the effect of replenishing the aquifer and hydraulically flushing the residual chromium downgradient to capture at the Athens Road system.

NDEP Comment 6:

KM response to Comment #9, please provide a schedule for the submission of the report on the testing of the ferrous sulfate system. Also, please note that if KM plans to adopt the ferrous sulfate system on a larger scale, an evaluation of the expected NPDES discharge concentration of iron should be included. This evaluation should include mass balance calculations and analytical data to support the conclusions presented.

Kerr-McGee Response:

Please see Kerr-McGee's response to NDEP's Comment # 1. Also, as agreed in a conference call between Kerr-McGee and NDEP, the evaluation report will be included as an appendix to the next semi-annual chromium mitigation performance report.

ISSUED 11/18/04

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: November 8, 2004

CC:

RE: KM Meeting on November 8, 2004 at 8:30 AM via telephone

1. Attendance:
   a. NDEP: Brian Rakvica, Todd Croft
   b. KM: Keith Bailey, Susan Crowley, Tom Reed
2. Discussed the Chromium GWTS
   a. KM investigated the increase in concentration in the effluent from the GWTS in May/June 2004.
   b. It was noted that the data that was reported in Table 4 included data from the KM lab and the confirmatory lab. If the data was all adjusted to the confirmatory samples the data would be consistent. KM to address this issue in future reporting. It was noted that the data from July and August were similar (0.21 and 0.15 ppm respectively).
   c. KM noted that the operation of the system has been consistent.
   d. KM noted that the GWTS must be operated to maintain the discharge limitations in the Consent Agreement (1.7 ppm total chromium); the concentration in pond GW-11 must be below the RCRA limits and they are contractually obligated to provided feed water to the FBR system that is near the NPDES limits.
   e. NDEP asked for clarification of how the ferrous sulfate is monitored. KM explained that excess ferrous sulfate is added and then the discharge is monitored.
   f. KM will memorialize these operational issues in the response to Brian's letter.
   g. It was noted that a majority of the total chromium in the discharge is suspended solids.
   h. KM noted that the Seep area would likely have to be operated (in some fashion) due to TDS Issues.
   i. NDEP requested that KM describe the methodologies to address chromium at the Seep area and the Athens Road well field in their response.
   j. KM also noted that some of the total chromium is removed in the GAC columns and the guard filter to the FBR plant.
3. Discussed pond GW-11 analytical.
   a. KM noted that it would be very difficult to find the analytical data that supports Table B.2 as submitted to the NDEP.

b. KM will discuss with NDEP BWPC the requirements for the permit renewal as this may or may not include sampling of the various well fields.
c. Brian noted that he had found the backup documentation for Table B.2 and that KM did not need to provide the response for the "most stringent water quality standards".

ISJC
11/17/04

Meeting Minutes

Project:	Kerr-McGee
Location:	Kerr-McGee
Time and Date:	1:00 PM, Tuesday, November 9, 2004
Meeting Number:	---
In Attendance:	NDEP-BCA – Las Vegas – Brian Rakvica, Todd Croft (via telephone) Kerr-McGee (KM) Susan Crowley; Rick Stater; Tom Reed and Keith Bailey (via telephone) ENSR- David Gerry, Sally Bilodeau, Ed Krish (via telephone)

CC: Jennifer Carr, Jeff Johnson

1. Meeting was held to review ECA progress.
2. Discussed GW-11 characterization and Chromium Semi-Annual report response.
    a. Reviewed the details of the meeting on 11/8/04. Please see separate meeting notes for details.
    b. Reviewed the operations of the chromium GWTS.
    c. KM noted that the remaining samples for pond GW-11 would be collected tomorrow. Results in about a month. A schedule for delivery of the analytical information which will supplement that already gathered will be forwarded to NDEP by November 29th.
    d. KM noted that additional wells would be installed on the western portion of their on-site well field. These will be described in correspondence to be forwarded to NDEP by November 29th.
    e. It was discussed that the report on the ferrous sulfate system may be included in the January semi-annual report as an appendix.
3. Discussed CSM.
    a. KM has assembled the well data, borings logs, well logs, available data for perchlorate and chromium. It was noted that the boring logs would be provided as PDF files on a CD due to the volume of paperwork.
    b. KM noted that the boundaries of the site have been defined and presented a figure showing these boundaries. The site is approximately 2.5 miles wide and 4 miles long (to the Las Vegas Wash).
    c. NDEP requested that figures have matching scales (similar to the perchlorate reports). Kerr-McGee noted that although the scales will match the previous perchlorate maps, the base map will differ slightly in the graphical presentation. Rockware software is being utilized to develop the CSM maps and Rockware's base upon which the contours are placed will look slightly different.
    d. Reviewed site history.
    e. Discussed the use of LOU areas.
        i. NDEP noted that the use of LOU areas and the summary table presented by ENSR is useful, however, the site should be

characterized as a whole in the future. The NDEP does not want the characterization to proceed on a LOU area basis.

ii. Noted that some LOU areas can probably be addressed due to remote location and or finite size.

iii. Discussed that the project will have to deal with issues on a regional, finite and intermediate basis and how this relates to the former LOU areas.

iv. Noted that the LOU areas are a useful tool for source area characterization.

v. Discussed data quality. Noted that detection limits should be presented for non-detects. ENSR noted that the Phase II and Supplemental Phase II reports did contain an evaluation of data quality. These evaluations are being reviewed as part of the overall Data Usability Evaluation.

vi. KM requested that (if possible) all companies should produce figures at the same scale and try to coordinate sampling events. NDEP agreed and will pursue.

vii. KM noted that it would be helpful to have access to the TIMET database.

4. Discussed Data Usability Evaluation
    a. KM requested a copy of the TIMET data usability evaluation. NDEP noted that comments had been transmitted to KM previously.
5. Discussed Background Study.
    a. Discussed the combined BRC/TIMET plans.
    b. Discussed TIMET's plans for collecting groundwater background samples.
6. Next Meeting: Thursday, January 6, 2004, 1:00 PM at KM; call-in number to be provided; Draft CSM to be presented at this meeting, if not earlier.

ISSUED 11/15/04

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: November 9, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Meeting on November 9, 2004 at 9:00 AM via telephone

1. Attendance:
   a. NDEP: Brian Rakvica, Todd Croft
   b. KM: Keith Bailey, Susan Crowley, Tom Reed
2. Reviewed FBR system operations.
   a. GWTS is operating at ~80 gpm. The 80 gpm includes ~20 gpm from GW-11 and ~60 gpm from the on-site well field. The ~60 gpm appears to be the nominal flow that can currently be derived from the GWTS well field.
   b. KM continues the performance test. KM is waiting for one more analytical sample in order to complete the test. Assuming that ND's are equal to zero, the current average concentration for the test is 4.3 ppb.
   c. KM noted that the clarity has been running 15-20 ntu.
   d. NDEP noted that the discharge was better than the last observation. The discharge was fairly clear and there were some fine solids in it. There were black and white algae present.
   e. It was noted that KM and/or Veolia representatives make daily observations at the Seep area.
3. Discussed discharge relocation.
   a. KM noted that the County does not want the discharge relocated much past the culvert area due to high water conditions.
   b. KM will look into options to minimize the pooling of water in the backwater area.
4. Discussed Quarterly Meeting.
   a. KM requested that the plans for the removal of the temporary IX systems be added to the agenda for discussion.
   b. KM noted that they are in the process of developing a contingency plan for the FBR system and this includes full operation of the system with temporary generators.
5. Discussed AMPAC
   a. NDEP noted that the AOC is still in negotiation.
   b. NDEP noted that the remedial system design is on-going.
   c. NDEP noted that AMPAC has completed investigative efforts in the vicinity of Athens Road and Sam Boyd Stadium.

d. The area near Sam Boyd Stadium was originally slated for use as the sole infiltration area, however, aquifer testing has shown that this area can not handle the entire quantity of water needed for this. Other areas are being considered to augment the stadium infiltration area.
e. Discussed the discovery of a storm culvert that appears to be conveying perchlorate impacted water from the AMPAC plume to points closer to the Las Vegas Wash.

6. Discussed drinking water levels.
   a. Noted that lake turnover has not completed yet. It appears that the highest concentration that should be expected will be less than 10 ppb.
7. Other discussions.
   a. Keith Bailey noted that the California draft MCL has been withdrawn.
8. Next meeting: November 30, 2004 at 9:00 AM. Call-in number: to be provided.

Administrator – Acting
Jolaine Johnson & Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations & Reclamation
Facsimile 684-5259

State of Nevada
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director -acting*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Federal Facilities

Corrective Actions
Facsimile 687-8335

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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
333 W. Nye Lane, Room 138
Carson City, Nevada 89706

done 11/15/04

November 10, 2004

Legal Copy Cats & Printing
300 4th Street
Las Vegas, Nevada 89101

RE: **Copying Job**
BMI Projects

Dear Sir/Madam:

- The accompanying files are the property of the State of Nevada, Division of Environmental Protection (NDEP). They are **ORIGINAL** official state case files, and are irreplaceable.
- Copies of the accompanying files have been requested by **Ms. Crowley**.
- Please make the number of sets of copies as requested by **Ms. Crowley** in the same order as they have been presented to you. Please maintain the page-to-page order of the files. Double sided originals may be copied to single sided sheets if it makes your process easier and more cost effective.
- Please assure that the exact order of the files and their contents are maintained throughout the process. This is very important.
- Please separate the copies from the originals.
- Please contact **Ms. Crowley** with any questions regarding copy format.
- When the copying job has been completed, please contact the undersigned. All reproduction costs shall be billed to Ms. Susan Crowley, Kerr-McGee Chemical LLC, PO Box 55, Henderson, Nevada

89009; (702) 651-2234. We would like the copy job to be completed **by Monday, November 15, 2004** if at all possible.

- The Nevada Division Case Officer responsible for these files is Brian Rakvica. He can be reached in the Las Vegas Office at 486-2870. Please feel free to call myself or **Ms. Crowley** with any questions.

Sincerely,

Brian A. Rakvica
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP-Las Vegas Office

CC: FOIA request file

11/10/04

Acknowledged By **Date**

Administrator – Acting
Jolaine Johnson & Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations & Reclamation
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State of Nevada
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director -acting*

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Waste Management
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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138
Carson City, Nevada 89706

November 1, 2004

dae 11/4/04

Legal Copy Cats & Printing
300 4th Street
Las Vegas, Nevada 89101

RE: **Copying Job**
BMI Projects

Dear Sir/Madam:

- The accompanying files are the property of the State of Nevada, Division of Environmental Protection (NDEP). They are **ORIGINAL** official state case files, and are irreplaceable.
- Copies of the accompanying files have been requested by **Ms. Crowley**.
- Please make the number of sets of copies as requested by **Ms. Crowley** in the same order as they have been presented to you. Please maintain the page-to-page order of the files. Double sided originals may be copied to single sided sheets if it makes your process easier and more cost effective.
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- Please contact **Ms. Crowley** with any questions regarding copy format.
- When the copying job has been completed, please contact the undersigned. All reproduction costs shall be billed to Ms. Susan Crowley, Kerr-McGee Chemical LLC, PO Box 55, Henderson, Nevada

89009; (702) 651-2234. We would like the copy job to be completed **by Thursday, November 4, 2004** if at all possible.

- The Nevada Division Case Officer responsible for these files is Brian Rakvica. He can be reached in the Las Vegas Office at 486-2870. Please feel free to call myself or **Ms. Crowley** with any questions.

Sincerely,

Brian A. Rakvica
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP-Las Vegas Office

CC: FOIA request file

11-3-04

Acknowledged By **Date**

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

October 29, 2004

Mr. Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee Chemical LLC Environmental Conditions Investigation – Kerr-McGee Response to NDEP Comments on the 3rd Quarter 2004 Activity Summary

Pursuant to Section XIII of the Consent Agreement, signed September 5, 1996, between Nevada Division of Environmental Protection (NDEP) and Kerr-McGee Chemical LLC (Kerr-McGee), formerly Kerr-McGee Chemical Corporation (KMCC), Kerr-McGee quarterly submits an activity summary for the Henderson facility's Environmental Conditions Assessment (ECA). Your office requested that included with this activity summary, Kerr-McGee provide a current *Deliverable Schedule*, to delineate future documents and activities. The most recent quarterly activity summary was forwarded to your office in early October, and included a revised *Deliverable Schedule* with dates that extended the time available for preparation of the Site Conceptual Model (Model) as well as related documents; the Data Quality Objectives (DQO) and the Data Usability Evaluation(DUE). Kerr-McGee revised the expected deliverable dates because the breadth, complexity and diversity of information that needs inclusion in the Model require time to collate. Remedial activities that have been accomplished at the site are substantial and present a large database upon which the Model, DQO and DUE are based. To evaluate and present the vast amount of data in a meaningful way and to complete the level of quality review that the NDEP has requested, additional time is necessary. For these reasons the deliverable schedule has been extended as presented.

The *Deliverable Schedule*, as provided in the 3rd quarter ECA activity summary, has adequate allowance to produce high quality Model, DQO and DUE documents. Feel free to call me at (702) 651-2234, if you have any questions. Thank you.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

Hand Carried

Cc:
Tom Reed
Ed Krish, ENSR
Don Shandy
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Alan Tinney, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

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STATE OF NEVADA
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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
Las Vegas Office
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

October 27, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Site Related Chemicals List – Revision 3
Dated October 26, 2004

Dear Ms. Crowley,

The NDEP has received and reviewed KM's correspondence identified above and finds that the document is acceptable. The NDEP agrees that this is a living document and it is expected that as additional information is collected this document may require further revision. The NDEP would also like to note that if a risk assessment is conducted and all site-related chemicals have not been identified, the uncertainty associated with these unknowns would need to be addressed at that time. If there is anything further please do not hesitate to contact me.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Al Tinney, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

October 26, 2004

Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee Chemical LLC – Site-Related Chemicals List - Revision 3
In response to NDEP Comments of September 29, 2004

Dear Mr. Rakvica:

Kerr-McGee Chemical LLC (Kerr-McGee) has undertaken an Environmental Conditions Assessment (ECA) as directed by Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004, Kerr-McGee prepared a list of site-related chemicals that have an association with the geographic setting within which the Kerr-McGee plant exists. This Site-Related Chemical List (List) was submitted in June 2004. Responding to comments from your office, the List was revised July 22, 2004 and September 27, 2004, with Revision 1 and 2, respectively.

You forwarded comments, dated September 29, 2004, relating to Revision 2 of the List. Attachment A contains Kerr-McGee's responses to the comments. In addition, an appropriately revised Revision 3 of the List is attached, as well as a revised Table 2, the alphabetical listing of these same chemical substances.

Please feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Overnight Mail

Cc:
Tom Reed
Ed Krish, ENSR
Don Shandy
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Brad Dougherty
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Al Tinney, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP
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Attachments

Attachment A
Kerr-McGee Response to September 29, 2004 NDEP
Comments on Revision 2 of the Site Related Chemicals List for the
Henderson Facility

NDEP Comment 1:

Cover page, in response to KM's statement on hexachlorobenzene, please note that hexachlorobenzene (HCB), octachlorostyrene, dioxins, furans, and other dioxin-like compounds can all form in a similar manner. Benzene does not need to be present. HCB forms in the presence of high temperature thermal processes where both carbon, chlorine and a catalyst are present. Specifically, the former magnesium process at BMI represent a possible source of HCB formation.

Kerr-McGee Response to Comment 1:

Hexachlorobenzene has been added to the Site Related Chemicals (SRC) list.

NDEP Comment 2:

General, in several places in this document KM states that "KM does not propose to develop new analytical methods". The NDEP understands and appreciates the costs associated with method development and would like to note that this response is adequate for the site-related chemicals (SRC) list, however, as the project progresses towards eventual risk assessment these unknowns will need to be discussed.

Kerr-McGee Response to Comment 2:

Comment noted.

NDEP Comment 3:

Page 13 and Table 1, for phosphorous KM states the "EPA Method 200.7 have been added to the table", however, the table lists EPA Method 365.3. Please verify and correct the method number or the text.

Kerr-McGee Response to Comment 3:

Method 200.7 has been listed on Table 1 for phosphorous.

NDEP Comment 4:

Page 13 and Table 1, KM states the "the table has been modified to include only EPA 350.1 for urea, ammonia and ammonium perchlorate." The table lists method 350.2 for each of these compounds. Please correct the table or the text.

Kerr-McGee Response to Comment 4:

Method 350.1 has been listed for urea, ammonia and ammonium perchlorate.

NDEP Comment 5:

Table 1, please note that TCE is not a synonym for tetrachloroethylene.

Kerr-McGee Response to Comment 5:

TCE has been removed from the synonym list for tetrachloroethylene.

NDEP Comment 6:

Table 1, please note that the degradation product DDD is missing from the organochlorine pesticides category.

Kerr-McGee Response to Comment 6:

DDD has been added to the organchlorine pesticides.

NDEP Comment 7:

Please be advised that the NDEP has not verified the applicability of all of the analytical methods listed in the SRC list. The NDEP anticipates that discussions on analytical methods will be covered in more detail as a sampling and analysis plan is developed for the site.

Kerr-McGee Response to Comment 7:

Comment noted.

Table 1
Site-Related Chemicals List
Kerr-McGee Henderson Area
October 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	
Miscellaneous Compounds, Chemicals, and Products	ammonia	anhydrous ammonia, aqua ammonia, aqueous ammonia	7664-41-7	V,S,A	EPA 350.1 ammonia as N	0.75	30	Historically present in vapor form; Phase I; possibility of sorbing in soil and/or water; LDLs from ATL[11]
	ammonium perchlorate	perchloric acid ammonium salt	7790-98-9	S, A	EPA 350.1 ammonia as N	0.75	30	Phase I; LDLs from ATL
					EPA 314.0 as perchlorate	0.04	2	LDLs from ATL
					EPA 310.1 as alkalinity	NA[6]	NA[6]	NDEP request in 8/5/04 letter
	anti-foam agent	surfactants	NA	A	EPA 425.1 for surfactants	NA	25	NDEP request in 6/21/04 letter
	argon		7440-37-1	V	EPA 3CM	NA	NA	Historically present in the gas form. NDEP request in 6/21/04 letter
	barium hydroxide	barium dihydroxide	17194-00-2	S, A	EPA 6010B as barium	1.0	3	Phase I; LDLs from ATL
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
					SM 2320B alkalinity as hydroxide [10]	50	5000	NDEP request in 8/5/04 letter
	barium sulfide	barium sulphide	21109-95-5	S, A	EPA 6010B as barium	1.0	3	Phase I; LDLs from ATL
					EPA 376.2 as sulfide, EPA 9030B/9034 for soil	0.5	50	
					EPA 310.1 as alkalinity	NA[6]	NA[6]	NDEP request in 8/5/04 letter
	barium sulfate	barite	7727-43-7	S, A	EPA 6010B as barium	1	3	LDLs from ATL
					EPA 300.0 as sulfate	10	1000	
	barite	barium sulfate	7727-43-7	S, A	EPA 6010B as barium	1	3	LDLs from ATL
					EPA 300.0 as sulfate	10	1000	
	boric acid		10043-35-5	S,A	EPA 6010B as boron	10	50	LDLs from ATL
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
	boron carbide	B4-C; Tetrabor	12069-32-8	S, A	EPA 6010B as boron, carbide not analyzed	10	50	Phase I; LDLs from ATL
					EPA 310.1 as alkalinity	NA[6]	NA[6]	
					Total Organic Carbon (TOC) by 9060 for carbon [10]	NA[6]	NA[6]	
	boron tribromide	boron bromide	10294-33-4	S, A	EPA 6010B as boron	10	50	Phase I; LDLs from ATL
					EPA 300.0 as bromide	0.5	50	
	boron trichloride	trichloroborane, boron chloride	10294-34-5	S, A	EPA 6010B as boron	0.5	50	Phase I; LDLs from ATL
					EPA 300.0 as chloride	5	500	
					EPA 325.3 as chloride	20	2000	
	calcium carbonate	calcium salt of carbonic acid	471-34-1	S,A	EPA 6010B as calcium	10	500	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$	50	5000	
	calcium chloride	scale	10043-52-4	S, A	EPA 6010B as calcium	10	500	NDEP request in 6/21/04 letter; LDLs from ATL
					EPA 300.0 as chloride	5	500	
					EPA 325.3 as chloride	20	2000	
	calcium hypochlorite	losantin, calcium hypochloride, hypochlorous	777-54-3	S, A	EPA 6010B as calcium	10	500	Phase I; LDLs from ATL
					EPA 330.3 as residual chlorine	2	200	
	calcium oxide (lime)	lime, calx, quicklime, calcium monoxide, burnt lime, airlock, calcia, caloxol cp2, calxyl, desical P, rhenosorb C	1305-78-8	S, A	EPA 6010B as calcium	10	500	LDLs from ATL
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
	calcium sulfate	anhydrous calcium sulfate, Anhydrous gypsum,	7778-18-1	S, A	EPA 6010B as calcium	10	500	Phase I; LDLs from ATL
					EPA 300.0 as sulfate	10	1000	

Table 1
Site-Related Chemicals List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	
Miscellaneous Compounds, Chemicals, and Products (continued)	chlorine	molecular chlorine	7782-50-5	A,V	EPA 330.3 as residual chlorine	NA	200	Phase I; vapor contaminant will not be tested; possibility of dissolving in water.
	chelant (Nalco 1745)	Nalco 1745, dithiocarbamates	NA	A	None identified for long chain polymers present in dithiocarbamates	NA	NA[6]	NDEP request in 6/21/04 letter
	coagulants	ferric sulfide, aluminum sulfate, ferric chloride	various	S, A	Coagulants will be analyzed using the ion and metal analysis identified under the specific chemicals listed and EPA 425.1 for surfactants	varies	varies	NDEP request in 6/21/04 letter
	coal	carbon, trace metals	7440-44-0	A	Total Organic Carbon (TOC)-ASTM 5997 or EPA 9060, metals 6010B	NA	0.06	NDEP request in 6/21/04 letter
	coke	carbon, trace metals	NA	A	Total Organic Carbon (TOC)-ASTM 5997 or EPA 9060, metals 6010B	NA	0.06	NDEP request in 6/21/04 letter
	diatomaceous earth	diatomaceous silica, diatomite, precipitated amorphous silica, silica gel, silicon dioxide (amorphous)	7631-86-9	S,A	6010B as silica			
					EPA 310.1 as alkalinity	NA[6]	NA[6]	NDEP request in 8/5/04 letter
	filter aid	diatomaceous earth	NA	NA	see diatomaceous earth	NA	NA	NDEP request in 6/21/04 letter
	flammables		varies	S, A, V	EPA 1010 (flashpoint), ASTM E681-04	varies	varies	NDEP request in 6/21/04 letter; LDLs from ATL
	flocculents	alum; caustic; ferric chloride; ferric sulfate; ferrous sulfate; lime; sulfides; and polyelectrolytes	varies	S,A	Flocculants will be analyzed using the ion and metal analysis identified under the specific chemical listed, 6010 and 6020 for alum as aluminum, EPA 425.1 for surfactants, and ASTM 5997 TOC analysis for polyelectrolytes.	varies	varies	NDEP request in 6/21/04 letter
	graphite	carbon	7440-44-0	A	Total Organic Carbon (TOC)-ASTM 5997 or EPA 9060	NA	0.06	NDEP request in 6/21/04 letter
	hydrogen chloride	anhydrous hydrogen chloride; Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid)	7647-01-0	S,A	EPA 300.0 or 325.3 as chloride; Not analyzed as gas.	20	2000	Historically present in gas form, could enter soil or water if absorbed into water; LDLs from ATL
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	NA	0-14 range	
	hydrogen peroxide	high-strength hydrogen peroxide, Hydrogen dioxide, Hydrogen peroxide (aqueous), Hydroperoxide, Peroxide	7722-84-1	A	EPA 150.1 as pH for water, EPA 9045C as pH for soil	NA	0-14 range	Strong oxidizer; relatively unstable compound that requires stabilization to avoid deterioration over time; no known analysis method
	hydrogen sulfide	hydrosulfuric acid, sewer gas, sulfuretted hydrogen	7783-06-4	S,A	EPA 376.2 as sulfide, EPA 9030B/9034 for soil , ASTM D5504 (vapor)	0.5	50	Historically present in vapor form; Phase I; LDLs from ATL(soil and water); LDL (vapor) 5 ppb (CAS)[12]

Table 1
Site-Related Chemicals List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	
Miscellaneous Compounds, Chemicals, and Products (continued)	iron oxide	ferric oxide,iron(III) oxide	1332-37-2	S, A	EPA 6010B as iron	10	500	Phase I; LDLs from ATL
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
	magnesium carbonate	carbonate magnesium, hydromagnesite, magnesium(II) carbonate	7439-95-4	S, A	EPA 6010B as magnesium	10	100	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$	50	5000	
	magnesium chlorate		NA	S, A	EPA 6010B as magnesium	10	100	Phase I; LDLs from ATL
					EPA 300.0 as chlorate	See Note 5	300	
	magnesium chloride	magnesium (II) chloride	7786-30-3	S, A	EPA 6010B as magnesium	10	100	Phase I; LDLs from ATL
					EPA 300.0 as chloride	5	500	
					EPA 325.3 as chloride	20	2000	
	magnesium perchlorate	perchloric acid magnesium salt	10034-81-8	S, A	EPA 6010B as magnesium	10	100	Phase I; LDLs from ATL
					EPA 314.0 as perchlorate	0.04	2	
	manganese dioxide	Manganese (IV) Oxide	1313-13-9	S, A	EPA 6010B as manganese	10	500	Phase I; LDLs from ATL
	manganese oxide	manganomanganic oxide, trimanganese tetraoxide, trimanganese tetroxide	1344-43-0	S, A	EPA 6010B as manganese	10	500	Phase I; LDLs from ATL
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
	manganese sulfate	manganese (II) sulphate, manganous sulphate, manganese (II) sulfate, manganese (2+) sulfate monohydrate, sulfuric acid manganese salt	7785-87-7	S, A	EPA 6010B as manganese	10	500	Phase I; LDLs from ATL
					EPA 300.0 as sulfate	10	1000	
	methyl mercury	mercury metal: colloidal mercury, metallic mercury, quicksilver	7439-97-6	S, A	EPA 7470A/7471A as mercury	0.1	0.2	LDLs from ATL
	paints		NA	S,A	EPA 6010B for metals	See Note 4	varies	Phase I
					EPA 8260B VOCs, EPA 8270C SVOCs	varies	varies	
	paraffin wax	paraffin	NA	S,A	EPA 8015M (C_{13}-C_{22} range)	30	0.50	Phase I
	potassium chlorate	chloric acid potassium salt, bertholfet salt, chlorate of potash	3811-04-9	S, A	EPA 6010B as potassium	See Note 4	1000	Phase I; LDLs from ATL
					EPA 7610	25	500	
					EPA 300.0 as chlorate	See Note 5	300	
	potassium chloride	potassium monochloride, potassium muriate, monopotassium chloride, kalitabs, rekawan, slow K, super K, pfiklor, enseal, kaochlor, kaon-cl, potavescent	7447-40-7	S, A	EPA 6010B as potassium	See Note 4	1000	Phase I; LDLs from ATL
					EPA 7610	25	500	
					EPA 300.0 as chloride	5	500	
					EPA 325.3 as chloride	20	2000	
	potassium perchlorate	perchloric acid potassium salt	7440-09-7	S, A	EPA 6010B as potassium	See Note 4	1000	Phase I; LDLs from ATL
					EPA 7610	25	500	
					EPA 314.0 as perchlorate	0.04	2	

Table 1
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	
Miscellaneous Compounds, Chemicals, and Products (continued)	potassium phosphate	potassium phosphate tribasic, potassium orthophosphate, tripotassium phosphate	7758-11-4	S, A	EPA 6010B as potassium	See Note 4	1000	Phase I; LDLs from ATL
					EPA 7610	25	500	
					EPA 365.3 as total phosphate	0.2	20	
					EPA 310.1 alkalinity	NA[8]	3	
	silica	diatomaceous earth, diatomaceous silica, diatomite, precipitated amorphous silica, silica gel, silicon dioxide (amorphous)	7631-86-9	S, A	6010B as silica	20	100	Phase I; LDLs from ATL
					EPA 310.1 alkalinity	NA[8]	3	NDEP request in 8/5/04 letter
	silicon tetrabromide	silicon (IV) bromide, silicon bromide, tetrabromosilane	7789-66-4	S, A	6010B as silica	20	100	Phase I; LDLs from ATL
	silicon tetrachloride	silicon chloride, tetrachlorosilane, silicon (IV) chloride	10026-04-7	S, A	6010B as silica	20	100	Phase I; LDLs from ATL
					EPA 300.0 as chloride	5	500	
					EPA 325.3 as chloride	20	2000	
	sodium arsenite	sodium (meta)arsenite, arsenous acid sodium salt, sodium metaarsenite, Atlas A, chem pels C, chem-sen 56, Kill-all, penite, prodalumnol, sodanit, various trade names	7784-46-5	S, A	EPA 6010B as sodium	See Note 4	19	LOU Response; LDLs from ATL
					EPA 6010B as arsenic	1	10	
	sodium alpha olefin sulfonate	sodium tetradecene sulfonate, sodium C14-16 olefin sulfonate;C14-16-alkane hydroxy and C14-16-alkene	68439-57-6	S,A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
	sodium borate	anhydrous borax, borax dehydrated, disodium salt of boric acid, disodium tetraborate, fused borax, sodium borate (anhydrous), sodium tetraborate	1330-43-4	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 310.1 alkalinity	NA[8]	NA[8]	
	sodium carbonate	soda ash, disodium carbonate, carbonic acid disodium salt	497-19-8	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$[10]	50	5000	

Table 1
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	
Miscellaneous Compounds, Chemicals, and Products (continued)	sodium chlorate	agrosan, asex, atlacide, atratol, b-herbatox, desolet, drexel defol, evau-super, grain sorghum harvest-aid, granex O, Harvest-aid, hibar C, kusatol, leafex 2, ortho C-1 defoliant & weed killer, oxycil, rasikal, shed-a-leaf, soda chlorate, sodakem, travex, tumbleaf, val-drop	7775-09-9	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 300.0 as chlorate	See Note 5	300	
	sodium chloride	extra fine 200 salt, extra fine 325 salt, H.G. blending, salt, sea salt, table salt, common salt, dendritis, rock salt, top flake, white crystal, saline, halite, purex, USP sodium chloride	7647-14-5	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 300.0 as chloride	5	500	
					EPA 325.3 as chloride	20	2000	
	sodium dichromate	sodium bichromate	7789-12-0	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 7196A as hexavalent chromium, EPA 3060A for soil	0.1	10	
					EPA 6010B as chromium	1	3	
	sodium hexametaphosphate	metaphosphoric acid hexasodium salt, glassy sodium metaphosphate, SHMP	10124-56-8	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 365.3 as total PO_4	0.2	20	
					EPA 310.1 alkalinity	NA[8]	3	NDEP request in 8/5/04 letter
	sodium hydrosulfide	sodium hydrogen sulphide, sodium hydrogen sulfide, sodium sulfhydrate, sodium bisulphide, sodium hydrosulphide, sodium bisulfide	16721-80-5	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 376.2 as sulfide, EPA 9030B/9034 for soil	0.5	50	
					EPA 310.1 alkalinity	NA[8]	NA[8]	
	sodium hydroxide	caustic soda, lye, soda lye, sodium hydrate	1310-73-2	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 310.1 alkalinity	NA[8]	NA[8]	NDEP request in 8/5/04 letter
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
	sodium oxide	disodium monoxide, sodium monoxide, disodium oxide	1313-59-3	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
	sodium perchlorate	perchloric acid sodium salt	7601-89-0	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 314.0 as perchlorate	0.04	2	

Table 1
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	
Miscellaneous Compounds, Chemicals, and Products (continued)	sodium sulfite	anhydrous sodium sulfite, sodium sulphite, S-WAT, sulftech, sulfurous acid sodium salt, disodium sulfite, exsiccated sodium sulfite	7757-83-7	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
					EPA 377.1 as sulfite	NA[8]	2000	
	strontium carbonate	carbonic acid strontium salt	1633-05-2	S, A	EPA 6010B as strontium	0.5	100	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$	NA[8]	NA[8]	
	sulfur dioxide	sulfurous acid anhydride, sulfurous oxide, sulfur oxide	7446-09-5	V	NIOSH Method 6004	NA	NA	Historically present in gas form; detection limit 3 µg/sample
	synthetic detergent	surfactants	NA	A	EPA 425.1 as surfactants	NA	25	NDEP request in 6/21/04 letter
	tank mud	tank sediment	NA	S, A	EPA 6010B for total metals	See Note 4	varies	NDEP request in 6/21/04 letter
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
					EPA 7196A for hexevalent chromium EPA 3060A for soil	0.1	10	
					Ion analysis (see ions below)	see below	see below	
	tricalcium phosphate	calcium phosphate tribasic; tricalcium diphosphate; bone phosphate; calcium orthophosphate; calcium phosphate; calcium phosphate (3:2); calcium tertiary phosphate; phosphoric acid, calcium salt (2:3)	7758-87-4	S, A	EPA 6010B as calcium	10	500	Phase I; LDLs from ATL
					EPA 365.3 as total phosphate	0.5, 0.2	50, 20	
					EPA 310.1 alkalinity	NA[8]	3	NDEP request in 8/5/04 letter
	titanium tetrachloride			S, A	EPA 6010B as titanium	15.0	300	
					EPA 300.0 as chloride	5	500	Phase I; LDLs from ATL
					EPA 325.3 as chloride	20	2000	Phase I; LDLs from ATL
	unknowns	not known, not identified, non specific	NA		Various methods would be used as appropriate depending on the data available to refine the analytical suite. Refer to Table 3 or the complete list of analytical methods.	varies	varies	NDEP request in 6/21/04 letter
	urea	B-I-K, carbamide, carbamide resin, isourea, pseudourea, carbonyldiamine	57-13-6	A	EPA 350.1 ammonia as N	0.75	30.0	Phase I; LDLs from ATL
	various lab wastes		NA	S, A,.V	Various methods would be used as appropriate. Refer to Table 3 for the complete list of analytical methods.	varies	varies	NDEP request in 6/21/04 and 8/5/04 letters

Table 1
Site-Related Chemicals List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	
Ions	chlorate		14866-68-3	A	EPA 300.0 as chlorate	See Note 5	300	
	chloride		16887-00-6	S, A	EPA 300.0 as chloride	5	500	NDEP request in 6/21/04 letter; LDLs from ATL
				S, A	EPA 325.3 as chloride	20	2000	NDEP request in 6/21/04 letter; LDLs from ATL
	cyanide		57-12-5	S, A	EPA 335.1, EPA 335.2 as total cyanide	0.25	10	Phase I; LDLs from ATL
	nitrate		14797-55-8	S, A	EPA 300.0 as nitrate	1.0	100	
	perchlorate		7601-90-3	S, A	EPA 314.0 as perchlorate	0.04	2	Phase I; LDLs from ATL
	phosphate		14265-44-2	S, A	EPA 300.0 as ortho phosphate, EPA 365.1 as total phosphate	0.5	50	Phase I
					EPA 310.1 alkalinity	NA[8]	3	NDEP request in 8/5/04 letter
	sulfate		14808-79-8	S, A	EPA 300.0 as sulfate, EPA 375.4	1.0, 5.0	19, 1000	
	sulfide		18496-25-8	S, A	EPA 376.2 as sulfide, EPA 9030B/9034 for soil	1.0, 0.5	NA[8], 50	
					EPA 310.1 alkalinity	NA[8]	NA[8]	NDEP request in 8/5/04 letter
Asbestos	asbestos		1332-21-4	S, A	ISO 10312 TEC	NA	0.2 MFL*	Phase I
Metals	aluminum		7429-90-5	S, A	EPA 6010B as aluminum	10.0	500	LDLs from ATL
	antimony		7440-36-0	S, A	EPA 6010B as antimony	2.0	5	LDLs from ATL
	arsenic		7440-38-2	S, A	EPA 6010B as arsenic	1.0	10	LDLs from ATL
	barium		7440-39-3	S, A	EPA 6010B as barium	1.0	3	Phase I; LDLs from ATL
	beryllium		7440-41-7	S, A	EPA 6010B as beryllium	1.0	3	LDLs from ATL
	boron		7440-42-8	S, A	EPA 6010B as boron	10.0	50	Phase I; LDLs from ATL
	cadmium		7440-43-9	S, A	EPA 6010B as cadmium	1.0	3	LOU Response; LDLs from ATL
	calcium		7440-70-2	S, A	EPA 6010B as calcium	10.0	500	Phase I; LDLs from ATL
	chromium (hexavalent)		18540-29-9	S, A	EPA 7196A, EPA 3060A for soil	0.1	10	Phase I; LDLs from ATL
	chromium (total)		7440-47-3	S, A	EPA 6010B as total chromium	1.0	3	Phase I; LDLs from ATL
	cobalt		7440-48-4	S, A	EPA 6010B as cobalt	1.0	3	Phase I; LDLs from ATL
	copper		7440-50-8	S, A	EPA 6010B as copper	2.0	5	Phase I; LDLs from ATL
	iron		7439-89-6	S, A	EPA 6010B as iron	1.0	500	Phase I; LDLs from ATL
	lead		7439-92-1	S, A	EPA 6010B as lead	10.0	5	Phase I; LDLs from ATL
	magnesium		7439-96-5	S,A	EPA 6010B as magnesium	10.0	100	LDLs from ATL
	manganese		7439-96-4	S, A	EPA 6010B as manganese	1.0	500	Phase I; LDLs from ATL
	mercury		7439-97-6	S,A	EPA 7470A/7471A as mercury	0.1	200	LDLs from ATL
	molybdenum		7439-98-7	S, A	EPA 6010B as molybdenum	1.0	5	LOU Response; LDLs from ATL
	nickel		7440-02-0	S, A	EPA 6010B as nickel	1.0	5	Phase I; LDLs from ATL
	platinum		7440-06-4	S, A	EPA 6010B as platinum	15.0	300	Phase I; LDLs from ATL
	phosphorous		7723-14-0	S,A	EPA 200.7	0.5	200	LDLs from ATL
	potassium		7440-09-7	S, A	EPA 6010B as potassium	25.0	500	Phase I; LDLs from ATL
	selenium		7782-49-2	S, A	EPA 6010B as selenium	1.0	10	LDLs from ATL
	silica		7631-86-9	S,A	See Miscellaneous Compounds, Chemicals and Products listing			
	silver		744-22-4	S, A	EPA 6010B as silver	1.0	3.0	LOU Response; LDLs from ATL
	sodium		744-23-5	S, A	EPA 6010B as sodium	See Note 4	19	Phase I; LDLs from ATL
	strontium		7440-24-6	S,A	EPA 6010B as strontium	0.5	100	LDLs from ATL
	thallium		7440-28-0	S, A	EPA 6010B as thallium	1.0	15	LDLs from ATL
	tin		7440-31-5	S, A	EPA 6010B as tin	1.0	300	LDLs from ATL
	titanium		7440-32-6	S, A	EPA 6010B as titanium	15.0	300	LDLs from ATL
	tungsten		7440-33-7	S, A	Flame AAS (aqueous), ICP-AES (soil)	NA[8]	100	
	vanadium		7440-62-2	S, A	EPA 6010B as vanadium	1.0	3	LDLs from ATL
	zinc		744-66-6	S, A	EPA 6010B as zinc	1.0	10	Phase I; LDLs from ATL

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						Soil (mg/kg)	Water (µg/L)	
Volatile Organic Compounds (VOCs)[6]	1,1,1-TCA	chlorothene; 1,1,1-trichloroethane; 1,1,1-trichloroethane (stabilized), methyl chloroform	71-55-6	S, A	EPA 8260B	0.005	0.5	Phase I; LDLs from ATL
	2-butanone*	ethyl methyl ketone, MEK, methyl acetone, methyl ethyl ketone	78-93-3	S, A	EPA 8260B	0.005	5	LOU Response
	2-hexanone*	methyl n-butyl ketone	591-78-6	S, A	EPA 8260B	0.005	5	
	acetone*	dimethyl ketone, ketone propane, 2-propanone	67-64-1	S, A	EPA 8260B	0.005	5	Phase II ECI
	benzene	benzol, phenyl hydride	71-43-2	S, A	EPA 8260B	0.001	1	Phase II ECI
	chlorobenzol	benzene chloride, chlorobenzol, MCB, monochlorobenzene, phenyl chloride	108-90-7	S, A	EPA 8260B	0.001	1	
	chloroform	methane trichloride, trichloromethane	67-66-3	S, A	EPA 8260B	0.001	1	Phase II ECI
	chlorinated organics		varies	S, A	EPA 8260B	0.001	1	NDEP request in 6/21/04 letter
	chlorinated paraffins		varies	S, A	EPA 8260B	0.001	1	NDEP request in 6/21/04 letter
	ethylbenzene		100-41-4	S,A	EPA 8260B	0.005	0.5	LDLs from ATL
	glycols*	varies	varies	S,A	EPA 8015C or EPA 8260B	200	200,000	LDLs from ATL
	methanol*	carbinol, columbian spirits, methyl alcohol, Pyroligneous spirit, Wood alcohol, Wood naphtha, Wood spirit	67-56-1	S, A	EPA 8260B, EPA 8015C	0.001	1.0	Phase I
	methyl isobutyl ketone*	isobutyl methyl ketone, hexone, 4-methyl 2-pentanone, MIBK	108-10-1	S	EPA 8260B	0.005	NA[8]	NDEP request in 6/21/04 letter
	methyl tert-butyl ether	MTBE	1634-04-4	S, A	EPA 8260B	0.001	0.05	NDEP request 8/05/04 letter
	monochlorobenzene	benzene chloride, chlorobenzol, MCB,chlorobenzene, phenyl chloride	108-90-7	S, A	EPA 8260B	0.001	1	Phase I
	orthodichlorobenzene	1,2 dichlorobenzene	95-50-1	S, A	EPA 8260B	0.001	1	as 1,2-, 1,3- and 1,4- isomers; Phase I
	paradichlorobenzene	1,4-dichlorobenzene, PDB, paracide	106-46-7	S, A	EPA 8260B	0.001	1	as 1,2-, 1,3- and 1,4- isomers; Phase I
	tetrachloroethylene	perchloroethylene, PCE, tetrachloroethene	127-18-4	S, A	EPA 8260B	0.001	1	

Table 1
Site-Related Chemicals List
Kerr-McGee Henderson Area
October 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	
Volatile Organic Compounds (VOCs)[6] (cont'd)	toluene*	methyl benzene, methyl benzol, phenyl methane, toluol	108-88-3	S, A	EPA 8260B	0.001	1	Phase I
	trichloroethylene	trichloroethene, TCE	79-01-6	S, A	EPA 8260B	0.001	1	
	xylene	dimethylbenzene; xylol	1330-20-7	S, A	EPA 8260B as total xylenes	0.001	1	As total xylenes;LOU Response
Inorganic Acids	hydrochloric acid	muriatic acid	7647-01-0	S, A	EPA 325.3 as chloride	20	2,000	Phase I; LDLs from ATL
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
	sulfuric acid		7664-93-8	S, A	EPA 325.3 as sulfate	5	500	Phase I; LDLs from ATL
					EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
Chlorinated Herbicides	tumbleaf defoliant		NA	A	EPA 8151A	NA[8]	NA[8]	Phase I
Organophosphorous Pesticides	all	insecticides	varies	S, A	Method 8141A	varies	varies	
Organochlorine Pesticides	DDT	p,p'-DDT, dichlorodiphenyltrichloroethane	50-29-3	S	EPA 8081A as 4,4-DDT	0.002	0.05	Phase I; LDLs from ATL
	DDE	4,4'-DDE, dichlorodiphenyldichloroethylene	72-55-9	S	EPA 8081A	0.002	0.05	LDLs from ATL
	DDD	4,4'-DDD, dichlorodiphenyldichloroethane	72-54-8	S	EPA 8081A	10	0.01	NDEP Sept 29, 2004 letter
	insecticides		NA	A	EPA 8081A	0.01	0.6 -0.8	Phase I
	pesticides		NA	S,A	EPA 8081A	0.0017	0.6 -0.8	Phase I
Organic Acids	citric acid		77-92-9	S,A	EPA 150.1 as pH for water, EPA 9045C as pH for soil	0-14 range	0-14 range	
Petroleum Hydrocarbons	TPH				EPA 8015M full range, BTEX and MTBE by 8260B, lead by 6010B, PAHs by 8270C or 8310			Phase I
	C_4-C_{12}	gasoline		S,A	EPA 8015M	1	200	Phase I; LDLs from ATL
	C_{13}-C_{22}	paraffin wax, diesel		S,A	EPA 8015M	10	200	Phase I; LDLs from ATL
	C_{23+}	grease, crude oils		S,A	EPA 8015M	10	200	Phase I; LDLs from ATL
Polychlorinated Biphenyls (PCBs)	PCBs				EPA 8082			Phase I
	aroclor 1016		1267-41-12	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1221		1110-42-82	S,A	EPA 8082	0.2	0.5	Phase I
	aroclor 1232		1114-11-65	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1242		5346-92-19	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1248		1267-22-96	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1254		1109-76-91	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1260		1109-68-25	S,A	EPA 8082	0.1	0.5	Phase I
Polychlorinated Dibenzodioxins/ Dibenzofurans	dioxins/furans		varies	S,A	EPA 1613	varies	varies	

Table 1
Site-Related Chemicals List
Kerr-McGee Henderson Area
October 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	
Semivolatile Organic Compounds (SVOCs) and Polynuclear Aromatic Hydrocarbons (PAHs)	PAHs				EPA 8270C/8310			Phase I
	acenaphthene		83-32-9	S,A	EPA 8270C/8310	0.01	5	Phase I
	acenaphthylene		206-96-8	S,A	EPA 8270C/8310	0.01	5	
	anthracene		120-12-7	S,A	EPA 8270C/8310	0.01	5	Phase I
	benz(a)anthracene		56-55-3	S,A	EPA 8270C/8310	0.01	5	Phase I
	benzo(a)pyrene		50-32-8	S,A	EPA 8270C/8310	0.01	5	Phase I
	benzo(b)fluoranthene		205-99-2	S,A	EPA 8270C/8310	0.01	5	Phase I
	benzo(k)fluoranthene		207-08-9	S,A	EPA 8270C/8310	0.01	5	Phase I
	benzo(ghi)perylene		191-24-2	S,A	EPA 8270C/8310	0.01	5	
	chrysene		218-01-9	S,A	EPA 8270C/8310	0.01	5	Phase I
	dibenz(a,h)anthracene		53-70-3	S,A	EPA 8270C/8310	0.01	10	Phase I
	fluoranthene		206-44-0	S,A	EPA 8270C/8310	0.01	5	Phase I
	fluorene		89-73-7	S,A	EPA 8270C/8310	0.01	5	Phase I
	hexachlorobenzene		118-74-1	S	EPA 8270C	0.07	0.36	NDEP Sept 29, 2004 letter
	indeno(1,2,3-cd)pyrene		193-39-5	S,A	EPA 8270C/8310	0.01	10	Phase I
	naphthalene		97-20-3	S,A	EPA 8270C/8310	0.01	0.5	Phase I
	nitrobenzene		98-95-3	S, A	EPA 8270C	0.33	10	Phase I
	octachlorostyrene		29082-74-4	S,A	EPA 8081	0.01	5	Phase I
	phenanthrene		85-01-8	S,A	EPA 8270C/8310	0.01	5	
	pyrene		129-00-0	S,A	EPA 8270C/8310	0.01	5	Phase I
	pyridine*		110-86-1	S, A	EPA 8270C or 8260B	1.65	5	Phase I; LDLs from ATL
Radionuclides Note: units are picocuries per liter (pCi/L) unless noted	actinium 228		14331-83-0	S	EML HASL 300	See Note 7	NA	NDEP request 8/05/04 letter
				A	EPA 900.0(gross alpha/beta), EPA 901.1(gamma)	NA	5, 20	
	bismuth 212		14913-49-6	S	EML HASL 300	See Note 7	NA	NDEP request 8/05/04 letter
				A	EPA 900.0(gross alpha/beta), EPA 901.1(gamma)	NA	5, 20	
	gross alpha (adjusted) [3]			A	EPA 900.0/SW9310	NA	5	NDEP request 2/11/04 letter
				S	SW9310/EML HASL 300	See Note 7	See Note 7	
	lead (isotopic)	Pb-210	14255-04-0	S	EML HASL 300	See Note 7	NA	NDEP request 8/05/04 letter
				A	EPA 909	NA	0.2	
		Pb-212	15092-94-2	S	EML HASL 300	See Note 7	NA	
				A	EPA 901.1/SW9310	NA	20	
	polonium 210		13981-52-7	S, A	EML HASL 300 Po 02 RC	0.001	0.001	bq/1000 = becquerels per 1000 min
	radium 226		13982-63-3	S	EML HASL 300	See Note 7	NA	NDEP request 2/11/04 letter
				A	EPA 903.1	NA	0.2	
	radium 228		15262-20-1	A	EPA 904.0	NA	2.5	
				S	EML HASL 300	See Note 7	NA	
	radon 222		10043-92-2	A	EPA 913.0	NA	0.4 Bq/L	NDEP request 8/05/04 letter
	thorium (isotopic)	includes Th-228, Th-229, Th-230, Th-232, Th-234	varies	S,A	EML HASL-300; A-01-R Mod/HASL 300	See Note 7	See Note 7	NDEP request 2/11/04 & 8/05/04 (Th-234) letters
	uranium (isotopic)	includes U-232, U-233/234, U-235/236, U-238	varies	S,A	EML HASL 300	See Note 7	See Note 7	
	uranium (total)		7440-61-1	A	EPA ASTM D5174	NA	0.05	NDEP request 2/11/04 letter
Water Quality Parameters	TDS	total dissolved solids	NA	A	EPA 160.1 as total dissolved solids	NA	10,000	Phase I
	TSS	total suspended solids	NA	A	EPA 160.2 as total suspended solids	NA	10,000	
	pH		NA	A	EPA 150.1 as pH for water, EPA 9045C as pH for soil	NA	0-14 range	

Table 1
Site-Related Chemicals List
Kerr-McGee Henderson Area
October 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2, 9, 10]	Laboratory Detection Limits [14]		Notes
						Soil (mg/kg)	Water (µg/L)	

Notes:

[1] Abbreviations used: S = soil sample; A = aqueous sample; V = vapor sample
[2] Analytical Method may test for ions or indicators, not necessarily the compound listed.
[3] Adjusted gross alpha is calculated by subtracting the effects of uranium and radon 222 from gross alpha.
[4]For metals analyzed per Method 6010B, the method protocol requires soil samples to be digested into solution prior to analysis. Therefore, the Detection Limits are given in units of ug/L.
[5]For EPA Method 300.0 (ion analysis) soil samples are extracted into liquid, therefore the LDLs are given in units of ug/L. These LDLs are method detection limits (MDLs)
[6]For VOCs or SVOCs analyzed per EPA Method 8260B, the method states that Method Detection Limits (MDLs) vary depending on instrument sensitivity and matrix effects. Therefore, the MDLs are estimated by dividing the estimated quantitation limits (EQLS) by a factor of 5, per the method protocol.
[7]For EML Method HASL 300, LDLs are lab specific.
[8]For LDLs marked NA, there were no LDLs listed in the National Environmental Methods Index, and no other references could be found to supply LDLs for this method.
[9]pH testing : chemicals that are not listed for method EPA 150.1 or 9045C pH tests may be tested, if necessary, on a case by case basis in soil or aqueous medium.
[10]alkalinity testing : chemicals that are not listed for method EPA 310.1 may be tested, if necessary, on a case by case basis in soil or aqueous medium.
[11] ATL (Advanced Technology Laboratories): this lab was consulted for various analytical methods and LDLs.
[12] CAS (Columbia Analytical Services) : this air lab was consulted for various vapor analyses.
[13] Synonyms from ptcl.chem.ox.ac.uk/msds.
[14] Laboratory Detection limits listed are based on published or laboratory specific information and will vary in individual samples.

General Notes:
* = non-halogenated organics.
mg/L = milligrams per liter.
µg/L = micrograms per liter.
NA - not available or not applicable.
LOU = Letter of Understanding between Kerr McGee Chemical Corporation (KMCC) and NDEP, August 15, 1994.
Phase I = Kleinfelder, Inc. Environmental Conditions Assessment, KMCC, Henderson Nevada, April 1993.
Phase II = ENSR Environmental Conditions Assessment at KMCC Henderson Nevada, August 7, 1997.
MFL* = Asbestos, Million fibers per Liter.
PAH's and PCB's are itemized, not all may be present on site.
If cell is blank, the compound was not on the referenced regulatory list.

Table 2
Alphabetical Site Related Chemicals List
Kerr-McGee Henderson Area
September 2004

1,1,1-TCA	chlorinated paraffins	napthalene	TDS
2-butanone	chlorine	nickel	tetrachloroethylene
2-hexanone	chlorobenzol	nitrate	thallium
acenaphthene	chloroform	nitrobenzene	thorium (isotopic)
acenaphthylene	chromium (hexavalent)	octachlorostyrene	tin
acetone	chromium (total)	orthodichlorobenzene	titanium
actinium 228	chrysene	PAHs	titanium tetrachloride
all organophosphorous pesticides	citric acid	paints	toluene
aluminum	coagulants	paradichlorobenzene	TPH
ammonia	coal	paraffin wax	tricalcium phosphate
ammonium perchlorate	cobalt	PCBs	trichloroethylene
anthracene	coke	perchlorate	TSS
anti-foam agent	copper	pesticides	tumbleaf defoliant
antimony	cyanide	pH	tungsten
argon	DDD	phenanthrene	unknowns
aroclor 1016	DDE	phosphate	uranium (isotopic)
aroclor 1221	DDT	phosphorous	uranium (total)
aroclor 1232	diatomaceous earth	platinum	urea
aroclor 1242	dibenz(a,h)anthracene	polonium 210	vanadium
aroclor 1248	dioxins/furans	potassium	various lab wastes
aroclor 1254	ethylbenzene	potassium chlorate	xylene
aroclor 1260	filter aid	potassium chloride	zinc
arsenic	flammables	potassium perchlorate	
asbestos	flocculants	potassium phosphate	
barite	fluoranthene	pyrene	
barium	fluorene	pyridine	
barium hydroxide	glycols	radium 226	
barium sulfate	graphite	radium 228	
barium sulfide	gross alpha (adjusted)	radon 222	
benz(a)anthracene	hexachlorobenzene	selenium	
benzene	hydrochloric acid	silica	
benzo(a)pyrene	hydrogen chloride	silicon tetrabromide	
benzo(b)fluoranthene	hydrogen peroxide	silicon tetrachloride	
benzo(ghi)perylene	hydrogen sulfide	silver	
benzo(k)fluoranthene	indeno(1,2,3-cd)pyrene	sodium	
beryllium	insecticides	sodium alpha olefin sulfonate	
bismuth 212	iron	sodium arsenite	
boric acid	iron oxide	sodium borate	
boron	lead	sodium carbonate	
boron carbide	lead (isotopic)	sodium chlorate	
boron tribromide	magnesium	sodium chloride	
boron trichloride	magnesium carbonate	sodium dichromate	
C_{13}-C_{22}	magnesium chlorate	sodium hexametaphosphate	
C_{23+}	magnesium chloride	sodium hydrosulfide	
C_4-C_{12}	magnesium perchlorate	sodium hydroxide	
cadmium	manganese	sodium oxide	
calcium	manganese dioxide	sodium perchlorate	
calcium carbonate	manganese oxide	sodium sulfite	
calcium chloride	manganese sulfate	strontium	
calcium hypochlorite	mercury	strontium carbonate	
calcium oxide (lime)	methanol	sulfate	
calcium sulfate	methyl isobutyl ketone	sulfide	
chelant (Nalco 1745)	methyl mercury	sulfur dioxide	
chlorate	methyl tert-butyl ether	sulfuric acid	
chloride	molybdenum	synthetic detergent	
chlorinated organics	monochlorobenzene	tank mud	

ISSUED 11/1/04

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: October 26, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Meeting on October 26, 2004 at 1:30 PM via telephone

1. Attendance:
   a. NDEP: Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Reviewed FBR system operations.
   a. System is currently receiving 78 gpm of the blended water from the GWTS and the GW-11 pond. 20 gpm of GW-11 pond water is being put into the blend and approximately 58 gpm of GWTS water. 76 gpm of this is forwarded to the FBR whereas the remaining 2 gpm is recycled to the GW-11 pond.
   b. KM continues the performance test. Approximately one week remains. One of the composite samples came back with a high detection for perchlorate, however, the discrete samples did not have a concentration that would result in such a high concentration. KM is running the analysis for the discrete samples.
   c. KM noted that the clarity has been running 15-20 ntu.
   d. NDEP noted that the discharge appeared to be cloudier and have an increased sulfide smell this week.
   e. KM noted that they have had to divert the FBR to pond GW-11 for approximately 6 hours over the course of the past 23 days. This has been due to some minor mechanical problems.
   f. Discussed D.O. concentrations. KM noted that the end of pipe discharge has been running 3.5-5.5 mg/L. The concentration at the culvert has been about 1.0 mg/L less than that.
3. Discussed the latest letter from NDEP on chromium.
   a. KM noted that they are pumping all of the available water from the on-site wells and pond GW-11 is not a limiting factor. Brian noted that if additional wells or capacity was needed for the system, the system might require modification. KM agreed.
4. Next meeting: November 9, 2004 at 9:00 AM. Call-in number: (405)-270-4202.

Administrator – acting
Jolaine Johnson and Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations and Reclamation
Facsimile 684-5259

STATE OF NEVADA
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Facsimile 687-6396

Federal Facilities
Facsimile 687-6396

Corrective Actions
Facsimile 687-8335

ndep.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

Las Vegas Office

1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

October 26, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Characterization of GW-11 Pond Contents in Response to September 20, 2004 NDEP letter
dated October 18, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides comments below.

1. Please provide a schedule for the sampling, analyses, and reporting discussed in your response to comment #2.
2. Table B.2, please explain which water quality standards were used to develop the column labeled "Most Stringent Water Quality Standards".
3. Table B.2, the detection limits are not included for a number of the analyses. Please provide a revised table that includes the detection limits for all analyses.
4. Table B.2, the NDEP appreciates the submittal of this information, however, the NDEP would like to note that the detection limits that are presented are elevated (above the "Most Stringent Water Quality Standards") for a number of analytes. No response is needed to this issue as it was addressed in KM's response to Comment #3 from the previous NDEP letter.

The NDEP requests that KM respond to these issues **by November 29, 2004**. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Al Tinney, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
Las Vegas Office
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

October 26, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Kerr-McGee Response to NDEP's 9-8-04 Comments

Dear Ms. Crowley,

The NDEP has received and reviewed KM's correspondence identified above and provides comments in Attachment A. The NDEP requests that KM respond to these issues **by November 29, 2004**.

If there is anything further please do not hesitate to contact me.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP-Las Vegas Office

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Alan Tinney, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
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Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

ATTACHMENT A

1. KM Response to Comment #2, the NDEP's would like to note that the original comment deals with the issue of the total outflow concentrations from the groundwater treatment system (GWTS) to pond GW-11 exceeding the USEPA MCL of 0.1 mg/L. KM's response addresses the existing consent order and UIC permit which does not answer the NDEP's original question. This USEPA MCL corresponds to the discharge limit specified in KM's NPDES permit. There is also a limit of 0.01 mg/L specified for hexavalent chromium in the existing NPDES permit. Water from the GW-11 pond is eventually discharged via this NPDES permit and it is the belief of the NDEP that the performance of the chromium system directly relates to this NPDES permit.

   The NDEP understands that the existing concentrations in the NPDES discharge are within permit limitations, however, the NDEP would like to understand the following: is the system operating as expected?; have any changes been made to the treatment system that would cause this increase in discharge concentration? Are any future modifications or repairs anticipated that will reduce the concentration of chromium in the discharge?

   It is the understanding of the NDEP (based on KM's response) that KM's solution to the elevated levels of chromium in the discharge of the treatment system is as follows: the flow from pond GW-11 is re-run through the chromium treatment system prior to addition to the FBRs and the chromium concentrations are further reduced by the addition of large volumes of lower concentration water from the Seep area and Athens Road well field. If this understanding is not correct please provide clarification.

   Please explain the increase in discharge concentration in the months of May and June 2004 from the GWTS to pond GW-11. Also, if any more current data (for average total chromium for the treated outflow as labeled in Table 4 of the semi-annual report) is available please provide that information as well.

2. KM Response to Comment #4, the NDEP concurs that it is not necessary to sample non-KM wells outside the vicinity of the site plume. As the plume is better defined, it may become necessary to sample non-KM wells that are not currently sampled. The NDEP also requests that KM provide the chromium iso-concentration maps and the potentiometric surface maps with both semi-annual reports.
3. KM Response to Comments #5 and #6, the NDEP agrees with the proposed installation of additional wells. It is suggested that soils data be collected and analyzed in any locations where wells are drilled. Please include well M29 in the next round of sampling to provide further delineation of the chromium plume in the vicinity of Unit 6. Also, it appears that the plume is not well defined in the vicinity of wells M100, M111, and H38. Please review the feasibility of including some or all of these wells in the next round of sampling. There also appears to be

a large data gap between the Athens Road well field and the northern extent of the data presented on plate 1. There are a number of wells in this area that may be suitable for sampling. It is also requested that KM carefully review the plume maps and review the sufficiency of the data used to develop the iso-concentration contours. If additional sampling is needed to define the plume it is suggested that the additional wells be included in the next round of sampling.

4. KM Response to Comment #7, the NDEP disagrees with KM's contention that the operation of the chromium remediation system (and the perchlorate remediation system) is not a driving issue behind the design of the capture systems. The NDEP will accept KM's position, however, please be advised that future modifications to the treatment system should not be limited by pond capacity. It is understood that the operation of the perchlorate remediation system is eventually intended to accept the entire existing flow rate from the existing chromium treatment system.
5. KM Response to Comment #8, the NDEP does not have any information to suggest that a reducing environment exists and is converting the KM hexavalent chromium plume to trivalent chromium. Also, this response does not address the issue of the total chromium plume and it's migration towards the Las Vegas Wash. If KM is aware of a natural attenuation mechanism for the reduction of hexavalent chromium to trivalent chromium, it is requested that this information be presented to the NDEP.
6. KM response to Comment #9, please provide a schedule for the submission of the report on the testing of the ferrous sulfate system. Also, please note that if KM plans to adopt the ferrous sulfate system on a larger scale, an evaluation of the expected NPDES discharge concentration of iron should be included. This evaluation should include mass balance calculations and analytical data to support the conclusions presented.

10/24/04
Sunday
pg 1 of

~1015 Leave House
T-100 Mileage 127,420 Trip 263

1) Seep Area
1) Seep has more standing water throughout
(rained this past week)

Full flow - sample collected ~1050 hrs (very fine solids)
Water appears cloudy in discharge area & backwater area
Green algae on top of black algae
A fair amount of white algae present along w/ the black algae
* No odor

2) Culvert Area
(A) Above culvert
* Water a little more cloudy than typical
Little algae on bottom - most gone
Most algae present is black algae w/ some green algae. A fair amount of white fillamentous is present.
A fair amount of small floaters (black) are present (detached)
* Green/black algae attached to twigs & floating w/ white fillamentous attached also has purple color on top
Some brownish algae present on bottom
Nearly ∅ scum approaching culvert
Most rocks at culvert covered w/ white precipitate

10/24/04
Sunday
pg 2

&/or white filamentous

② Below culvert
most rocks covered w/ white precipitate &/or white filamentous all the way to cattails
very few bubbles after agitation

3) Backwater area
Murky water - no flow - nearly ∅ scum

4) Pablo creek
1) at weir - clear water

2) at USGS gauge - clear water

3) Area inundated w/ water - cannot access confluence area

10/24/04
Sunday
Pg 3

Trip
1) North end ~ 1120 hrs
Area looks similar to last weeks
likely no additional fill placed
current fill is ~ at grade to 3+ feet above
Pasco Rd.

2) South end - paleo channel
more fill placed all the way back
to headwaters of paleochannel
few boulders & NO asphalt in this fill.
Alot of fill placed along western portion
of paleo channel where RIS water daylights
Alot of this fill has many large boulders
little standing/flowing water observable.
Dozer stuck near origin of RIS water
daylight

Refuel mileage 127,437 Trip 280

~ 1215 Home
T-100 mileage 127,445 Trip 8

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

October 21, 2004

Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee Response to NDEP's 9-8-04 Comments re the *Kerr-McGee Semi-annual Performance Report - Chromium Mitigation Program – January to June 2004*

Dear Mr. Rakvica:

Semi-annually, Kerr-McGee Chemical LLC, Kerr-McGee, provides Nevada Division of Environmental Protection, NDEP, an evaluation of chromium remedial progress in the vicinity of the Henderson facility. The last evaluation, *Semi-annual Performance Report – Chromium Mitigation Program* for the first half of 2004 was submitted to NDEP in July 2004. In correspondence dated September 8, 2004, NDEP provided comments to Kerr-McGee regarding this report. Kerr-McGee has reviewed these comments and offers the following responses, included in Attachment A. The NDEP comments are italicized for ease of reference.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Overnight mail

CC:
Tom Reed
Ed Krish, ENSR
Don Shandy
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Brad Douerghty
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Al Tinney, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

Attachments

ATTACHMENT A

Kerr-McGee Response to NDEP September 8, 2004 Comments on the
"Semi-annual Performance Report – Chromium Mitigation Program
Henderson Facility, Nevada
January – June, 2004"

NDEP Comment 1:
Page 8, second paragraph, it is requested that a more detailed description be provided for the treatment of hexavalent chromium at the Athens Road well field.

Kerr-McGee Response to Comment 1:
The current levels of hexavalent chromium in the Athens Road collection wells (~ 1 mg/l) prompted pilot testing and eventual installation of a ferrous sulfate addition system to chemically reduce the chromium. The simple system uses two metering pumps (one spare) to feed approximately 20 ml/minute ferrous sulfate solution (6% Fe) from totes, into the ART-8 well flow line as it enters Lift Station #3. The 70 gpm well flow, containing the ferrous sulfate, mixes with the 160 gpm flow from the other Athens Road wells and the hexavalent chromium in solution is reduced to the trivalent state. Solids generation is minimal and those solids which are precipitated are largely removed at the Kerr-McGee plant site in the granular activated carbon columns preceding the Fluidized Bed Reactors (FBRs).

NDEP Comment 2:
Table 4, the average total chromium outflow concentration has exceeded the USEPA MCL of 0.1 mg/L for the months of May and June 2004. The NDEP understands that this water is currently being impounded in pond GW-11, however, KM has been discharging from pond GW-11 periodically over the past few months. Please explain the excursions noted in May and June 2004 and what is planned (if anything) to mitigate this issue.

Kerr-McGee Response to Comment 2:
Kerr-McGee has been and currently is in compliance with requirements NDEP has defined for the hexavalent chromium remediation process at the Henderson facility. The requirements are define in the 1986 Consent Order and the UIC permit # UNEV94218, as modified by NDEP. There has been no excursion of the discharge concentrations when compared to the NDEP defined requirements.

The Consent Order for chromium mitigation at the Kerr-McGee Henderson facility was signed in June 1986. The Consent Order, on which the UIC permit was originally based, required monthly discharge limits of total chromium and hexavalent chromium not to exceed 1.7 mg/l and 0.05 mg/l respectively, for groundwater that had been treated to reduce hexavalent chromium and then recharged into the shallow aquifer. The permit has since been modified by NDEP in June 1995, December 1998, and May 1999, eventually recognizing that the treated groundwater is no longer recharged into the shallow aquifer but is impounded in a double-lined impoundment (GW-11 pond). An application for renewal is currently pending with the NDEP. Because the treated groundwater is now impounded in GW-11 pond, no discharge limits or testing requirements are specified in the modified permit. However, Kerr-McGee has continued to operate the chromium reduction process to meet or exceed the original discharge requirements for chromium (both total and hexavalent) listed in the original 1986 Consent Order.

In addition, all water discharged from pond GW-11 is routed back through the chromium reduction process for any additional chromium reduction possible, prior to treatment in the perchlorate reduction process, the FBRs.

NDEP Comment 3:
Plate 1, the NDEP advises KM to review the available TIMET data for total chromium concentrations on their property (adjacent the KM site). Incorporation of this data would significantly revise the way that the 0.05, 0.1 and 1 mg/L contours are portrayed. As noted previously, the NDEP is concerned that the existing groundwater capture system is not addressing the far eastern and western portions of the plume. Please review this data and respond. See also comments below. Also, please show the locations of Ponds P-2 and P-3 on this figure.

Kerr-McGee Response to Comment 3:
Plate 1 is the total chromium concentration map generated from the annual groundwater sampling data collected during the second quarter of each year. Kerr-McGee will request from TIMET both the locations of the wells on their property which are in close proximity to Kerr-McGee's eastern boundary, and the appropriate chromium groundwater data from these wells. Kerr-McGee will plot these locations and data on future drafts of Plate 1 to better define the eastern limits of the existing chromium plume. In addition, old ponds P-2 and P-3 will be located on Plate 1.

NDEP Comment 4:
Plates 1 and 2, the NDEP needs a potentiometric surface map (of the same scale and orientation as Plates 1 and 2) to match the mapped areas of Plates 1 and 2. It is suggested that (in the future) the concentration contours map and the potentiometric surface maps be generated at the same scale as the annual perchlorate map.

Kerr-McGee Response to Comment 4:
Kerr-McGee will prepare potentiometric surface maps to complement Plates 1 and 2. The potentiometric map associated with Plate 2 will be submitted with the second half 2004 report in January 2005. The potentiometric map to go with Plate 1 will be submitted with the annual data in July 2005.

For the last several years, Kerr-McGee has voluntarily collected perchlorate, specific conductivity, and groundwater elevation data annually from not only Kerr-McGee wells, but also any other available monitor wells covering an approximate ten square mile area in and around Henderson. From these data, Kerr-McGee has prepared perchlorate, specific conductivity, and potentiometric surface maps at a scale of 1-inch equals 1000 feet.

Kerr-McGee would consider plotting our own annual groundwater chromium data on this same map scale, and would include, if available, chromium data collected by other monitor well owner/operators within the area of the map. However, Kerr-McGee does not believe it appropriate to sample non-Kerr-McGee wells for chromium outside the immediate vicinity of the site plume.

NDEP Comment 5:
Plate 2, it appears to the NDEP that the delineation of the chromium plume is not complete. It appears to the NDEP that the plume may continue from the Athens Road area, through well PC53, towards well PC58. Also, the plume is not defined east of wells PC53 or PC58 or west of wells M76 or PC73. This delineation is necessary for future submittals. Also, sampling of wells PC93, PC94, and MW-K8 would be useful in the delineation of this plume. If KM believes this to be unnecessary a justification should be provided.

Kerr-McGee Response to Comment 5:
In regard to the chromium plume presented on Plate 2, Kerr-McGee agrees that additional lateral delineation of the plume is warranted. Kerr-McGee proposes to conduct sampling of wells PC-1, PC-2, PC-4, PC-93, PC-94, and MW-K8 for total chromium during the fourth quarter 2004 groundwater sampling period, tentatively scheduled for November 2004. These data will be presented in the second half 2004 report to be submitted in January 2005. If

total chromium is detected in any of these wells above the detection limit (> 0.02 mg/l), then Kerr-McGee will add the wells to the annual chromium monitoring program.

NDEP also noted the chromium plume has not been defined west of wells M-76 and PC-73 (Plate 1). Kerr-McGee proposes that well H-51, 300 feet west of well PC-73, be sampled for total chromium during the fourth quarter sampling period. If total chromium is detected in this well above the detection limit (> 0.02 mg/l); then Kerr-McGee will add the well to the annual chromium monitoring program. In addition, Kerr-McGee will install a groundwater monitor well west of well M-76 to delineate the chromium plume in that area. This well installation would be coordinated with other well installation activity along the western portion of the Interceptor Well / Slurry Wall system (see Kerr-McGee's response to NDEP comment 6).

NDEP Comment 6:

Appendix B, response #1a, while the NDEP appreciates the fact that determination of the capture efficiency of the on-site well field may be difficult, the NDEP would like to note that this determination is necessary. The NDEP has no quantitative or qualitative information to suggest that the chromium (or perchlorate) plume is not traveling around the eastern and western extents of the slurry wall. The NDEP requests that a net drawdown map be submitted in response to this letter and that a complete evaluation be presented in the January 2005 chromium report.

Kerr-McGee Response to Comment 6:

Kerr-McGee has prepared a net drawdown map (utilizing the equivalent map to figures 3 and 4 in the chromium report) which will compare September 2004 water levels with static water levels measured prior to the Interceptor well system start-up (September 1987). The map is attached to this correspondence as Figure 1.

To evaluate western conditions, Kerr-McGee proposes to install at least two monitor wells along the western portion of the Interceptor well / slurry wall system to monitor chromium and perchlorate concentrations. These wells will be replacement wells for M-14 and M-57 which were plugged and abandoned in the wake of the FBR construction.

NDEP Comment 7:

Appendix B, response #1b, please refer to the NDEP's comment #3 above regarding the TIMET chromium data. Also, it appears that part of the issue with increased capacity of the chromium system is the capacity of pond GW-11. The NDEP believes that the capacity of pond GW-11 should not be the driving issue behind the design of the capture system. KM should contemplate operational changes to allow for the maximum capture of chromium (and perchlorate)-impacted water in the on-site wells.

Kerr-McGee Response to Comment 7:

Kerr-McGee maintains that the capture of the on-site plume by the combination of the slurry wall and the Interceptor wells is achieving virtually complete capture. Capture volume is dependent on what nature will give up for groundwater wells to collect. GW-11 pond capacity is not the "driving issue behind design of the capture system". Limitations on treatment capacity for perchlorate removal have previously been a factor in the accumulation of GW-11 pond volume; to about 90 percent of capacity, considering freeboard maintenance requirements. However, recent improvements in FBR performance have resulted in a net decrease of pond volume over the last month.

NDEP Comment 8:
Appendix B, response #1c, KM suggests that natural attenuation will be one of the mechanisms to deal with the downgradient portion of their plume. KM should explain what chemical or microbial processes will result in the attenuation of the total and hexavalent chromium.

Kerr-McGee Response to Comment 8:
The downgradient portion of the chromium plume is defined as that portion between the two Kerr-McGee recovery systems; the Interceptor well / slurry wall system and the Athens Road recovery system. The primary natural attenuation process at work on this plume is adsorption / precipitation. Adsorption of the hexavalent chromium ion retards the expansion of the plume and allows time for the reduction of the Cr^{+6} to Cr^{+3} as insoluble $Cr(OH)_3$.

NDEP Comment 9:
Appendix B, response #1d, please provide a schedule for the completion of the testing of the ferrous sulfate process. Also, per KM's statements in response #1b, won't this flow rate still be limited by the capacity of pond GW-11? Please explain.

Kerr-McGee Response to Comment 9:
The ferrous sulfate test on the groundwater chromium treatment plant is effectively complete. Kerr-McGee will soon be preparing a brief report on the successful test program for submission to NDEP. The report likely will request continued operation of the ferrous sulfate system and possible elimination of the electrolytic cell iron dissolving units (to avoid generation of hazardous wastes from cell cleaning). As noted in response #7, the capacity of the GW-11 pond is not controlling the groundwater treatment plant flow rate.

NDEP Comment 10:
Appendix B, response #2b, please provide documentation or correspondence to substantiate this response. Also, please note that the chromium concentrations detected on the TIMET site appear to match the KM contours very well. Also, please be advised that the NDEP has asked TIMET to look into the issue of chromium impacted cooling water on their site.

Kerr-McGee Response to Comment 10:
The information concerning the lack of cooling water return to the Kerr-McGee facility was obtained from personal communication with Mr. Pat Corbett, past plant manager of the Kerr-McGee Henderson facility, and Ms. Susan Crowley, staff environmental specialist at the facility. Kerr-McGee is currently checking past document files and water treatment / cooling tower operation files to determine if written documentation of this issue still exists.

NDEP Comment 11:
Appendix B, response #3b, the NDEP would like to note that regardless of the decreases in wells M-11 and M-76 these are still significant sources of chromium concentrations in groundwater (over 50 times higher than the USEPA MCL) and nearby wells have even higher concentrations of chromium. Furthermore, it appears that well M12A would also be representative of conditions downgradient of units 4 and 5 and this well is approximately 180 times higher than the USEPA MCL.

Kerr-McGee Response to Comment 11:
Comments noted.

NDEP Comment 12:

Appendix B, response #3b, the NDEP is concerned that given the distance that the plume has traveled that there is an additional 50+ years of travel time for the tail end of this plume to reach the on-site capture system. The NDEP recommends that KM perform a quantitative evaluation of the effectiveness of operating this pump-and-treat system until the tail end of the plume reaches the on-site capture system. It is suggested that KM develop a model to determine the approximate travel time for the remainder of the plume to be captured. If KM finds that continued operation of this pump-and-treat system is the most effective way to move forward it is suggested that KM contemplate additional wells installed upgradient of the slurry wall.

Kerr-McGee Response to Comment 12:

The on-site pump-and-treat system was an optional recovery method until Kerr-McGee committed to the installation of a slurry wall which effectively stopped groundwater movement immediately downgradient from the Interceptor wells. The pump-and -treat system must now continue in operation to prevent impacted groundwater "piling up" and moving around the slurry wall. Kerr-McGee believes that assurance of the effective capture of the onsite groundwater plume is our primary mission. Potential remediation of the upgradient portion of the plume will be evaluated as part of the overall assessment of the facility, which is being undertaken in the Environmental Conditions Assessment (ECA) process.

NDEP Comment 13:

Appendix B, response #3c, the NDEP would welcome a proposal for in-situ chromium remediation. It is suggested that this remedial alternative be explored for impacted areas (soils and groundwater) downgradient of Ponds P-2 and P-3 as well. Please provide a schedule for the evaluation of the feasibility of these processes.

Kerr-McGee Response to Comment 13:

Kerr-McGee will continue with the ECA process currently underway at the Henderson facility. The outcome of the ECA process will include, among other things, the identification of data gaps, and, as successive steps are taken and appropriate data collected, the evaluation of remedial options.

Kerr-McGee is aware of the on-site chromium issue, and expects that the status of chromium in soil and groundwater will be described in the conceptual site model report. Furthermore, Kerr-McGee expects that the consideration of eventual remedial alternatives, including a feasibility assessment, will result from the ongoing ECA process.

In regard to scheduling, Kerr-McGee is confident that the on-site groundwater extraction system and slurry wall are effective in eliminating further off-site migration of chromium in groundwater, and that the chromium in the upgradient soils does not comprise an imminent threat or pose a risk requiring time-critical attention. Kerr-McGee proposes to proceed with the current ECA schedule, and incorporate the consideration of feasibility for the remediation of chromium in soil and groundwater into the ECA process. The dates that such feasibility evaluation will be conducted are dependent upon the progress of the ECA process. However, Kerr-McGee will work closely with the NDEP to develop a proposed schedule for considering all appropriate remedial options as soon as the data are available and the process allows.

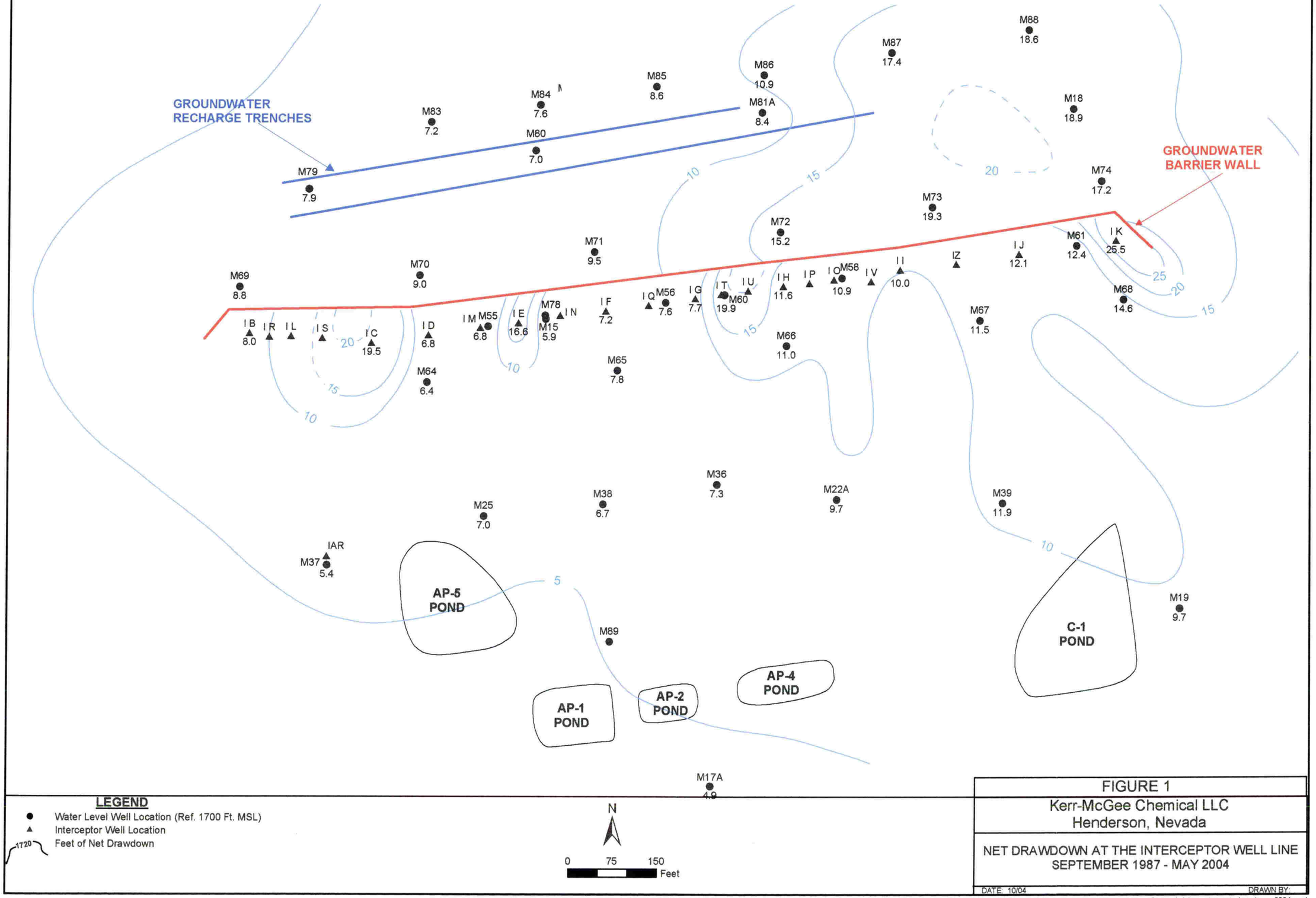


FIGURE 1

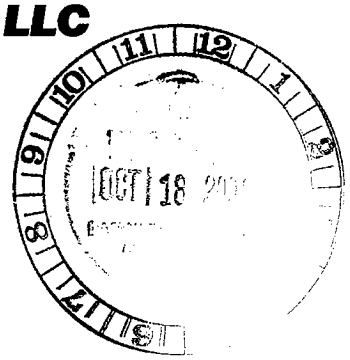
Kerr-McGee Chemical LLC
Henderson, Nevada

NET DRAWDOWN AT THE INTERCEPTOR WELL LINE
SEPTEMBER 1987 - MAY 2004

DATE: 10/04 DRAWN BY:

figure_1_interceptor_net_drawdown_2004.mxd

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009



October 18, 2004

Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA – *Characterization of GW-11 Pond Contents*
In response to September 20, 2004 NDEP letter

Dear Mr. Rakvica:

Kerr-McGee Chemical LLC (Kerr-McGee) has undertaken an Environmental Conditions Assessment (ECA) as directed by Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004, Kerr-McGee has characterized the GW-11 pond contents and supplied that information to the NDEP on September 16, 2004.

You forwarded comments, dated September 20, 2004, relating to the characterization of GW-11 Pond contents. Attachment A contains Kerr-McGee's responses to the comments.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachments

Hand Carried to NDEP, mailed to other recipients

Cc:
Tom Reed
Ed Krish, ENSR
Don Shandy
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Al Tinney, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

ATTACHMENT A

Kerr-McGee Response to September 20, 2004 NDEP Comments on the Characterization of GW-11 Pond Contents for the Henderson Facility, Nevada

1. **NDEP Comment 1:**

"A revised "Sample Collection Procedures" section was provided to the NDEP via electronic mail due to a number of spelling errors in the original version. It should be noted that the correct version contains four errors (grammatical, spelling, and formatting). Quality appears to be a lingering problem on this project and the NDEP requests that KM discuss this issue with their consultants. Please note that Table 1 and the "detailed narrative discussing quality control issues..." have similar errors."

Kerr-McGee Response to Comment 1:

Comment is noted. Future submittals will incorporate appropriate and additional internal reviews to ensure the quality of the submittal and that errors of the type noted are minimized.

2. **NDEP Comment 2:**

"In the revised "Sample Collection Procedures" it is stated that uranium, thorium, cyanide, TPH, organophosphorous pesticides, and octachlorostyrene were not included among the analyses. These parameters were all included in Table 1 that was presented to the NDEP at our July 23, 2004 meeting. It is not clear why these parameters were eliminated and why the NDEP was not notified. The NDEP requests that a sample be taken and analyzed for the parameters that were not included."

Kerr-McGee Response to Comment 2:

Kerr-McGee will collect additional samples and conduct the omitted analyses including uranium, thorium, cyanide, TPH, and organophosphorous pesticides. Analysis for octachlorostyrene will be attempted, but the successful analysis will depend upon the availability of a suitable laboratory standard and analytical procedure by the contract laboratory. Kerr-McGee will notify NDEP of the proposed schedule for data collection and analysis delivery. Please also see Kerr-McGee's response to NDEP comment 4a.

3. **NDEP Comment 3:**

"In the narrative from the lab discussing quality control issues, it is stated that "the PAHs in general may be either biased low or subject to degradation in this sample matrix." Regardless of the grammatical and formatting errors of this sentence, this concerns the NDEP because the detection limits for some of the PAHs are above ARARs or guidance levels; including (but not limited to): benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. There are a number of other chemicals that have detection limits above corresponding ARARs or guidance levels. For example, PCBs (except Aroclor 1016), alpha-BHC, aldrin, beta-BHC, chlordane, etc., were reported with elevated detection limits. KM should be advised that this is an issue that will need to be addressed in the future."

Kerr-McGee Response to Comment 3:

Comment is noted and this issue will be addressed during future sampling and analysis events. The laboratories contracted to perform the analyses will be advised of the need to achieve appropriate detection limits or provide explanation as to the hindrances to achieving those detection limits posed by a particular matrix. Regarding grammatical and/or formatting issues in lab reports, note that analytical

reports that are forwarded to Kerr-McGee from the contract lab frequently contain phases and notes that are not necessarily grammatically correct, but convey meaning satisfactorily. Please contact Kerr-McGee if the lab's meaning is not clear.

4. **NDEP Comment 4:**

The NDEP has comments regarding the analytical data as listed below.

a. *Gross Alpha concentrations must be presented in a summary as Adjusted Gross Alpha for comparison to USEPA MCLs. Also, Radium 226 and 228 concentrations should be presented as combined Radium 226, 228 for comparison to USEPA MCLs.*

b. *Given the concentrations of a number of chemicals in the GW-11 pond (gross alpha radionuclides, arsenic, boron, hexavalent chromium, nitrate, and TDS), the NDEP requests that KM sample and analyze a minimum of one representative sample from each of the well field. This includes the onsite well field, the Athens Road well field, and the Seep Area well field. These samples should be collected in a manner that is representative of the composite flow of each of the well fields. The NDEP requests that these samples be analyzed using the compete analyte list presented in Table 1.*

Kerr-McGee Response to Comment 4:

4a.) Kerr-McGee will determine an adjusted gross alpha concentration subsequent to the completion of uranium sampling and analysis described in Kerr-McGee's response to NDEP's comment 2. To accomplish this determination a sample for gross alpha will be taken simultaneous with the sample for uranium.

4b.) Sampling the GW-11pond outlet comprises an appropriate and representative sample of the actual and current GW-11 pond contents. It is unlikely that composite samples collected from each of the groundwater sources would contribute to a more representative characterization of the GW-11 contents. However, characterization of the areas which provided groundwater to fill GW-11 exists and was used by NDEP to develop the current NPDES discharge permit for the perchlorate remediation process. Before groundwater (from other than on-site wells) was placed into the GW-11 pond, a groundwater characterization in the vicinities of the then intended collection areas (on-site, seep area and Athens Road area) was completed. This characterization formed NDEP's basis for development of an NPDES discharge permit for a perchlorate remediated complex matrix. GW-11 pond water was approved for addition to this matrix, even considering the concentration that would occur between the time the water was collected (at NDEP's direction) and time the treatment system was commissioned. A copy of the original characterization (Table B.2 - used by NDEP for the permit development work) is attached. Please note that the spreadsheet is provided as it was used by NDEP. If notations in the spreadsheet are not meaningful to the reader, please contact Kerr-McGee for an explanation.

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Table B.2
Source Water Analytical Data vs. Water Quality Standards

Parameter	units	Seep				Onsite Water			Pittman Lateral PC-70					Most Stringent Water Quality Standard
		Lancaster 05/21/99	Lancaster-grab 09/14/99	NEL - grab 09/14/99	maximum detected value	Lancaster 01/20/00	NEL 01/20/00	maximum detected value	Lancaster 4/16/1999	Lancaster 4/19/1999	Lancaster 4/21/1999	Lancaster 4/24/1999	maximum detected value	
pH	SU	7.85	7.34	7.56	7.85	7.6	7.46	7.6	7.11	7.13	6.94	7.27	7.27	6.5-9.0
ClO4 (Perchlorate)	mg/l	100			100		1600	1600	480	460	440	340	480	-
CLO3 (Chlorate)	mg/l	100			100									-
Total Dissolved Solids	mg/l	7300			7300		11700	11700	9020	9060	8980	9680	9680	1900
Total Suspended Solids	mg/l		3.7 <	13.2	13.2	51 J	43.2	51						135
Total Organic Carbon	mg/l	4.6	5.6		5.6	4.9	5.1	5.1	3.6	2.4	2.2	3	3.6	-
Total Organic Nitrogen	mg/l		1 <	0.35	1	1 <								-
TOX	mg/l													-
Sulfate	mg/l	1950	2150	1900	2150	1710	4300	4300	2180	2390	2500	2390	2500	-
Sulfide	mg/l		0.009 <	ND		0.15	0.011 <	0.15						0.002
Sulfite	mg/l		0.94 <	ND		0.94 <								-
PO4	mg/l	0.56			0.56				0.17 J	0.26	0.28	2.3	2.3	-
Phosphorus (Total)	mg/l		0.136	0.04	0.136	0.04 <	0.0085 <							-
Chloride	mg/l	2300			2300				2910	2810	2820	3710	3710	-
Cyanide	mg/l	0.004 <	0.004 <	ND		0.004 <	0.0064 <		NA	ND	ND	ND		0.0052
NO2/NO3	mg/l	6.98	8	8.5	8.5	47	48	48	NA	21.3	18	15.2	21.3	-
Total Nitrogen	mg/l						48	48						-
Ammonia - N	mg/l		0.15 J	ND	0.15 J	15.2	15	15.2						-
BOD5	mg/l		1.42 J	ND	1.42 J	12	18	18						-
Bromide	mg/l		2 <	ND		200 <								-
Chemical Oxygen Demand	mg/l		9.6	140	140	3.1 J	28	28						-
Color	Pt-Co		20	15	20	75	60	75						-
Fluoride	mg/l		1.45	1.6	1.6	0.98	0.93	0.98						1.0
Surfactants (MBAS)	mg/l		0.73	0.25	0.73	5.8	0.1	5.8						-
Oil & Grease	mg/l		1.5 <	3.8	3.8	2.7 <	16	16						-
TKN	mg/l		0.41 J	0.35	0.41	0.63 <	0.05 <							-
Coliform, Fecal	#/100 ml		40	110	110	10 <	2 <							-
Residual Chlorine	mg/l		0.084 J	0.02	0.084	0.03 <								-
METALS														-
Aluminum	mg/l	0.22	0.052 <	0.15	0.22	0.077 <			0.059 J	ND	ND	7.77	7.77	-
Antimony	mg/l	0.025 <	0.25 <	ND		0.029 <	0.0009 J	0.029 J	ND	ND	ND	ND		4.3
Arsenic	mg/l	0.103	0.115		0.115	0.005 <	0.0038 J	0.005 J	0.129	0.128	0.132	0.125	0.132	0.100
Barium	mg/l	0.0214 J	0.0183 J	0.021	0.0214	0.0383 <	0.041	0.041	0.0262 J	0.0237 J	0.0245 J	0.22	0.22	-
Beryllium	mg/l	0.0017 <	0.00079 <	ND		0.0011 <	0.00034 J	0.001 J	ND	ND	ND	ND		0.1
Boron	mg/l			3.6	3.6	13.2	13	13.2						0.75
Cadmium	mg/l	0.0017 <	0.00063 <	ND		0.00081 <	0.00169 <		ND	ND	ND	ND		0.0029
calcium	mg/l	552			552				727	768	700	782	782	-
Chromium (Tot.)	mg/l	0.0054 <	0.0054 <	ND		0.666	0.49	0.666	0.124	0.132	0.121	0.092	0.132	0.100
Chromium (VI)	mg/l	0.003 <					0.01 <		0.129	0.114	0.102	0.055	0.129	0.010
Cobalt	mg/l	0.0055 <	0.0055 <			0.0066 <			ND	ND	ND	0.0095 J	0.0095 J	-
Copper	mg/l	0.0058 <	0.0058 <	0.0081	0.0081	0.0035 <	0.0054	0.005	ND	ND	ND	0.03	0.03	0.033
Iron	mg/l	0.016 <	0.016 <	ND		2.57	3.7	3.7	0.046 J	ND	ND	6.71	6.71	1.000
Lead	mg/l	0.0065 <	0.023 <	ND		0.025 <	0.00056 <		ND	ND	ND	ND		0.0046
Magnesium	mg/l	211	207	240	240	386	380	386	280	268	269	297	297	-
Manganese	mg/l	0.946	1.68	1.8	1.8	0.297	0.33	0.33	1.33	1.39	1.3	1.72	1.72	0.2
Mercury	mg/l	0.000042 <	0.000042 <	ND		0.0001 <	0.00007 <		0.000092 J	0.000058 J	ND	ND	0.000092 J	0.000012
Molybdenum	mg/l		0.112	0.12	0.12	0.045 J	0.042	0.045						0.019
Nickel	mg/l	0.0152 J	0.0155	ND	0.0155	0.006	0.01 <	0.01	0.0058 J	0.0069 J	0.0078 J	0.0154 J	0.0154 J	0.2
Potassium	mg/l	45.8			45.8		36	36	41.2	40.5	40.6	38.5	41.2	-
Selenium	mg/l	0.011	0.008 J	ND	0.011	0.0083 J	0.0059	0.008 J	0.0081 J	ND	0.006 J	0.0063 J	0.0081 J	0.005

Table B.2
Source Water Analytical Data vs. Water Quality Standards

Parameter	units	Seep				Onsite Water			Pittman Lateral PC-70					Most Stringent Water Quality Standard
		Lancaster 05/21/99	Lancaster-grab 09/14/99	NEL - grab 09/14/99	maximum detected value	Lancaster 01/20/00	NEL 01/20/00	maximum detected value	Lancaster 4/16/1999	Lancaster 4/19/1999	Lancaster 4/21/1999	Lancaster 4/24/1999	maximum detected value	
Silver	mg/l	0.0057 <	0.0014 <	ND		0.0017 J	0.0012 <	0.002 J	ND	ND	ND	ND		0.037
sodium	mg/l	1520			1520		1600	1600	1800	1800	1610	2090	2090	-
strontium	mg/l	11.2			11.2		21	21	14.8	15.1	15.1	14.7	15.1	-
Thallium	mg/l	0.0097 <	0.0097 <	ND		0.0092 <	0.0006 J	0.009 J	ND	ND	ND	ND		0.0063
Tin	mg/l		0.032 <	ND		0.031 <								-
vanadium	mg/l	0.051			0.051		0.0051	0.005	0.075	0.077	0.075	0.116	0.116	-
Zinc	mg/l	0.003 <	0.003 <	ND		0.0076 J	0.0036 <	0.008 J	0.026	0.0181 J	0.03	0.0511	0.0511	0.292
														-
Herbicides														-
2,4-D	ug/l	0.098 <					0.04 <		1.14	ND	ND	ND	1.14	-
Silvex (2,4,5-TP)	ug/l	0.0362 J	0.0403 J		0.0403 J	0.0297 J	0.01 <	0.03 J	0.058	ND	ND	0.51	0.51	-
2,4,5-T	ug/l	0.257			0.257		0.02 <		0.698	ND	ND	0.469 J	0.698	-
Dalapon	ug/l	0.79 J			0.79 J				ND	ND	ND	ND		-
Dinoseb	ug/l	0.39			0.39		0.01 <		0.604	ND	ND	ND	0.604	-
Dicamba	ug/l	0.099			0.099				0.112	0.13 J	0.173	0.169 J	0.173	-
MCPP	ug/l	49 <							ND	ND	ND	ND		-
MCPA **(see note on p.5)	ug/l	28000 **			28000 **				51000 **	52000 **	57000 **	40000 **	57000 **	-
2,4-DP (dichloroprop	ug/l	0.098 <					0.1 <		ND	ND	ND	ND		-
2,4-DB	ug/l	0.098 <					0.1 <		4.08	4	3.9 J	1.4 J	4.08	-
Pentachlorophenol	ug/l	0.017 J			0.017 J				0.03 J	ND	ND	ND	0.03 J	13.5
														-
alpha-BHC	ug/l	0.664	0.69	0.92	0.92	0.106	0.14	0.14	0.58	0.7	0.676	0.771	0.771	0.13
beta-BHC	ug/l	0.249	0.372	0.3	0.372	0.0011 <	0.029 <		0.11	0.123	0.138	0.166	0.166	0.46
delta-BHC	ug/l	1.68	1.71	1.9	1.9	0.0155	0.06 J	0.06	0.812	1	0.934	1.99	1.99	-
gamma-BHC (Lindane)	ug/l	0.0052 J	0.0511		0.0511	0.0196	0.06 J	0.06	0.0809	0.0762	0.0923	0.0966	0.0966	0.08
Heptachlor	ug/l	0.0019 <	0.0016 <	ND		0.0015 <	0.033 <		ND	ND	ND	ND		0.0021
Aldrin	ug/l	0.0026 J	0.0155	ND	0.0155	0.0061 <	0.03 <		ND	ND	ND	ND		0.0014
Heptachlor Epoxide	ug/l	0.0044 J	0.00181 J	ND	0.0044 J	0.00096 <	0.028 <		ND	ND	ND	0.0021 J	0.0021 J	0.0011
alpha-Endosulfan	ug/l	0.0019 <	0.002 <	ND		0.0019 <	0.032 <		ND	ND	0.0027 J	0.0064 J	0.0064 J	2
Dieldrin	ug/l	0.0039 <	0.00099 <	ND		0.00096 <	0.026 <		ND	ND	ND	ND		0.0014
4-4'-DDE	ug/l	0.0073 J	0.00099 <	ND	0.0073 J	0.00096 <	0.029 <		ND	ND	ND	ND		0.0059
Endrin	ug/l	0.0042 J	0.007 <	ND	0.007 J	0.0068 <	0.022 <		ND	ND	ND	ND		0.0023
beta-Endosulfan	ug/l	0.0039 <	0.0048 <	ND		0.0047 <	0.024 <		ND	ND	ND	ND		2
4-4'-DDD	ug/l	0.0114 J	0.0047 <	ND	0.0114 J	0.00046 <	0.018 <		ND	ND	ND	ND		0.0084
Endosulfan Sulfate	ug/l	0.0039 <	0.003 <	ND		0.0029 <	0.1 <		ND	ND	ND	ND		2
4-4'-DDT	ug/l	0.0039 <	0.0089 <	ND		0.00086 <	0.027 <		ND	ND	ND	ND		0.0059
Endrin Ketone	ug/l	0.0039 <							ND	ND	ND	ND		-
Methoxychlor	ug/l	0.019 <	0.02 <	ND		0.02 <	0.029 <		ND	ND	ND	ND		0.03
alpha chlordane	ug/l	0.0025 J		ND	0.0025 J	0.019 <	0.2 <		ND	ND	ND	ND		-
gamma chlordane	ug/l	0.0019 <		ND		0.019 <	0.2 <		0.0025 J	ND	0.0054 J	ND	0.0054 J	-
Toxaphene	ug/l	0.19 <	0.3 <	ND		0.29 <	0.1 <		ND	ND	ND	ND		0.0002
Endrin Aldehyde	ug/l	0.0039 <	0.0047 <	ND		0.0046 <	0.027 <		ND	ND	ND	ND		0.81
Aroclor - 1016	ug/l	0.097 <	0.043 <	ND		0.041 <	0.54 <		ND	ND	ND	ND		0.00045
Aroclor - 1221	ug/l	0.097 <	0.12 <	ND		0.12 <	0.44 <		ND	ND	ND	ND		0.00045
Aroclor - 1232	ug/l	0.097 <	0.047 <	ND		0.046 <	0.054 <		ND	ND	ND	ND		0.00045
Aroclor - 1242	ug/l	0.097 <	0.099 <	ND		0.096 <	0.27 <		ND	ND	ND	ND		0.00045
Aroclor - 1248	ug/l	0.097 <	0.038 <	ND		0.037 <	0.2 <		ND	ND	ND	ND		0.00045
Aroclor - 1254	ug/l	0.097 <	0.14 <	ND		0.13 <	0.13 <		ND	ND	ND	ND		0.00045
Aroclor - 1260	ug/l	0.097 <	0.036 <	ND		0.035 <	0.34 <		ND	ND	ND	ND		0.00045
														-
Semi-Volatiles:														-
Phenol	ug/l	1 <	0.3 <	ND		0.3 <	5 <		ND	ND	ND	ND		4,600,000

Table B.2
Source Water Analytical Data vs. Water Quality Standards

Parameter	units	Seep						Onsite Water				Pittman Lateral PC-70										Most Stringent Water Quality Standard
		Lancaster 05/21/99		Lancaster-grab 09/14/99		NEL - grab 09/14/99	maximum detected value	Lancaster 01/20/00		NEL 01/20/00	maximum detected value	Lancaster 4/16/1999		Lancaster 4/19/1999		Lancaster 4/21/1999		Lancaster 4/24/1999		maximum detected value		
Bis(2-chloroethyl) ether	ug/l	1	<	0.2	<	ND		0.2	<	5	<		ND		ND		ND		ND			14
2-Chlorophenol	ug/l	1	<	0.4	<	ND		0.4	<	5	<		ND		ND		ND		ND			-
1,3-Dichlorobenzene	ug/l	1	<	0.5	J	ND	1 J	0.3	J	0.99	<	0.99 J	ND		ND		ND		1	J	1 J	2,600
1,4-Dichlorobenzene	ug/l	1	<	0.7	J	ND	1 J	0.5	J	1.16	<	1.16 J	ND		ND		ND		ND			2,600
1,2-Dichlorobenzene	ug/l	1	<	0.6	J	ND	1 J	0.8	J	0.8	<	0.8 J	ND		ND		ND		ND			17,000
2-methylphenol	ug/l	1	<										ND		ND		ND		ND			-
2-2'oxybis(1-chloropropane	ug/l	1	<										ND		ND		ND		ND			-
4-methylphenol	ug/l	3	<										ND		ND		ND		ND			-
N-nitrosodi-n-propylamine	ug/l	1	<	0.5	<	ND		0.5	<	5	<		ND		ND		ND		ND			-
N-nitrosodimethylamine	ug/l			0.3	<	ND				5	<											81
Hexachloroethane	ug/l	1	<	0.4	<	ND		0.4	<	5	<		ND		ND		ND		ND			89
Hexachloroethene	ug/l																					-
Nitrobenzene	ug/l	1	<	0.7	<	ND		0.7	<	5	<		ND		ND		ND		ND			1,900
Isophorone	ug/l	1	<	0.1	<	ND		0.09	<	5	<		ND		ND		ND		ND			6,000
2-Nitrophenol	ug/l	1	<	0.3	<	ND		0.3	<	5	<		ND		ND		ND		ND			-
2,4-Dimethylphenol	ug/l	1	<	0.8	<	ND		0.8	<	5	<		ND		ND		ND		ND			-
Bis(2-chloroethoxy) methane	ug/l	1	<	0.4	<	ND		0.4	<	5	<		ND		ND		ND		ND			-
2,4 - Dichlorophenol	ug/l	1	<	0.4	<	ND		0.4	<	5	<		ND		ND		ND		ND			790
1,2,4-Trichlorobenzene	ug/l	1	J	2	J	ND	2 J	0.3	<	5	<		1	J	1	J	1	J	2	J	2 J	-
Naphthalene	ug/l	1	<	0.2	<	ND		0.2	<	5	<		ND		ND		ND		ND			-
4-chloroaniline	ug/l	1	<										ND		ND		ND		ND			-
Hexachlorobutadiene	ug/l	2	<	0.8	<	ND		0.8	<	5	<		ND		ND		ND		ND			500
4-Chloro-3-methylphenol	ug/l	1	<	0.3	<	ND		0.3	<	5	<		ND		ND		ND		ND			-
2-methylnaphthalene	ug/l	1	<										ND		ND		ND		ND			-
Hexachlorocyclo-pentadiene	ug/l	5	<	1	<	ND		0.9	<	5	<		ND		ND		ND		ND			17,000
2,4,6-Trichlorophenol	ug/l	2	<	0.5	<	ND		0.5	<	5	<		ND		ND		ND		ND			-
2,4,5-trichlorophenol	ug/l	2	<										ND		ND		ND		ND			-
2-Chloronaphthalene	ug/l	1	<	0.2	<	ND		0.2	<	5	<		ND		ND		ND		ND			-
2-nitroaniline	ug/l	2	<										ND		ND		ND		ND			-
Dimethyl Phthalate	ug/l	2	<	0.2	<	ND		0.2	<	5	<		ND		ND		ND		ND			2,900,000
Acenaphthylene	ug/l	1	<	0.2	<	ND		0.2	<	5	<		ND		ND		ND		ND			-
																						-
Chloromethane	ug/l	3	<	3	<	ND		3	<	0.87	<		ND		ND		ND		ND			-
Bromomethane	ug/l	3	<	3	<	ND		3	<	0.56	<		ND		ND		ND		ND			4,000
Vinyl Chloride	ug/l	2	<	2	<	ND		2	<	0.5	<		ND		ND		ND		ND			5,250
Chloroethane	ug/l	3	<	3	<	ND		3	<	0.89	<		ND		ND		ND		ND			-
Dichloromethane	ug/l	2	<	2	<	ND		3	J	2.2	J	3 J	ND		ND		ND		ND			-
acetone	ug/l	6	<										ND		ND		ND		6	J	6 J	-
carbon disulfide	ug/l	3	<										ND		ND		ND		ND			-
1,1- Dichloroeth(yl)ene	ug/l	1	<	0.9	<	ND		0.9	<	1.02	<		ND		ND		ND		ND			32
1,1- Dichloroethane	ug/l	2	<	2	J	ND	2	2	<	1.12	<		8		8		8		9		9	-
Chloroform	ug/l	1	<	1	<	ND		430		390	D	430	2	J	2	J	2	J	1	J	2 J	4,700
1,2 - Dichloroethane	ug/l	2	<	2	<	ND		2	<	0.5	<		ND		ND		ND		ND			990
2-butanone	ug/l	3	<										ND		ND		ND		ND			-
1,1,1 - Trichloroethane	ug/l	1	<	1	<	ND		1	<	0.55	<		ND		ND		ND		ND			-
Carbon Tetrachloride	ug/l	1	<	1	<	ND		1	<	0.8	<		ND		ND		ND		ND			44
Bromodichloromethane	ug/l	1	<	0.7	<	ND		1	J	1.4	J	1.4 J	ND		ND		ND		ND			220
1,1,2,2, - Tetrachloroethane	ug/l	2	<	1	<	ND		1	<	0.58	<		ND		ND		ND		ND			110
1,2 - Dichloropropane	ug/l	1	<	1	<	ND		1	<	0.5	<		ND		ND		ND		ND			-
trans - 1,3 - Dichloropropene	ug/l	1	<	0.6	<	ND		0.6	<	0.63	<		ND		ND		ND		ND			-
Trichloroethylene	ug/l	1	<	1	<	ND		1	<	0.5	<		1	J	1	J	1	J	1	J	1 J	810
Dibromochloromethane	ug/l	2	<	2	<	ND		2	<	0.6	<		ND		ND		ND		ND			340

Table B.2
Source Water Analytical Data vs. Water Quality Standards

Parameter	units	Seep							Onsite Water				Pittman Lateral PC-70										Most Stringent Water Quality Standard
		Lancaster 05/21/99		Lancaster-grab 09/14/99		NEL - grab 09/14/99		maximum detected value	Lancaster 01/20/00		NEL 01/20/00	maximum detected value	Lancaster 4/16/1999		Lancaster 4/19/1999		Lancaster 4/21/1999		Lancaster 4/24/1999		maximum detected value		
1,1,2 - Trichloroethane	ug/l	2	<	2	<	ND			2	<	0.59	<	ND		ND		ND		ND				420
Benzene	ug/l	1	<	1	<	ND			1	<	0.64	<	ND		ND		ND		ND				710
1,3 -Dichloropropylene	ug/l	1	<	1	<	ND					0.71	<	ND		ND		ND		ND				1700
Bromoform	ug/l	1	<	0.8	<	ND			0.8	<	1.1	J	1.1	J	ND		ND		ND				3600
4 methyl 2-pentanone	ug/l	5	<												ND		ND		ND				-
2 hexanone	ug/l	7	<												ND		ND		ND				-
Tetrachloroethylene	ug/l	1	<	1	<	ND			1	<	0.8	<	2	J	2	J	2	J	ND		2	J	88.5
Toluene	ug/l	2	<	2	<	ND			2	<	1.2	J	2	J	ND		ND		2	J	2	J	200,000
Chlorobenzene	ug/l	1	<	0.8	<	ND			0.8	<	0.7	<	ND		ND		ND		ND				21,000
Ethylbenzene	ug/l	2	<	2	<	ND			2	<	0.57	<	ND		ND		ND		ND				29,000
Styrene	ug/l	1	<			ND					0.9	<	ND		ND		ND		ND				-
Xylenes	ug/l	1	<			ND					1.06	<	ND		ND		ND		ND				-
trans- 1,2 - Dichloroethylene	ug/l	2	<	2	<	ND			2	<	0.7	<	ND		ND		ND		ND				-
cis-1,2, Dichloroeth(yl)ene	ug/l	2	<	2	<	ND			2	<	1.11	<	ND		ND		ND		ND				-
Methyl Tert-butyl ether	ug/l					ND					0.56	<											-
2,3,7,8-TCDD (Dioxin)	ug/l					ND																	0.00000014
Trichlorofluoromethane	ug/l			2	<	ND			2	<	4.06	<											-
2-Chloroethylvinyl Ether	ug/l								2	<	5	<											-
3 nitroaniline	ug/l	2	<										ND		ND		ND		ND				-
Acenaphthene	ug/l	1	<	0.2	<	ND			0.2	<	5	<	ND		ND		ND		ND				-
2,4 - Dinitrophenol	ug/l	14	<	20	<	ND			19	<	5	<	ND		ND		ND		ND				14,000
4-Nitrophenol	ug/l	10	<	2	<	ND			2	<	5	<	ND		ND		ND		ND				-
dibenzofuran	ug/l	1	<										ND		ND		ND		ND				-
2,4-Dinitrotoluene	ug/l	1	<	0.4	<	ND			0.4	<	5	<	ND		ND		ND		ND				91
2,6-Dinitrotoluene	ug/l	2	<	0.5	<	ND			0.5	<	5	<	ND		ND		ND		ND				-
Diethyl Phthalate	ug/l	2	<	0.5	<	ND			0.5	<	5	<	ND		ND		ND		ND				120,000
4-Chlorophenyl Phenyl Ether	ug/l	1	<	0.4	<	ND			0.4	<	5	<	ND		ND		ND		ND				-
Fluorene	ug/l	1	<	0.3	<	ND			0.3	<	5	<	ND		ND		ND		ND				14,000
4 nitroaniline	ug/l	2	<										ND		ND		ND		ND				-
4,6-Dinitro-2-Methylphenol	ug/l	5	<	0.6	<	ND			0.6	<	5	<	ND		ND		ND		ND				765
N-Nitrosodiphenylamine	ug/l	1	<	0.3	<	ND			0.3	<	5	<	ND		ND		ND		ND				160
4-Bromophenyl-phenyl-ether	ug/l	2	<	0.7	<	ND			0.7	<	5	<	ND		ND		ND		ND				-
Hexachlorobenzene	ug/l	2	<	2	<	ND			2	<	5	<	ND		ND		ND		ND				0.0077
Pentachlorophenol	ug/l	3	<	2	<	ND			2	<	5	<	ND		ND		ND		ND				13.45
Phenanthrene	ug/l	1	<	0.3	<	ND			0.3	<	5	<	ND		ND		ND		ND				-
Anthracene	ug/l	1	<	0.2	<	ND			0.2	<	5	<	ND		ND		ND		ND				110,000
carbazole	ug/l	1	<										ND		ND		ND		ND				-
Di-n-butyl Phthalate	ug/l	2	<	0.7	<	ND			0.7	<	5	<	ND		ND		ND		3	J	3	J	12,000
Fluoranthene	ug/l	1	<	0.2	<	ND			0.2	<	5	<	ND		ND		ND		ND				370
Pyrene	ug/l	1	<	0.3	<	ND			0.3	<	5	<	ND		ND		ND		ND				11,000
Butylbenzylphthalate	ug/l	2	<	0.5	<	ND			0.5	<	5	<	ND		ND		ND		ND				-
3,3'-Dichlorobenzidine	ug/l	2	<	0.6	<	ND			0.6	<	5	<	ND		ND		ND		ND				0.77
Benzo(a)anthracene	ug/l	1	<	0.3	<	ND			0.3	<	5	<	ND		ND		ND		ND				0.31
Bis(2-ethylhexyl)phthalate	ug/l	2	<	0.6	<	ND			0.6	<	5	<	ND		ND		ND		3	J	3	J	59
Chrysene	ug/l	1	<	0.3	<	ND			0.3	<	5	<	ND		ND		ND		ND				0.31
Di-n-Octylphthalate	ug/l	2	<	0.4	<	ND			0.4	<	5	<	ND		ND		ND		ND				-
Benzo(b)fluoranthene	ug/l	1	<	0.3	<	ND			0.3	<	5	<	ND		ND		ND		ND				0.31
Benzo(k)fluoranthene	ug/l	1	<	0.5	<	ND			0.5	<	5	<	ND		ND		ND		ND				0.31
Benzo(a)pyrene	ug/l	1	<	0.2	<	ND			0.2	<	5	<	ND		ND		ND		ND				0.31
Indeno (1,2,3-cd) pyrene	ug/l	1	<	2	<	ND			0.4	<	5	<	ND		ND		ND		ND				0.31
Dibenzo(a,h)anthracene	ug/l	1	<	0.5	<	ND			0.5	<	5	<	ND		ND		ND		ND				0.31

Table B.2
Source Water Analytical Data vs. Water Quality Standards

Parameter	units	Seep				Onsite Water			Pittman Lateral PC-70					Most Stringent Water Quality Standard
		Lancaster 05/21/99	Lancaster-grab 09/14/99	NEL - grab 09/14/99	maximum detected value	Lancaster 01/20/00	NEL 01/20/00	maximum detected value	Lancaster 4/16/1999	Lancaster 4/19/1999	Lancaster 4/21/1999	Lancaster 4/24/1999	maximum detected value	
Benzo(g,h,i)perylene	ug/l	1 <	0.3 <	ND		0.3 <	5 <		ND	ND	ND	ND		-
Bis(2-chloroisopropyl) ether	ug/l		0.3 <	ND		0.3 <	5 <							170,000
1,2-Dichlorobenzene (oDCB)	ug/l			ND			5 <							17,000
1,3-Dichlorobenzene (mDCB)	ug/l			ND			5 <							2,600
1,4-Dichlorobenzene (pDCB)	ug/l			ND			5 <							17,000
1,2 Diphenylhydrazine	ug/l					0.3 <								-
diazanon	ug/l			ND			0.3 <							-
disolfoton	ug/l			ND			0.3 <							-
ethion	ug/l			ND			0.3 <							-
Mirex	ug/l		0.01 <			0.01 <								-
demeton-O	ug/l			ND			0.2 <							0.001
demeton-S	ug/l			ND			0.2 <							-
Guthion	ug/l		0.2 <	ND		0.19 <	0.3 <							-
Malathion	ug/l		0.2 <	ND		0.19 <	0.3 <							0.01
Ethyl Parathion	ug/l		0.2 <	ND		0.19 <	0.3 <							0.1
Methyl Parathion	ug/l			ND			0.3 <							-
Dichlorodifluoromethane	ug/l		2 <			1 <								-
Acrolein	ug/l		40 <											-
Acrylonitrile	ug/l		10 <											780
Benzidine	ug/l					8 <								6.6
Benzidine	ug/l													0.0054
titanium	ug/l		8 <			0.0056 <								0.0054
1,2 - Diphenylhydrazine	ug/l		0.0029 <											-
Chlordane (alpha+gamma)	ug/l	0.0044 J,<			0.0044 J	0.038 <	0.4 <							5.4
DDT & metabolites	ug/l	0.0226 J,J,<	0.01459 <		0.0226 J	0.00228 <	0.074 <		0.0025 J		0.0054 J		0.0054 J	0.0043
Demeton (O+S)	ug/l						0.4 <							0.001
Parathion (ethyl+methyl)	ug/l		0.2 <			0.19 <	0.6 <							0.1
PCBs, Total	ug/l	0.679 <	0.523 <			0.505 <	1.974 <							0.013
Total Inorganic Nitrogen	mg/l	6.98	8.15	8.5	8.5	62.2	63	63		21.3	18		21.3	0.014 20

** Compound is an unidentified compound, is not MCPA, but has similar CC/MS residence time

DSCD
10/18/04

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: October 13, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Meeting on October 12, 2004 at 1:30 PM via telephone

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Reviewed FBR system operations.
   a. System is currently receiving 78 gpm of the blended water from the GWTS and the GW-11 pond. 20 gpm of GW-11 pond water is being put into the blend and approximately 58 gpm of GWTS water. 75 gpm of this is forwarded to the FBR whereas the remaining 3 gpm is recycled to the GW-11 pond.
   b. KM initiated the performance test on Sunday, 10/3/04 at 12:01 AM. The 1st weekly sample has been sent off-site for confirmation. Preliminary results from the on-site lab indicate ND.
   c. KM noted that the hydrogen peroxide system is operational and was automated as of last week.
   d. System is operating at 980-990 gpm and ~95% of the chemical load.
   e. NDEP inquired if KM expected to have to address any temperature concerns with the blended water this winter. KM does not anticipate any issues.
3. Discussed NDEP observations.
   a. Discharge looks fairly clear and contains fewer solids than the last observation. A mild sulfide odor was noted.
4. Discussed discharge relocation. KM noted that they are still pursuing this with BOR. KM noted that they have not heard back from BOR and will continue to follow up.
5. Discussed DO concentrations.
6. NDEP requests a verbal update after the meeting. Susan to submit formal updates on a monthly basis.
7. Other discussions.
   a. Next quarterly meeting may be scheduled for early December.
   b. KM noted that they are expecting a letter response from the USEPA regarding the Superfund request from the environmental groups.
   c. NDEP noted that they had an information request from a party in Denver.
   d. Noted that the latest Northshore Road load was 120 #/day.

e. KM noted that there might be a line of increasing concentration approaching the Seep area well field.
f. Discussed Lake Mead levels and drought expectations.

8. Next meeting: Tuesday, October 26, 2004 at 1:30 PM. Call-in number: 405-270-2655.

10/17/04
Sunday
pg 1 of

~ 12:45 T-100 mileage 127,176 trip 18
Leave house

(1) Seep Area - NO odor - Feel Flow
Sample collected ~ 1315 Hrs - pretty clear →
Alot of very fine solids
* Alot of green Algae - A Fair Amount of Fine Algae mostly along w/ the green Algae. Black Algae present: (1) Beneath green & brown; (2) in Back water area; (3) Downstream near rocks in quite areas. Some white Algae Typically associated w/ the Black Algae
* Salt cedar Turning brown & beginning to shed needles.
* * some standing water now present at Seep ~6" to < 1' deep

(2) culvert Area
① Above culvert: - water looks pretty clear
Most of seep stream floor covered w/ Algae.
Most of this is black covered by green Algae
A Fair Amount of white filamentous is present.
Some brown/green Algae is present. Some Thin white Algae covers the Blade
Some Algae detached & floating (mostly Black)
Some "Sheen" in small pockets Along bank
X No small red worms observed
No ~~scum~~ Scum observed

② AT culvert:
Alot of Black algae & some white filamentous
Rocks AT culvert mostly all covered in white precipitate

③ Below culvert:
Rocks mostly all covered w/ white precipitate
some white filamentous algae present
At the way to LO water & some Black algae Present
* very, very few bubbles due to Agitation
* Pretty clear water - some floaters

(3) TS rock water Area
Appears muddy - mostly ∅ screen

(4) Pasco west Area
① AT west - clear water
② USGS gauge - clear water
③ confluence - NOT observable -> inundated

~ 1530 hrs Home
mileage 127,219
TMP 61

~ 1400

TRIP:
(1) North end - similar to prior observations - possibly more fill. ~ 3' above pasco RB AT one point & ~ even w/ pasco RB Through remainder
(2) South End - more fill placed - mostly along western portion of paleochannel - some oversized rock & concrete debris w/ NO RAP
* wet rock remains along western TS rock & looks to be higher to base of upper most large Bushes/trees
& wet bank/creek STILL present

~ 1445 Landfill west
No dewatering observed

1425 leave Trip

10/17/04
sunday
pg 3 of

T-Cards keeper

20/4	75(51)	1	Tight	1430 1530
15	88	1 1/2	Kmcc	1300 1430
12	89			

1300 - 1530

Administrator – acting
Jolaine Johnson and Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations and Reclamation
Facsimile 684-5259

STATE OF NEVADA
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Facsimile 687-6396

Federal Facilities
Facsimile 687-6396

Corrective Actions
Facsimile 687-8335

ndep.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
Las Vegas Office
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

October 14, 2004

TO: SUSAN CROWLEY
VIA FAX WITH HARD COPY TO FOLLOW
651-2310

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Kerr-McGee ECA Quarterly Report
Dated October 12, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides comments below. The NDEP requests that KM respond to these issues **by October 29, 2004.**

1. This submittal presents a number of proposed changes in schedule. The NDEP is concerned that KM has proposed these significant delays without including an explanation in the report. Please provide justification for the two to three month delays in schedule that is proposed. KM does not have a major deliverable due for submittal until January 2005 (the preliminary CSM).
2. The NDEP will accept this delay in schedule if it is necessary to insure that high quality submittals will be prepared, however, please be advised that the NDEP will not be likely to accept additional major delays in the future.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Al Tinney, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: October 13, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Alan Tinney, Leo Drozdoff, Valerie King

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   a. NDEP: Todd Croft, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
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   a. Discharge looks fairly clear and contains fewer solids than the last observation. A mild sulfide odor was noted.
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f. Discussed Lake Mead levels and drought expectations.

8. Next meeting: Tuesday, October 26, 2004 at 1:30 PM. Call-in number: 405-270-2655.

Todd Croft

From: Brian Rakvica
Sent: Monday, October 18, 2004 8:09 AM
To: Todd Croft; Jennifer Carr; Jeff Johnson; Jim Najima; Jon Palm; Alan Tinney; Leo Drozdoff; Valerie King
Subject: Kerr-McGee meeting notes - perchlorate

All,

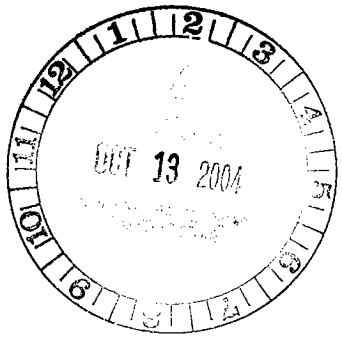
attached are the notes from our mneeting on 10/12/04

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

October 12, 2004



Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119

Dear Mr. Rakvica:

Subject: Kerr-McGee ECA Quarterly Report – 3rd Quarter, 2004

Pursuant to Section XIII of the Consent Agreement, signed September 5, 1996, between Nevada Division of Environmental Protection (NDEP) and Kerr-McGee Chemical LLC (Kerr-McGee), formerly Kerr-McGee Chemical Corporation (KMCC), Kerr-McGee submits the following quarterly status report for the Henderson facility's Environmental Conditions Assessment (ECA).

Activities Conducted 7-1-04 to 9-30-04

- July 6 – Kerr-McGee meets with NDEP (Brian Rakvica) to discuss the ongoing ECA process.
- July 6 – Kerr-McGee submits *"Kerr-McGee ECA Organizational Chart and Resumes"* in response to NDEP comments of 6/11/04.
- July 9 – NDEP accepts Kerr-McGee revised ECA Organizational Chart.
- July 12 – Kerr-McGee submits *"Kerr McGee General Responses to NDEP Comments of February 11, 2004"* in response to NDEP 6/11/04 letter, comments 6, 7, 8, and 9.
- July 13 – NDEP accepts Kerr-McGee responses to NDEP comments of 2/11/04 letter.
- July 14 – Kerr-McGee submits the *"ECA – Revised Deliverable Schedule"* in response to NDEP of 6/29/04.
- July 14 - NDEP accepts Kerr-McGee revised Deliverable Schedule dated July 14, 2004.
- July 15 – Kerr-McGee submits *"Kerr-McGee ECA Quarterly Status Report – 2nd Quarter, 2004"* to NDEP.
- July 22 – Kerr-McGee submits *"Kerr-McGee ECA – Revised Site-Related Chemical List/Report"* in response to NDEP comments of 6/21/04.
- July 26 - Kerr-McGee submits *"Kerr-McGee Semi-Annual Performance Report – Chromium Mitigation Program – January to June 2004" to* NDEP.
- July 28 - Kerr-McGee submits *"Kerr-McGee Quarterly Performance Report – Perchlorate Recovery System, April – June 2004" to* NDEP.
- August 4 – GW-11 pond characterization samples collected.
- August 4 – Kerr-McGee meets with NDEP (Brian Rakvica, Jeff Johnson) to discuss the ongoing ECA process.
- August 5 – NDEP comments on Kerr-McGee revised Site-Related Chemical List dated July 22, 2004.
- August 10 – Kerr-McGee submits *"Kerr-McGee Groundwater Monitoring Summary"* to NDEP.
- August 11 – NDEP comments on Kerr-McGee Groundwater Monitoring Summary dated August 10, 2004.
- August 27 – Kerr-McGee submits *"Characterization of GW-11 Pond Contents"* notification to NDEP of delayed schedule beyond initial due date of 8/30/04, due to duration of laboratory analyses.

- August 31 - Kerr-McGee submits *"Characterization of GW-11 Pond Contents"* notification of September 17 revised submittal date to NDEP.
- August 31 – NDEP accepts the revised date of September 17, 2004 for delivery of GW-11 pond characterization results.
- September 8 - NDEP comments on *"Kerr-McGee Semi-Annual Performance Report – Chromium Mitigation Program – January to June 2004"*
- September 13 – Kerr-McGee submits *"Kerr-McGee Groundwater Monitoring Summary – Revision 1"* to NDEP (responding to 8/11/04 NDEP comments)."
- September 14 – Kerr-McGee meets with NDEP (Brian Rakvica, Jeff Johnson) to discuss the ongoing ECA process.
- September 16 – Kerr-McGee submits *"Characterization of GW-11 Pond Contents"* to NDEP.
- September 16 – NDEP accepts Groundwater Monitoring Summary dated September 13, 2004.
- September 20 - NDEP comments on Kerr-McGee Characterization of GW-11 Pond Contents dated September 16, 2004.
- September 27 – Kerr-McGee submits *"Kerr-McGee ECA – Revised Site-Related Chemical List, Kerr-McGee Response to NDEP August 5, 2004 Letter"* to NDEP.
- September 29 - NDEP comments on Kerr-McGee Revised Site Related Chemicals List dated September 27, 2004.

Please note that attached is Kerr-McGee's ECA revised "*Deliverable Schedule*" which tracks recent activities as well as lists expectations for future activities. This schedule has been modified to reflect the discussions between Kerr-McGee and NDEP on September 21, 2004. Feel free to call me at (702) 651-2234, if you have any questions. Thank you.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

Attachment

CC: Tom Reed
Rick Stater
Don Shandy
Ed Krish, ENSR
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Leslie Palencia, MWD
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Alan Tinney, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

\Quarterly (3rd Q 04) Progress Report to Rakvica.doc

ENVIRONMENTAL CONDITIONS ASSESSMENT
DELIVERABLE SCHEDULE

KERR-McGEE CHEMICAL LLC
Henderson, Nevada
October 11, 2004

Deliverable	Date
Project Organizational Chart / Resumes * Revision 1: Response to NDEP Comments of June11, 2004	May 15, 2004 – Submitted July 6, 2004 – Approved 7-9-04
KM Response to NDEP Comments (2-11-04 Letter) * Revision 1: Response to NDEP Comments of June 11, 2004	June 1, 2004 – Submitted July 12, 2004 – Approved 7-13-04
Deliverable Schedule * KM Response to NDEP Schedule Comments of 6-29-04	April 8, 2004 – Submitted July 14, 2004 – Submitted 7-14-04
Site-Related Chemical List (Report) * Revision 1: Response to NDEP Comments of June 21, 2004 * Revision 2: Response to NDEP Comments of August 5, 2004 * Revision 3: Response to NDEP Comments of September 29, 2004	June 15, 2004 – Submitted July 22, 2004 – Submitted September 27, 2004 – Submitted October 29, 2004 - Pending
Summary of Groundwater Monitoring * Revision 1: Response to NDEP Comments of 8-11-04	August 15, 2004 – Submitted September 13, 2004 – Approved 9-16-04
Characterization of GW-11 Pond Contents * KM response to NDEP Comments of September 20, 2004	August 30, 2004 – Submitted October 18, 2004 – Pending
Conceptual Site Model	January 15, 2005 – Pending
Data Quality Objectives	March 30, 2005 – Pending
Data Usability Evaluation (including review of *Supplemental Phase II Report*)	May 30, 2005 – Pending
BACKGROUND STUDY	
Background Study Work Plan	March 30, 2005 – Pending
Background Study Field Sampling	120 days following NDEP approval of Work Plan
Background Study Report	120 days following field sampling completion

PERIODIC MONITORING AND REPORTING	
ECA Phase II Status Report (Quarterly)	October 15, 2004; January 15 ; April 15; July 15, 2005
Perchlorate Remediation Performance Report (Quarterly)	October 28, 2004; January 28; April 15; July 28, 2005
Chromium Remediation Performance Report (Semi-Annually) * KM Response to NDEP Comments of September 8, 2004	January 28; July 28, 2005 October 22, 2004 – Pending

10/12/04
Tuesday
Pg 1 of

Kerr-McGee conf. call
Re: Perchlorate Remediation & FBR status

Attendees:
Keith Bailey
Brian Rakvica
Todd Croft

* Q report coming to NDEP in ~2 weeks
Seep Area wells → uptic in clay concentration from ~15-20 to 20-30 ppm. Keith believes this is a ripple caused by BOH RIB use

* FBR plant - performance test started 10/03 at 12:01 pm
~980-990 gpm
They are 930 gpm Pond water → blend w/ 58 gpm of onsite water
75 gpm to FBR w/ 3 gpm back to the pond
95% chemical load (initial calcs) They are waiting on MWH lab for confirmation

First of weekly samples sent off for analyses to MWH, site, KMCC, show
↳ ND (4)

peroxide automated control w/ sulfide analyzer working
Plant is stable

10/12/04
Tuesday
pg 2 of 2

* Susan has not had returned call from TSOR

* Took discussed seep discharge observations

* Susan & Keith to follow up on DO results & see if peroxide is too high

* KRCC still optimizing / fine tuning but believes they will be ok in December to meet 10 ppb

* Plan on early December for next QA meeting

Todd Croft

Subject:	Updated: KM / NDEP ClO4 Update Teleconference
Location:	Call-in number (405) 270-2655 (smc dials x2656)
Start:	Tue 10/12/2004 1:30 PM
End:	Tue 10/12/2004 2:30 PM
Show Time As:	Tentative
Recurrence:	(none)
Meeting Status:	Not yet responded
Required Attendees:	Crowley, Susan; Alan Tinney; Valerie King; Jim Najima; Todd Croft; Brian Rakvica

Brian Rakvica

From: Brian Rakvica
Sent: Monday, October 11, 2004 7:44 AM
To: 'Crowley, Susan'
Subject: RE: Site Related Chemical List for NDEP - Revision 3

Susan,

I think the change that is presented is reasonable due to the overlap.

Thanks,

Brian

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Wednesday, October 06, 2004 3:32 PM
To: Brian Rakvica
Subject: Site Related Chemical List for NDEP - Revision 3

Brian,
Just a question re the Kerr-McGee Site Related Chemical List .... In the attached we've combined the SVOC and PAH categories - primarily for housekeeping. If you have time - can you review page 10 of the attached and let me know if this is reasonable from your perspective? Thanks.

<<Site related chem list for NDEP 20042.xls>>

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

Brian Rakvica

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Wednesday, October 06, 2004 3:32 PM
To: Brian Rakvica
Subject: Site Related Chemical List for NDEP - Revision 3

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Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
October 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products	ammonia	anhydrous ammonia, aqua ammonia, aqueous ammonia	7664-41-7	V,S,A	EPA 350.1 as ammonia	0.75	30.00	Historically present in vapor form; Phase I; possibility of sorbing in soil and/or water; LDLs from ATL[11]
	ammonium perchlorate	perchloric acid ammonium salt	7790-98-9	S, A	EPA 350.1 as ammonia	0.75	30.00	Phase I; LDLs from ATL
					EPA 314 as perchlorate	40 (µg/kg)	2.00	LDLs from ATL
					EPA 310.1 alkalinity as ammonium [10]	NA[8]	NA[8]	
	anti-foam agent	surfactants	NA	A	EPA 425.1	NA	25.0	NDEP request in 6/21/04 letter
	argon		7440-37-1	V	EPA 3CM	NA	NA	Historically present in the gas form. NDEP request in 6/21/04 letter
	barium hydroxide	barium dihydroxide	17194-00-2	S, A	EPA 6010B as barium	1.0	3.0	Phase I; LDLs from ATL
					EPA 150.1 as pH [9]	0-14 range	0-14 range	
					EPA 310.1 alkalinity as hydroxide [10]	NA[8]	NA[8]	Phase I; LDLs from ATL
	barium sulfide	barium sulphide	21109-95-5	S, A	EPA 6010B as barium	1.0	3.0	
					EPA 376.2 as sulfide, EPA 9030	0.5	50.0	
					EPA 310.1 alkalinity as sulfide [10]	NA[8]	NA[8]	
	barium sulfate	barite	7727-43-7	S, A	EPA 6010B as barium	1.0	3.0	LDLs from ATL
					EPA 300.0 as sulfate	10.0	1000.0	
	barite	barium sulate	7727-43-7	S, A	EPA 6010B as barium	1.0	3.0	LDLs from ATL
					EPA 300.0 as sulfate	10.0	1000.0	
	boric acid		10043-35-5	S,A	EPA 6010B as boron	10.0	50.0	LDLs from ATL
					EPA 150.1 as pH [9]	0-14 range	0-14 range	
	boron carbide	B4-C; Tetrabor	12069-32-8	S, A	EPA 6010B as boron, carbide not analyzed	10.0	50.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as carbon [10]	NA[8]	NA[8]	
	boron tribromide	boron bromide	10294-33-4	S, A	EPA 6010B as boron	10.0	50.0	Phase I; LDLs from ATL
					EPA 300.0 as bromide	0.5	50.0	
	boron trichloride	trichloroborane, boron chloride	10294-34-5	S, A	EPA 6010B as boron	0.5	50.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride. EPA 325.3	5.0,20.0	500.0, 2000.0	
	calcium carbonate	calcium salt of carbonic acid	471-34-1	S,A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$ [10]	50.0	5000.0	
	calcium chloride	scale	10043-52-4	S, A	EPA 6010B as calcium	10.0	500.0	NDEP request in 6/21/04 letter; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0,20.0	500.0, 2000.0	
	calcium hypochlorite	losantin, calcium hypochloride, hypochlorous acid calcium salt, bleaching powder	777-54-3	S, A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
					EPA 330.3 as residual chlorine	2.0	200.0	
	calcium oxide (lime)	lime, calx, quicklime, calcium monoxide, burnt lime, airlock, calcia, caloxol cp2, calxyl, desical P, rhenosorb C	1305-78-8	S, A	EPA 6010B as calcium	10.0	500.0	LDLs from ATL
					EPA 150.1 as pH [9]	0-14 range	0-14 range	

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	calcium sulfate	anhydrous calcium sulfate, Anhydrous gypsum, Anhydrous sulfate of lime, Calcium salt of sulfuric acid	7778-18-1	S, A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
					EPA 300.0 as sulfate	10.0	1000.0	
	chlorine	molecular chlorine	7782-50-5	A,V	EPA 330.3 as residual chlorine	NA	200.0	Phase I; vapor contaminant will not be tested; possibility of dissolving in water.
	chelant (Nalco 1745)	Nalco 1745, dithiocarbamates	NA	A	None identified for long chain polymers present in dithiocarbamates	NA	NA[8]	NDEP request in 6/21/04 letter
	coagulents	ferric sulfide, aluminum sulfate, ferric chloride	various	S, A	Coagulants will be analyzed using the ion and metal analysis identified under the specific chemicals listed and EPA 425.1 for surfactants	varies	varies	NDEP request in 6/21/04 letter
	coal	carbon, trace metals	7440-44-0	A	Total Organic Carbon (TOC)-ASTM 5997, metals 6010B	NA	0.06	NDEP request in 6/21/04 letter
	coke	carbon, trace metals	NA	A	Total Organic Carbon (TOC)-ASTM 5997, metals 6010B	NA	0.06	NDEP request in 6/21/04 letter
	diatomaceous earth	diatomaceous silica, diatomite, precipitated amorphous silica, silica gel, silicon dioxide (amorphous)	7631-86-9	S,A	0370.1 dissolved silica, 6010B as silica	NA[8], 20.0	2000.0, 100.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as silica [10]	NA[8]	NA[8]	
	filter aid	diatomaceous earth	NA	NA	see diatomaceous earth	NA	NA	NDEP request in 6/21/04 letter
	flammables		varies	S, A, V	EPA 1010 (flashpoint), ASTM E681-04	varies	varies	NDEP request in 6/21/04 letter; LDLs from ATL
	flocculents	alum; caustic; ferric chloride; ferric sulfate; ferrous sulfate; lime; sulfides; and polyelectrolytes	varies	S,A	Flocculants will be analyzed using the ion and metal analysis identified under the specific chemical listed, 6010 and 6020 for alum as aluminum, EPA 425.1 for surfactants, and ASTM 5997 TOC analysis for polyelectrolytes.	varies	varies	NDEP request in 6/21/04 letter
	graphite	carbon	7440-44-0	A	Total Organic Carbon (TOC)-ASTM 5997	NA	0.06	NDEP request in 6/21/04 letter
	hydrogen chloride	anhydrous hydrogen chloride; Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid)	7647-01-0	S,A	EPA 325.3; Not analyzed as gas.	20.0	2000.00	Historically present in gas form, could enter soil or water if absorbed into water; LDLs from ATL
	hydrogen peroxide	high-strength hydrogen peroxide, Hydrogen dioxide, Hydrogen peroxide (aqueous), Hydroperoxide, Peroxide	7722-84-1	A	EPA 150.1 as pH [9]	NA	0-14 range	Strong oxidizer; relatively unstable compound that requires stabilization to avoid deterioration over time; no known analysis method

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	hydrogen sulfide	hydrosulfuric acid, sewer gas, sulfuretted hydrogen	7783-06-4	S,A	EPA 376.2 as sulfide, EPA 9030, ASTM D5504 (vapor)	0.5	50.0	Historically present in vapor form; Phase I; LDLs from ATL(soil and water); LDL (vapor) 5 ppb (CAS)[12]
	iron oxide	ferric oxide,iron(III) oxide	1332-37-2	S, A	EPA 6010B as iron	10.0	500.0	Phase I; LDLs from ATL
					EPA 150.1 as pH	0-14 range	0-14 range	
	magnesium carbonate	carbonate magnesium, hydromagnesite, magnesium(II) carbonate	7439-95-4	S, A	EPA 6010B as magnesium	10.0	100.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$ [10]	50.0	5000.0	
	magnesium chlorate		NA	S, A	EPA 6010B as magnesium	10.0	100.0	Phase I; LDLs from ATL
					EPA 300.0 as chlorate	See Note 5	300.0	
	magnesium chloride	magnesium (II) chloride	7786-30-3	S, A	EPA 6010B as magnesium	10.0	100.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	
	magnesium perchlorate	perchloric acid magnesium salt	10034-81-8	S, A	EPA 6010B as magnesium	10	100.0	Phase I; LDLs from ATL
					EPA 314 as perchlorate	40 (µg/kg)	2.0	
	manganese dioxide	Manganese (IV) Oxide	1313-13-9	S, A	EPA 6010B as manganese	10.0	500.0	Phase I; LDLs from ATL
	manganese oxide	manganomanganic oxide, trimanganese tetraoxide, trimanganese tetroxide	1344-43-0	S, A	EPA 6010B as manganese	10.0	500.0	Phase I; LDLs from ATL
					EPA 150.1 as pH [9]	0-14 range	0-14 range	
	manganese sulfate	manganese (II) sulphate, manganous sulphate, manganese (II) sulfate, manganese (2+) sulfate monohydrate, sulfuric acid manganese salt	7785-87-7	S, A	EPA 6010B as manganese	10.0	500.0	Phase I; LDLs from ATL
					EPA 300.0 as sulfate	10.0	1000.0	
	methyl mercury	mercury metal: colloidal mercury, metallic mercury, quicksilver	7439-97-6	S, A	EPA 7470A/7471A as mercury	0.1	0.2	LDLs from ATL
	paints		NA	S,A	EPA 6010B for metals	See Note 4	varies	Phase I
					EPA 8260B VOCs, EPA 8270 SVOCs	varies	varies	
	paraffin wax	paraffin	NA	S,A	EPA 8015M (C_{13}-C_{22} range)	30	0.50	Phase I
	potassium chlorate	chloric acid potassium salt, berthollet salt, chlorate of potash	3811-04-9	S, A	EPA 6010B as potassium, EPA 7610	See Note 4, 25.0	1000.0, 500.0	Phase I; LDLs from ATL
					EPA 300.0 as chlorate	See Note 5	300.0	
	potassium chloride	potassium monochloride, potassium muriate, monopotassium chloride, kalitabs, rekawan, slow K, super K, pfiklor, enseal, kaochlor, kaon-cl, potavescent	7447-40-7	S, A	EPA 6010B as potassium, EPA 7610	See Note 4, 25.0	1000.0, 500.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0,20.0	500.0, 2000.0	
	potassium perchlorate	perchloric acid potassium salt	7440-09-7	S, A	EPA 6010B as potassium, EPA 7610	See Note 4, 25.0	1000.0, 500.0	Phase I; LDLs from ATL
					EPA 314 as perchlorate	40 (µg/kg)	2.0	

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	potassium phosphate	potassium phosphate tribasic, potassium orthophosphate, tripotassium phosphate	7758-11-4	S, A	EPA 6010B as potassium, EPA 7610	See Note 4, 25.0	1000.0, 500.0	Phase I; LDLs from ATL
					EPA 365.3.0 as phosphate	0.2	20.0	
					EPA 310.1 alkalinity as phosphate [10]	NA[8]	3.0	
	silica	diatomaceous earth, diatomaceous silica, diatomite, precipitated amorphous silica, silica gel, silicon dioxide (amorphous)	7631-86-9	S, A	0370.1 dissolved silica, 6010B as silica	NA, 20.0	2000.0, 100.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as silica [10]			
	silicon tetrabromide	silicon (IV) bromide, silicon bromide, tetrabromosilane	7789-66-4	S, A	0370.1 dissolved silica, 6010B as silica	NA, 20.0	2000.0, 100.0	Phase I; LDLs from ATL
					EPA 300.0 as bromide	0.5	50.0	
	silicon tetrachloride	silicon chloride, tetrachlorosilane, silicon (IV) chloride	10026-04-7	S, A	0370.1 dissolved silica, 6010B as silica	NA[8], 20.0	2000.0, 100.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	
	sodium arsenite	sodium (meta)arsenite, arsenous acid sodium salt, sodium metaarsenite, Atlas A, chem pels C, chem-sen 56, Kill-all, penite, prodalumnol, sodanit, various trade names	7784-46-5	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	LOU Response; LDLs from ATL
					EPA 6010B as arsenic	1.00	10.0	
	sodium alpha olefin sulfonate	sodium tetradecene sulfonate, sodium C14-16 olefin sulfonate;C14-16-alkane hydroxy and C14-16-alkene	68439-57-6	S,A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
	sodium borate	anhydrous borax, borax dehydrated, disodium salt of boric acid, disodium tetraborate, fused borax, sodium borate (anhydrous), sodium tetraborate	1330-43-4	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as borate [10]	NA[8]	NA[8]	
	sodium carbonate	soda ash, disodium carbonate, carbonic acid disodium salt	497-19-8	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$ [10]	50	5000	

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	sodium chlorate	agrosan, asex, atlacide, atratol, b-herbatox, desolet, drexel defol, evau-super, grain sorghum harvest-aid, granex O, Harvest-aid, hibar C, kusatol, leafex 2, ortho C-1 defoliant & weed killer, oxycil, rasikal, shed-a-leaf, soda chlorate, sodakem, travex, tumbleaf, val-drop	7775-09-9	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 300.0 as chlorate	See Note 5	300.0	
	sodium chloride	extra fine 200 salt, extra fine 325 salt, H.G. blending, salt, sea salt, table salt, common salt, dendritis, rock salt, top flake, white crystal, saline, halite, purex, USP sodium chloride	7647-14-5	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	
	sodium dichromate	sodium bichromate	7789-12-0	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 7196A as hexavalent chromium	0.1	10.0	
					EPA 6010B as chromium	1.0	3.0	
	sodium hexametaphosphate	metaphosphoric acid hexasodium salt, glassy sodium metaphosphate, SHMP	10124-56-8	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 365.3 as total PO_4	0.2	20.0	
					EPA 310.1 alkalinity as phosphate [10]	NA[8]	3.0	
	sodium hydrosulfide	sodium hydrogen sulphide, sodium hydrogen sulfide, sodium sulfhydrate, sodium bisulphide, sodium hydrosulphide, sodium bisulfide	16721-80-5	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 376.2 as sulfide, EPA 9030	0.5	50.0	
					EPA 310.1 alkalinity as sulfide [10]	NA[8]	NA[8]	
	sodium hydroxide	caustic soda, lye, soda lye, sodium hydrate	1310-73-2	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as hydroxide	NA[8]	NA[8]	
					EPA 150.1 as pH [9]	0-14 range	0-14 range	
	sodium oxide	disodium monoxide, sodium monoxide, disodium oxide	1313-59-3	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 150.1 as pH	0-14 range	0-14 range	
	sodium perchlorate	perchloric acid sodium salt	7601-89-0	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 314 as perchlorate	40 (µg/kg)	2.0	

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	sodium sulfite	anhydrous sodium sulfite, sodium sulphite, S-WAT, sulftech, sulfurous acid sodium salt, disodium sulfite, exsiccated sodium sulfite	7757-83-7	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 377.1 as sulfite	NA[6]	2000.0	
	strontium carbonate	carbonic acid strontium salt	1633-05-2	S, A	EPA 6010B as strontium	0.5	100.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$ [10]	NA[8]	NA[8]	
	sulfur dioxide	sulfurous acid anhydride, sulfurous oxide, sulfur oxide	7446-09-5	V	NIOSH Method 6004	NA	NA	Historically present in gas form; detection limit 3 µg/sample
	synthetic detergent	surfactants	NA	A	EPA 425.1	NA	25.0	NDEP request in 6/21/04 letter
	tank mud	tank sediment	NA	S, A	EPA 6010B for total metals	See Note 4	varies	NDEP request in 6/21/04 letter
					EPA 150.1 as pH[9]	0-14 range	0-14 range	
					EPA 7196A for hexevalent chromium	0.1	10.0	
					Ion analysis (see ions below)	see below	see below	
	tricalcium phosphate	calcium phosphate tribasic; tricalcium diphosphate; bone phosphate; calcium orthophosphate; calcium phosphate; calcium phosphate (3:2); calcium tertiary phosphate; phosphoric acid, calcium salt (2:3)	7758-87-4	S, A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
					EPA 300.0 as phosphate, EPA 365.3	0.5, 0.2	50.0, 20.0	
					EPA 310.1 alkalinity as phosphate [10]	NA[8]	3.0	
	titanium tetrachloride			S, A	EPA 6010B as titanium	15.0	300.0	
					EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	
	unknowns	not known, not identified, non specific	NA		Various methods would be used as appropriate depending on the data available to refine the analytical suite. Refer to Table 3 or the complete list of analytical methods.	varies	varies	NDEP request in 6/21/04 letter
	urea	B-I-K, carbamide, carbamide resin, isourea, pseudourea, carbonyldiamine	57-13-6	A	EPA 350.1 as ammonia	0.75	30.0	Phase I; LDLs from ATL
	various lab wastes		NA	S, A,.V	Various methods would be used as appropriate. Refer to Table 3 for the complete list of analytical methods.	varies	varies	NDEP request in 6/21/04 and 8/5/04 letters

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Ions	chlorate		14866-68-3	A	EPA 300.0 as chlorate	See Note 5	300.0	
	chloride		16887-00-6	S, A	EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	NDEP request in 6/21/04 letter; LDLs from ATL
	cyanide		57-12-5	S, A	EPA 335.1, EPA 335.2 as total cyanide	0.25	0.01 (mg/L)	Phase I; LDLs from ATL
	nitrate		14797-55-8	S, A	EPA 300.0 as nitrate	1.0	100.0	
	perchlorate		7601-90-3	S, A	EPA 314 as perchlorate	40 (µg/kg)	2.0	Phase I; LDLs from ATL
	phosphate		14265-44-2	S, A	EPA 300.0 as phosphate	0.5	50.0	Phase I
					EPA 310.1 alkalinity as phosphate[10]	NA[6]	3.0	
	sulfate		14808-79-8	S, A	EPA 300.0 as sulfate, EPA 375.4	1.0, 5.0	19.0,	
	sulfide		18496-25-8	S, A	EPA 376.2 as sulfide, EPA 9030	1.0, 0.5	NA[6], 50.0	
					EPA 310.1 alkalinity as sulfide[10]	NA[6]	NA[6]	
Asbestos	asbestos		1332-21-4	S, A	ISO 10312 TEC	NA	0.2 MFL*	Phase I
Metals	aluminum		7429-90-5	S, A	EPA 6010B as aluminum	10.0	500.0	LDLs from ATL
	antimony		7440-36-0	S, A	EPA 6010B as antimony	2.0	5.0	LDLs from ATL
	arsenic		7440-38-2	S, A	EPA 6010B as arsenic	1.0	10.0	LDLs from ATL
	barium		7440-39-3	S, A	EPA 6010B as barium	1.0	3.0	Phase I; LDLs from ATL
	beryllium		7440-41-7	S, A	EPA 6010B as beryllium	1.0	3.0	LDLs from ATL
	boron		7440-42-8	S, A	EPA 6010B as boron	10.0	50.0	Phase I; LDLs from ATL
	cadmium		7440-43-9	S, A	EPA 6010B as cadmium	1.0	3.0	LOU Response; LDLs from ATL
	calcium		7440-70-2	S, A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
	chromium (hexavalent)		18540-29-9	S, A	EPA 7196A	0.1	10.0	Phase I; LDLs from ATL
	chromium (total)		7440-47-3	S, A	EPA 6010B as total chromium	1.0	3.0	Phase I; LDLs from ATL
	cobalt		7440-48-4	S, A	EPA 6010B as cobalt	1.0	3.0	Phase I; LDLs from ATL
	copper		7440-50-8	S, A	EPA 6010B as copper	2.0	5.0	Phase I; LDLs from ATL
	iron		7439-89-6	S, A	EPA 6010B as iron	1.0	500.0	Phase I; LDLs from ATL
	lead		7439-92-1	S, A	EPA 6010B as lead	10.0	5.0	Phase I; LDLs from ATL
	magnesium		7439-96-5	S,A	EPA 6010B as magnesium	10.0	100.0	LDLs from ATL
	manganese		7439-96-4	S, A	EPA 6010B as manganese	1.0	500.0	Phase I; LDLs from ATL
	mercury		7439-97-6	S,A	EPA 7470A/7471A as mercury	0.1	200.0	LDLs from ATL
	molybdenum		7439-98-7	S, A	EPA 6010B as molybdenum	1.0	5.0	LOU Response; LDLs from ATL
	nickel		7440-02-0	S, A	EPA 6010B as nickel	1.0	5.0	Phase I; LDLs from ATL
	platinum		7440-06-4	S, A	EPA 6010B	15.0	300.0	Phase I; LDLs from ATL
	phosphorous		7723-14-0	S,A	EPA 200.7	0.5	200.0	LDLs from ATL
	potassium		7440-09-7	S, A	EPA 7610	25.0	500.0	Phase I; LDLs from ATL
	selenium		7782-49-2	S, A	EPA 6010B as selenium	1.0	10.0	LDLs from ATL
	silica		7631-86-9	S,A	See Miscellaneous Compounds, Chemicals and Products listing			
	silver		744-22-4	S, A	EPA 6010B as silver	1.0	3.0	LOU Response; LDLs from ATL
	sodium		744-23-5	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
	strontium		7440-24-6	S,A	EPA 6010B as strontium	0.5	100.0	LDLs from ATL
	thallium		7440-28-0	S, A	EPA 6010B as thallium	1.0	15.0	LDLs from ATL
	tin		7440-31-5	S, A	EPA 6010B as tin	1.0	300.0	LDLs from ATL
	titanium		7440-32-6	S, A	EPA 6010B as titanium	15.0	300.0	LDLs from ATL
	tungsten		7440-33-7	S, A	Flame AAS (aqueous), ICP-AES (soil)	NA[6]	100.0	
	vanadium		7440-62-2	S, A	EPA 6010B as vanadium	1.0	3.0	LDLs from ATL
	zinc		744-66-6	S, A	EPA 6010B as zinc	1.0	10.0	Phase I; LDLs from ATL

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
October 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Volatile Organic Compounds (VOCs)[6]	1,1,1-TCA	chlorothene; 1,1,1-trichloroethane; 1,1,1-trichloroethane (stabilized), methyl chloroform	71-55-6	S, A	EPA 8260B	0.005	0.5	Phase I; LDLs from ATL
	2-butanone*	ethyl methyl ketone, MEK, methyl acetone, methyl ethyl ketone	78-93-3	S, A	EPA 8260B	0.001	1.0	LOU Response
	2-hexanone*	methyl n-butyl ketone	591-78-6	S, A	EPA 8260B	0.001	1.0	
	acetone*	dimethyl ketone, ketone propane, 2-propanone	67-64-1	S, A	EPA 8260B	0.001	1.0	Phase II ECI
	benzene	benzol, phenyl hydride	71-43-2	S, A	EPA 8260B	0.001	1.0	Phase II ECI
	chlorobenzol	benzene chloride, chlorobenzol, MCB, monochlorobenzene, phenyl chloride	108-90-7	S, A	EPA 8260B	0.001	1.0	
	chloroform	methane trichloride, trichloromethane	67-66-3	S, A	EPA 8260B	0.001	1.0	Phase II ECI
	chlorinated organics		varies	S, A	EPA 8260B	0.001	1.0	NDEP request in 6/21/04 letter
	chlorinated paraffins		varies	S, A	EPA 8260B	0.001	1.0	NDEP request in 6/21/04 letter
	ethylbenzene		100-41-4	S,A	EPA 8260B	0.005	0.5	LDLs from ATL
	glycols*	varies	varies	S,A	EPA 8015C or EPA 8260B	200	200,000	LDLs from ATL
	methanol*	carbinol, columbian spirits, methyl alcohol, Pyroligneous spirit, Wood alcohol, Wood naphtha, Wood spirit	67-56-1	S, A	EPA 8260B	0.001	1.0	Phase I
	methyl isobutyl ketone*	isobutyl methyl ketone, hexone, 4-methyl 2-pentanone, MIBK	108-10-1	S	EPA 8260B	0.001	NA[8]	NDEP request in 6/21/04 letter
	methyl tert-butyl ether	MTBE	1634-04-4	S, A	EPA 8260B	0.001	0.05	NDEP request 8/05/04 letter
	monochlorobenzene	benzene chloride, chlorobenzol, MCB,chlorobenzene, phenyl chloride	108-90-7	S, A	EPA 8260B	0.001	1.0	as 1,2-, 1,3- and 1,4- isomers; Phase I
	orthodichlorobenzene	1,2 dichlorobenzene	95-50-1	S, A	EPA 8260B	0.001	1.0	as 1,2-, 1,3- and 1,4- isomers; Phase I
	paradichlorobenzene	1,4-dichlorobenzene, PDB, paracide	106-46-7	S, A	EPA 8260B	0.001	1.0	as 1,2-, 1,3- and 1,4- isomers; Phase I
	tetrachloroethylene	perchloroethylene, PCE, tetrachloroethene	127-18-4	S, A	EPA 8260B	0.001	1.0	

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
October 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Volatile Organic Compounds (VOCs)[6] (cont'd)	toluene*	methyl benzene, methyl benzol, phenyl methane, toluol	108-88-3	S, A	EPA 8260B	0.001	1.0	Phase I
	trichloroethylene	trichloroethene, TCE	79-01-6	S, A	EPA 8260B	0.001	1.0	
	xylene	dimethylbenzene; xylol	1330-20-7	S, A	EPA 8260B as total xylenes	0.001	1.0	As total xylenes;LOU Response
Inorganic Acids	hydrochloric acid	muriatic acid	7647-01-0	S, A	EPA 325.3	20.0	2,000	Phase I; LDLs from ATL
					EPA 150.1 as pH[9]	0-14 range	0-14 range	
	sulfuric acid		7664-93-8	S, A	EPA 375.4	5.0	500.0	Phase I; LDLs from ATL
					EPA 150.1 as pH[9]	0-14 range	0-14 range	
Chlorinated Herbicides	tumbleaf defoliant		NA	A	EPA 8151A	NA[8]	NA[8]	Phase I
Organophosphorous Pesticides	all	insecticides	varies	S, A	Method 8141A	varies	varies	
Organochlorine Pesticides	DDT	p,p'-DDT, dichlorodiphenyltrichloroethane	50-29-3	S	EPA 8081A as 4,4-DDT	0.002	0.05	Phase I; LDLs from ATL
	DDE	4,4'-DDE, dichlorodiphenyldichloroethylene	72-55-9	S	EPA 8081A	0.002	0.05	LDLs from ATL
	DDD	4,4'-DDD, dichlorodiphenyldichloroethane	72-54-8	S	EPA 8081A	10	0.01	NDEP Sept 29, 2004 letter
	insecticides		NA	A	EPA 8081A	0.01	0.6 -0.8	Phase I
	pesticides		NA	S,A	EPA 8081A	0.0017	0.6 -0.8	Phase I
Organic Acids	citric acid		77-92-9	S,A	EPA 150.1 as pH[9]	0-14 range	0-14 range	
Petroleum Hydrocarbons	TPH				EPA 8015M full range, BTEX and MTBE by 8260B, lead by 6010B, PAHs by 8270C or 8310			Phase I
	C_4-C_{12}	gasoline		S,A	EPA 8015M	30.0	50.0	Phase I
	C_{13}-C_{22}	paraffin wax, diesel		S,A	EPA 8015M	30.0	0.5	Phase I
	C_{23+}	grease, crude oils		S,A	EPA 8015M	30.0	0.5	Phase I
Polychlorinated Biphenyls (PCBs)	PCBs				EPA 8082			Phase I
	aroclor 1016		1267-41-12	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1221		1110-42-82	S,A	EPA 8082	0.2	0.5	Phase I
	aroclor 1232		1114-11-65	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1242		5346-92-19	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1248		1267-22-96	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1254		1109-76-91	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1260		1109-68-25	S,A	EPA 8082	0.1	0.5	Phase I
Polychlorinated Dibenzodioxins/ Dibenzofurans	dioxins/furans		varies	S,A	EPA 1613	varies	varies	

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
October 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Semi Volatile Organic Compounds (SVOCs) and Polynuclear Aromatic Hydrocarbons (PAHs)	PAHs				EPA 8270C/8310			Phase I
	acenaphthene		83-32-9	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	acenaphthylene		206-96-8	S,A	EPA 8270C/8310	0.01	5.0	
	anthracene		120-12-7	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benz(a)anthracene		56-55-3	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benzo(a)pyrene		50-32-8	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benzo(b)fluoranthene		205-99-2	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benzo(k)fluoranthene		207-08-9	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benzo(ghi)perylene		191-24-2	S,A	EPA 8270C/8310	0.01	5.0	
	chrysene		218-01-9	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	dibenz(a,h)anthracene		53-70-3	S,A	EPA 8270C/8310	0.01	10.0	Phase I
	fluoranthene		206-44-0	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	fluorene		89-73-7	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	hexachlorobenzene		118-74-1	S	EPA 8270C	0.07	0.36	NDEP Sept 29, 2004 letter
	indeno(1,2,3-cd)pyrene		193-39-5	S,A	EPA 8270C/8310	0.01	10.0	Phase I
	napthalene		97-20-3	S,A	EPA 8270C/8310	0.01	0.5	Phase I
	nitrobenzene		98-95-3	S, A	EPA 8270C	0.33	10.0	Phase I
	octachlorostyrene		29082-74-4	S,A	EPA 8080, 8081	0.01	5.0	Phase I
	phenanthrene		85-01-8	S,A	EPA 8270C/8310	0.01	5.0	
	pyrene		129-00-0	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	pyridine*		110-86-1	S, A	EPA 8270C or 8260B	1.65	5.0	Phase I; LDLs from ATL
Radionuclides Note: units are picocuries per liter (pCi/L) unless noted	actinium 228		14331-83-0	S	EML HASL 300	See Note 7	NA	NDEP request 8/05/04 letter
				A	EPA 900.0(gross alpha/beta), EPA 901.1(gamma)	NA	5.0, 20.0	
	bismuth 212		14913-49-6	S	EML HASL 300	See Note 7	NA	NDEP request 8/05/04 letter
				A	EPA 900.0(gross alpha/beta), EPA 901.1(gamma)	NA	5.0, 20.0	
	gross alpha (adjusted) [3]			A	EPA 900.0/SW9310	NA	5.0	NDEP request 2/11/04 letter
				S	SW9310/EML HASL 300	See Note 7	See Note 7	
	lead (isotopic)	Pb-210	14255-04-0	S	EML HASL 300	See Note 7	NA	NDEP request 8/05/04 letter
				A	EPA 909	NA	0.2	
		Pb-212	15092-94-2	S	EML HASL 300	See Note 7	NA	
				A	EPA 901.1/SW9310	NA	20.0	
	polonium 210		13981-52-7	S, A	EML HASL 300 Po 02 RC	0.001	0.001	bq/1000 = bequerels per 1000 min
	radium 226		13982-63-3	S	EML HASL 300	See Note 7	NA	NDEP request 2/11/04 letter
				A	EPA 903.1	NA	0.2	
	radium 228		15262-20-1	A	EPA 904.0	NA	2.5	
				S	EML HASL 300	See Note 7	NA	
	radon 222		10043-92-2	A	EPA 913.0	NA	0.4 Bq/L	NDEP request 8/05/04 letter
	thorium (isotopic)	includes Th-228, Th-229, Th-230, Th-232, Th-234	varies	S,A	EML HASL-300; A-01-R Mod/HASL 300	See Note 7	See Note 7	NDEP request 2/11/04 & 8/05/04 (Th-234) letters
	uranium (isotopic)	includes U-232, U-233/234, U-235/236, U-238	varies	S,A	EML HASL 300	See Note 7	See Note 7	
	uranium (total)		7440-61-1	A	EPA ASTM D5174	NA	0.05	NDEP request 2/11/04 letter
Water Quality Parameters	TDS	total dissolved solids	NA	A	EPA 160.1 as total dissolved solids	NA	10,000	Phase I
	TSS	total suspended solids	NA	A	EPA 160.2 as total suspended solids	NA	10,000	
	pH		NA	A	EPA 150.1 as pH [9]	NA	0-14 range	

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
October 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	

Notes:

[1] Abbreviations used: S = soil sample; A = aqueous sample; V = vapor sample
[2] Analytical Method may test for ions or indicators, not necessarily the compound listed
[3] Adjusted gross alpha is calculated by subtracting the effects of uranium and radon 222 from gross alpha
[4] For metals analyzed per Method 6010B, the method protocol requires soil samples to be digested into solution prior to analysis. Therefore, the Instrument Detection Limits (IDLs) are given in units of µg/L.
[5] For EPA Method 300.0 (ion analysis) soil samples are extracted into liquid, therefore the LDLs are given in units of ug/L. These LDLs are method detection limits (MDLs)
[6] For VOCs or SVOCs analyzed per EPA Method 8260B, the method states that Method Detection Limits (MDLs) vary depending on instrument sensitivity and matrix effects. Therefore, the MDLs are estimated by dividing the estimated quantitation limits (EQLS) by a factor of 5, per the method protocol.
[7] For EML Method HASL 300, LDLs are lab specific
[8] For LDLs marked NA, there were no LDLs listed in the National Environmental Methods Index, and no other references could be found to supply LDLs for this method.
[9] pH testing : chemicals that are not listed for method EPA 150.1 pH test may be tested, if necessary, on a case by case basis in soil or aqueous medium.
[10] alkalinity testing : chemicals that are not listed for method EPA 310.1 may be tested, if necessary, on a case by case basis in soil or aqueous medium.
[11] ATL (Advanced Technology Laboratories): this lab was consulted for various analytical methods and LDLs.
[12] CAS (Columbia Analytical Services) : this air lab was consulted for various vapor analyses.
[13] Synonyms from ptcl.chem.ox.ac.uk/msds

General Notes:
* = non-halogenated organics
mg/L = milligrams per liter
µg/L = micrograms per liter
NA - not available or not applicable
LOU = Letter of Understanding between Kerr McGee Chemical Corporation (KMCC) and NDEP, August 15, 1994
Phase I = Kleinfelder, Inc. Environmental Conditions Assessment, KMCC, Henderson Nevada, April 1993
Phase II = ENSR Environmental Conditions Assessment at KMCC Henderson Nevada, August 7, 1997
MFL* = Asbestos, Million fibers per Liter
PAH's and PCB's are itemized, not all may be present on site.
If cell is blank, the compound was not on the referenced regulatory list.

Todd Croft

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Monday, October 04, 2004 11:28 AM
To: Todd Croft
Cc: Bailey, Keith
Subject: RE: COH Construction work along Pabco Road

Todd,
Thanks for the heads up. The marking will get done. In addition, I expect that calling and discussing the line's presence with Charles Reynolds (City's contractor) will go a long way to make sure they know where we are.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Todd Croft [mailto:tcroft@ndep.nv.gov]
Sent: Monday, October 04, 2004 10:13 AM
To: Crowley, Susan
Cc: Bailey, Keith
Subject: COH Construction work along Pabco Road

Susan & Keith:

I noticed on Sunday that the COH contractor had buried approximately 1/2 mile of new waste water pipeline from the Wash IX extending to the south and along the west side of the road. This work occurred within the span of ~ one week. At that pace, I suspect they will be another ~1/2 mile south by COB this Friday. I believe your uphill line and discharge line for the perchlorate remediation system crosses Pabco Road in proximity to where the contactor may be excavating by this Friday. You may wish to mark your line well and ensure the contactor knows where your line is.

THX BYE

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

Todd Croft

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Friday, October 01, 2004 4:08 PM
To: Alan Tinney; Todd Croft
Cc: Brian Rakvica; Bailey, Keith
Subject: Initiation of Performance Test Period

Alan / Todd,
If all goes well, we will begin the 30-day bio-process performance test beginning Sunday (October 3rd) @ 12:01 am. During this test period we will be using the daily composite for our daily discrete sample named in the NPDES permit NV0023060. Please feel free to call or e-mail me if you have any questions. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

Todd Croft

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Thursday, September 30, 2004 8:40 AM
To: Todd Croft
Subject: RE: Contact person for Metropolitan

Todd,
Thanks. Will do.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Todd Croft [mailto:tcroft@ndep.nv.gov]
Sent: Wednesday, September 29, 2004 4:29 PM
To: Crowley, Susan
Cc: Bailey, Keith
Subject: FW: Contact person for Metropolitan

Susan:

Please see the e-mail request below. The MWD contact has changed. Please change your cc list so future reports, maps, documents are sent to Leslie Palencia at the same MWD address.

THX BYE

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office tcroft@ndep.nv.gov
(Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

-----Original Message-----
From: Palencia,Leslie Soo [mailto:lpal@mwdh2o.com]
Sent: Tuesday, September 28, 2004 10:37 AM
To: Todd Croft
Subject: Contact person for Metropolitan

Hi Todd,

Hope all is well with you. I see that Metropolitan has been added to American Pacific's regular mailing list as I have received two items just recently (Global Water Monitoring Report AMPAC Monitoring Well System and a new Perchlorate Isocontour Map) in the mail.

I assume that you contacted AMPAC and requested that Metropolitan be added to the list - Thank you very much.

I wanted to let you know that our contact for both the Kerr-McGee and AMPAC mailing list is currently Marshall Davis, who has since retired from Metropolitan. Would you be able to ask Kerr-mcGee and AMPAC to change the Metropolitan Water District contact to Leslie Palencia? Thanks - the address is the same. I could call them too if you'd like.

Thanks,
Leslie

Leslie Palencia
Metropolitan Water District, Water Quality Section phone(909)392-5431
fax(909)392-5246
email: lpal@mwdh2o.com

Administrator – acting
Jolaine Johnson and Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations and Reclamation
Facsimile 684-5259

STATE OF NEVADA
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Facsimile 687-6396

Federal Facilities
Facsimile 687-6396

Corrective Actions
Facsimile 687-8335

ndep.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

Las Vegas Office

1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

September 29, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Revised Site Related Chemicals List
dated September 27, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides comments in Attachment A. The NDEP requests that KM respond to these issues **by October 29, 2004**.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Al Tinney, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

ATTACHMENT A

1. Cover page, in response to KM's statement on hexachlorobenzene, please note that hexachlorobenzene (HCB), octachlorostyrene, dioxins, furans and other dioxin-like compounds can all form in a similar manner. Benzene does not need to be present. HCB forms in the presence of high-temperature thermal processes where both carbon, chlorine and a catalyst are present. Specifically, the former magnesium process at BMI represent a possible source of HCB formation.
2. General, in several places in this document KM states that "KM does not propose to develop new analytical methods". The NDEP understands and appreciates the costs associated with method development and would like to note that this response is adequate for the site-related chemicals (SRC) list, however, as the project progresses towards eventual risk assessment these unknowns will need to be discussed.
3. Page 13 and Table 1, for phosphorous KM states that " EPA method 200.7 have been added to the table" , however, the table lists EPA Method 365.3. Please verify and correct the method number or the text.
4. Page 13 and Table 1, KM states that "the table has been modified to include only EPA 350.1 for urea, ammonia and ammonium perchlorate." The table lists method 350.2 for each of these compounds. Please correct the table or the text.
5. Table 1, please note that TCE is not a synonym for tetrachloroethylene.
6. Table 1, please note that the degradation product DDD is missing from the organochlorine pesticides category.
7. Please be advised that the NDEP has not verified the applicability of all of the analytical methods listed in the SRC list. The NDEP anticipates that discussions on analytical methods will be covered in more detail as a sampling and analysis plan is developed for the site.

ISSUED 10/5

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: September 29, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Meeting on September 29, 2004 at 1:30 PM via telephone

1. Attendance:
   a. NDEP: Todd Croft, Alan Tinney, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Reviewed FBR system operations.
   a. System is currently receiving 71 gpm of the blended water from the GWTS and the GW-11 pond. 20 gpm of GW-11 pond water is being put into the blend and approximately 58 gpm of GWTS water. 71 gpm of this is forwarded to the FBR whereas the remaining 6 gpm is recycled to the GW-11 pond.
   b. Influent concentration is approximately 190 ppm perchlorate and 400 ppm chlorate.
   c. Equalization tanks are operational.
   d. KM hopes to initiate the performance test by October 15, 2004. This test may be started as soon as Sunday, 10/3/04. KM will advise NDEP when they start the test.
   e. In general, KM has been seeing ND in their discharge. Detection limits have varied from ~2.5 ppb to ~16 ppb. Some have been above 16 ppb, however, most have been below.
   f. KM noted that the hydrogen peroxide system is operational.
   g. Hydraulic load is ~95%. KM noted that they are investigating the possibility of adding water from the eastern part of the Seep area.
   h. Discharge was ~ 9 ntu this AM.
3. Discussed permit.
   a. NDEP has approved KM's request to use composite samples during the performance test.
4. Discussed NDEP observations.
   a. Discharge looks fairly clear.
5. Discussed discharge relocation. KM noted that they are still pursuing this with BOR. KM noted that the design is essentially complete and the pipe has been purchased.
6. Discussed DO concentrations.
   a. DO has been 3.7-7 mg/L at the end of pipe and decreases through the swamp area by about 50%.

7. Next meeting: Tuesday, October 12, 2004 at 1:30 PM. Call-in number: 405-270-2655.

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

September 27, 2004

Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA – Revised Site-Related Chemical List
Kerr-McGee Response to NDEP August 5, 2004 Letter

Dear Mr. Rakvica:

Kerr-McGee Chemical LLC (Kerr-McGee) has undertaken an Environmental Conditions Assessment (ECA) as directed by Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, June 21 and August 5, 2004, Kerr-McGee prepared and revised a list of site-related chemicals that have an association with the geographic setting within which the Kerr-McGee plant exists. In addition, Kerr-McGee recognizes that this list may continue to be modified as the investigation progresses.

Most recently, NDEP forwarded comments, dated August 5, 2004, relating to the site-related chemical list (SRC list). Attachment A contains Kerr-McGee's responses to the August 5th comments as well as the correspondingly revised SRC list. In addition, in response to NDEP's September 15, 2004 e-mail relating to the presence of hexachlorobenzene, according to Kerr-McGee process engineers, this material is unlikely to be a site-related chemical because although chlorine was present, there was no benzene used in the process for making magnesium metal from magnesite.

Please feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment

Hand Carried

Cc:

Tom Reed	Rick Simon, ENSR
Ed Krish, ENSR	Sally Bilodeau, ENSR
Don Shandy	Dave Gerry, ENSR
Rick Stater	Jim Najima, NDEP
Jon Palm, NDEP	Todd Croft, NDEP
Jennifer Carr, NDEP	Jeff Johnson, NDEP
Valerie King, NDEP	Tamara Pelham, NDEP
Barry Conaty	Brenda Pohlmann, COH
Mitch Kaplan, US EPA	Carrie Stowers, CCCP

Attachment A
Kerr-McGee Response to August 5, 2004 NDEP Comments on the Site Related Chemist List for the Henderson Facility

NDEP Comment 1:

1. For ease of review and cross-checking it is requested that an alphabetical list of site-related chemicals (SRC) be provided to supplement the SRC list as submitted.

Response:

The site related chemicals in Table 1 have been alphabetically sorted and are provided as Table 2.

NDEP Comment 2:

2. As indicated in the NDEP's June 21, 2004 letter, laboratory (instrument) detection limits are not listed for a number of chemicals. Please provide the remainder of these detection limits in a revised submittal. The response provided by KM in item #3 discusses the difference between instrument detection limits and method detection limits. This does not answer the NDEP's question.

Response:

Laboratory Detection Limits (LDLs) have been added to the list where available. If a detection limit was not available, an explanation is provided in the notes at the bottom of the table.

NDEP Comment 3:

3. Per comment #4 in the NDEP's June 21, 2004 letter please include heavy metal sulfides and various lab wastes on the SRC list or provide a text justification for not including these mixtures.

Response:

Heavy metal sulfides will be analyzed by the sulfide analysis listed under hydrogen sulfide, sodium hydrosulfide, and sulfide as method 376.2 and the metals will be analyzed by the EPA 6010B and other methods as shown under the metals lists. The term "heavy metal sulfides" was not added to the site related chemical list as sulfides and metals are already included. The term "various lab wastes" has been included in the site related chemical list in response to the NDEP request. Various lab wastes would be analyzed using methods listed in Table 3 for unknowns.

NDEP Comment 4:

4. In comment #4 KM states that "chemicals such as graphite and diatomaceous earth are not known to pose significant environmental or health concerns". This statement is irrelevant to the development of a list of all chemicals potentially associated with the site. Also, the NDEP would like to note that it may be appropriate to eliminate SRC from further site characterization and risk assessment due to no toxicity (chemicals with low toxicity will need to be retained for further evaluation), rapid breakdown in the environment, insignificant volume of breakdown product, or other factors that eliminate health risk, however, these chemicals/compounds should be retained on the SRC list for tracking purposes.

Response:

Chemicals that are not known to pose significant risk to human health or the environment have remained in the SRC list as requested by the NDEP.

NDEP Comment 5:

5. In comment #5 KM states that "magnesium is a naturally occurring metal present in the soils, groundwater and drinking water; it is not typically a threat to human health or the environment". Please see comment #4 above.

Response

See Kerr-McGee response to NDEP comment #4.

NDEP Comment 6:

6. In comment #6 KM states that "Kerr-McGee has limited knowledge of the exact chemical composition of many of the examples cited". Further investigation and justification is needed on this topic. If KM believes that the proposed analyses for unknowns (as presented in KM comment #7) is sufficient to address these mixtures then KM should state this. If KM does not believe that the analyses proposed for unknowns is sufficient to address these mixtures then KM should either 1) expand the analyses for unknowns or 2) perform additional research to determine the chemical makeup of the mixtures.

Response

Kerr McGee believes that the analyses included in the SRC list covers a wide variety of chemical substances and is sufficient to address unknowns contained in chemical mixtures used on the site in the past.

NDEP Comment 7:

7. In comment #6 KM states that "identifying specific degradation by-products for each of the chemicals listed on the site-specific chemical list is unnecessary ... most chemicals within a specific chemical family is expected to degrade in a reasonably predictable way". The NDEP believes that this justification is inadequate. The NDEP requests that KM review each of the SRC and determine if the degradation by-products are being addressed by the proposed analyses. The NDEP has contracted with independent chemists, radio-chemists, and toxicologists to review the SRC list for the entire BMI facility and identify the degradation by-products as applicable. If KM chooses to not complete the review of its degradation by-products at this time, re-analysis or re-sampling may be required in the future for analytes that were not addressed. The NDEP is not requiring KM to perform this review, however, it is highly recommended for the sake of historic documentation and to reduce costs due to re-analysis/re-sampling.

Response

Kerr-McGee believes that the analyses included on the SRC list are sufficient to address degradation by-products.

NDEP Comment 8:

8. In the NDEP's June 21, 2004 letter to KM, comment #6b, a list of mixtures was provided. KM did not provide a response to "solvents". It is expected that this could be addressed within KM response #7, Table 2.

Response

Solvents have been added to Table 4 and will be addressed through EPA Methods 8260B and 8270C.

NDEP Comment 9:

9. In response to comment #7b, please explain why manganese, tungsten and platinum were excluded from the list of metals. Manganese and platinum are both associated with KM operations and tungsten is a metal that is believed to be related to the former BMI operations. Also, please explain why cyanide and radionuclides have been excluded from this list.

Response

Characterization of unknowns will include manganese, tungsten, platinum, cyanide and radionuclides as needed.

NDEP Comment 10:

10. In response to comment #7, Table 1, the NDEP has the following comments:

a. Please note that methods 8081, 8081A address only organochlorine pesticides. Please change the "chemical, compound, category or element" heading to organochlorine pesticides.

b. For herbicides it appears that the method is incorrectly listed as "EPA 8051". The correct method appears to be method 8151A for chlorinated herbicides. Please review this issue and respond.

Response

In response to NDEP comments 10a and 10b, Table 3 - Characterization of Unknowns and Table 4 - Broad Class Characterizations have been revised.

NDEP Comment 11:

11. In response to comment #7, Table 2, the NDEP has the following comments:

a. It appears to the NDEP that the broad class of chemicals listed as "acids" and "bases" would also require cation, anion, and metals analyses.

b. Based on the National Environmental Methods Index it appears that method 8015(c) will address ethylene glycol but not propylene glycol. Also the CAS number listed is the CAS number for ethylene glycol. If KM has institutional knowledge that suggests that only ethylene glycol was used as the site please explain. Otherwise it is necessary to include and document a method for propylene glycol as well as ethylene glycol.

c. For chlorinated herbicides it appears that the methods is incorrectly listed as "EPA 8051". The correct method appears to be method 8151A. Please review this issue and respond.

Response

a. Table 4 has been modified to include ion and metal analysis for acids and bases.

b. Based on a search of the National Environmental Methods Index (NEMI) and the US EPA Test Method index, there is no analytical method associated with propylene glycol. Kerr-McGee does not propose to develop new analytical methods. Kerr-McGee believes that the analyses included in the SRC list covers relevant and applicable site related chemical substances and is sufficient to address environmental issues.

c. Table 4 has been corrected to show Method 8151A for chlorinated herbicides.

NDEP Comment 12:

12. In response to comment #8c, the response does not answer the NDEP's question. Please explain how KM will address a scenario where the instrument

detection limit exceeds the screening level or explain when (and in what document) KM will address issue.

Response

The issue of an instrument detection limit exceeding a screening level will be addressed in a Data Usability document. It is expected that this issue would be resolved consistent with EPA guidance presented in the 1989 Risk Assessment Guidance for Superfund. For example, when the detection level is greater than the screening level, half of the detection level can be used as a proxy concentration. To effectively address the issue of instrument detection limits exceeding a screening level, NDEP needs to approve: 1) the SRC list and 2) the site screening levels. In addition, the review of historical data usability will be integral to this assessment. The issue of an instrument detection limit exceeding the screening level would be presented in the data usability document six months following the NDEP approval of the SRC list and site screening levels.

NDEP Comment 13:

13. In response to comment #13b, the NDEP would like to note that Method 8310 may have lower detection limits for some PAHs. This may be an issue that KM may want to address in the future.

Response

Method 8310 has been added to the table as an option for PAH analysis.

NDEP Comment 14:

14. In response to comment #15, the NDEP would like to note that a number of the radionuclides in the Thorium 232 and Uranium 238 decay series have been omitted. Including (but not limited to): Actinium 228, Lead 210, Lead 212, Bismuth 212, and Thorium 234. Please re-evaluate the radionuclides include on the SRC list and explain. Also, the isotope number has not been provided for Polonium. Please explain what isotopes of Polonium will be analyzed.

Response

In response to the second half of your comment 14, polonium will be analyzed for the isotope 210. Polonium 210 is in the Uranium 238 decay series and is the optimal polonium isotope for its long half-life. It is near the end of the decay series and will be evidence to the decay of the Uranium 238 deposit. According to Severn Trent Laboratories (STL), EML HASL 300 is the optimum analytical method for both water and soil.

Several experts in the field were contacted regarding the first part of your comment 14. Both STL and General Engineering Laboratories (GEL) were consulted in analyzing radionuclides of both the Uranium 238 and Thorium 232 decay series. Kerr-McGee

notes that the following comments reflect the recommendations of toxicology experts in the industry.

Gamma spectroscopy, in addition to alpha and beta spectroscopy, will quantify the necessary gamma energy lines and alpha and beta particles within the respective decay series. It is noted that many of the daughter products, including Actinium 228, Lead 212, Bismuth 212 and Thorium 234 each decay quite rapidly. It is noted that the efficiency in detecting these daughter products reflects the difficulty in capturing the alpha and beta particles as well as the gamma energy lines between the daughter products. The daughter products listed in the SRCL reflect those with either strong gamma emitters, length of half-life and/or availability of alpha and beta particles. In addition, high laboratory costs for each analyses rise exponentially with increased amount of analyzed daughter products.

In direct response to your request in comment 14, the radionuclides below were added to the SRCL.

Actinium 228, Lead 212 and Bismuth 212 are significant gamma emitters. Each will be analyzed by Gamma Spectroscopy (EPA 901.1), as well as Gross Alpha and Gross Beta (EPA 900.0) in aqueous medium. EML HASL 300 is most suitable for analyses of these radionuclides in soil.

Lead 210 and Thorium 234 each are significant in half-life length within the Uranium 238 decay series. Each will be analyzed using EML HASL 300 analytical method for soil. For the water analysis, Lead 210 will be analyzed using EPA 909 method and Thorium 234 will be analyzed using EML HASL 300 method.

Kerr McGee has included the list of radionuclides within Table 1 that are consistent with laboratories capabilities to detect key daughter products within the Uranium 238 and Thorium 232 decay series.

NDEP Comment 15:

15. In response to comment #15a, the NDEP would like to note that regardless of half-lives, elevated levels of radon 222 have been found in groundwater immediately adjacent the KM site. The NDEP suggests that radon 222 be added to the SRC list.

Response

Radon 222 has been added to the SRC list. Analytical method EPA 913.0 can be used to analyze Radon 222 in water.

NDEP Comment 16:

16. To clarify comment 15b, it should be noted that adjusted gross alpha does not subtract Radon 222 and Uranium. This adjustment subtracts the effects of these compounds. Radon 222 is lost during the preparation of the sample for

EPA Method 900.0 and it is important to not remove the effects of radon 222 twice.

Response

Note #3 at the bottom of the table has been revised as requested

NDEP Comment 17:

17. In comment #16a KM states that "those site-related chemicals that are non-hazardous or those site-related chemicals that do not pose a threat to human health or the environment should not be critical elements of the list". As discussed in our meeting, the NDEP disagrees. The NDEP believes that is useful to do a thorough analysis of the universe of site-related chemicals and to document the reasoning for excluding chemicals from further analysis (where applicable).

Response

Chemicals that are not known to pose significant risk to human health or the environment have remained in the SRC list as requested by the NDEP.

NDEP Comment 18:

18. In response to comment #16g, the NDEP disagrees with KM's statement. Please explain how EPA method 8015M will address other components of petroleum hydrocarbons (including but not limited to): lead, naphthalene, fluorene, BTEX compounds, and MTBE (if applicable at the site).

Response

The range of expected petroleum hydrocarbons C_4 to C_{23}+ will be analyzed by EPA 8015M. BTEX and MTBE will be analyzed by EPA 8260B and lead by EPA 6010B, naphthalene and fluorene will be analyzed by EPA 8270C or 8310. Consistent with your request 16a in the June 21, 2004 letter, we have attempted to list each chemical only once, so the BTEX compounds are under VOCs, naphthalene and fluorene are under PAHs, and lead is included under the metals. For completeness, a reference to these methods was added to the analytical column within the TPH category.

NDEP Comment 19:

19. In response to comment #16i, the NDEP requested an explanation for what was meant for the category labeled "non-halogenated" as it appeared to be a truncated version of "non-halogenated organics." KM stated "non-halogenated organics has been deleted, as requested" with no further explanation. This does not respond to the original question. If this category was erroneously included KM should have stated as such and deleted the category. The NDEP can only assume that this is the case since no explanation was provided.

Response

Non-halogenated organics are a sub-category of volatile organic and semivolatile organic compounds. Since non-halogenated organics are included under those headings, there is no need to keep a separate listing for them; therefore it was omitted from the list.

NDEP Comment 20:

20. On the SRC List Table the NDEP has the following comments:

a. This table still has a number of QA/QC issues. As the NDEP explained to KM, each submittal should represent the "best effort" of KM. The NDEP can not expend its limited resources reviewing documents that have numerous errors. Due to the number of errors the NDEP did not verify the validity of all of the analytical methods present. Once KM has reviewed the QA/QC issues with this document and re-submitted the NDEP will perform a more thorough review.

b. It appears that some of the proposed analytical methods can be consolidated in to other methods (e.g.: 8260, 8270) that are proposed for other compounds and KM can realize an analytical cost savings (see specific comments below for examples). The NDEP requests that KM evaluate this and respond.

c. For a number of chemicals/compounds (for example, anti-foam agent, argon, chelant, coagulants, coal, coke, sodium alpha olefin sulfonate) the analytical method listed is "None". It is necessary to provide an explanation for each of these situations. If no analytical method exists then a discussion on the feasibility of method development is necessary. If a method exists but KM is not proposing to analyze for this chemical/compound than adequate justification is required. For clarity, it is suggested that chemicals that KM proposes to not analyze be placed at the end of this list under a distinct header or be placed on a second table.

d. For sodium alpha olefin sulfonate it appears that analysis for sodium would be sufficient to address this compound.

e. Please provide a text justification for the use of EPA Method 8015B for "flammables".

f. Also, for boric acid, the NDEP believes that it would also be appropriate to include the analysis for pH in the list. This comment is typical for all acids and bases. KM should review the entire list and address this issue.

g. For boron tribromide the analysis for bromide is not included and for boron trichloride the analysis for chloride is not listed. It may also be appropriate to include the alkalinity analysis for the carbide portion of

boron carbide. This comment is typical for a number of examples in the list and should be addressed.

h. Calcium chloride is proposed to be addressed by calcium and sulfate analysis. This appears to be a typographic error. This and all other typographic errors should be addressed.

i. Chlorine is listed as being an air contaminant only, however, an analysis is listed. Please explain if KM plans to analyze for chlorine in the air or it this is a typographic error. If the chemical is not proposed for analysis the notes should state this.

j. Paints included analysis "8015 as VOC". It appears that this should be method 8260 for VOCs.

k. Several compounds included methods 6010/6020 analysis for silicon dioxide. It appears that it would be more appropriate to state that this analysis is for silica.

l. Sodium dichromate lists methods 6010/6020 for chromium. Please verify if any hexavalent chromium could be present in this compounds and include the analysis for hexavalent chromium (if necessary).

m. Please include the words "as sodium" after the words "EPA 6010, 6020" for sodium hyposulfide.

n. Unless KM can provide additional details, the NDEP suggests that "tank mud" also include analyses for cations, anions, pH, and hexavalent chromium.

o. Titanium tetrachloride includes a line that states "as tetrachloride". The NDEP believes that the analysis is intended to be for chloride. Please verify and correct this issue.

p. KM includes analysis for ammonia by methods 350.1 (various compounds) and 350.2 (urea). Please explain the rationale for utilizing two methods.

q. The method for sulfate is listed as 300.1. Is this supposed to be method 300.0?

r. Nothing is filled in for the phosphorous row. Please explain.

s. Under VOCs it appears that ethylbenzene, methanol, MIBK, chlorinated organics and chlorinated paraffins can be addressed by method 8260B. Please explain.

t. Under total petroleum hydrocarbons it would be helpful to list which petroleum hydrocarbons (diesel, gasoline, grease, oil paraffin wax, etc.) will be addressed by each analysis.

Response

a. *Comment noted.*

b. *Kerr-McGee anticipates consolidation of analytical methods where appropriate and has indicated this on Table 1 SRC list. This concept is also presented in Tables 3 and 4 where a broad analytical suite is proposed to identify many compounds.*

c. *Kerr-McGee has identified analytical methods to address the compounds listed and does not propose to develop new analytical methods. Kerr-McGee believes that the analyses included in the SRC list covers relevant and applicable site related chemical substances and is sufficient to address unknowns contained in chemical mixtures as well as degradation by-products. The suggestion to put some chemicals at the end of the list or to move chemicals off the list is not considered appropriate at this time given NDEP's desire to have a complete and comprehensive SRC list.*

- *Anti-foam agent: Because surfactants are the principal ingredient of anti-foaming agents, the analytical method for surfactants (synthetic detergent) will be used.*

- *Argon is a gas that can be analyzed by method EPA 3CM. Although listed, the NDEP has indicated that analysis for gases is not required at present.*

- *Chelant: A class of compounds called "dithiocarbamates" is commonly used as waste water chelants to react preferentially with heavy metals so they can be removed from the waste water. These compounds are generally long-chain polymers with no analytical method identified for detection. As stated above Kerr-McGee does not propose to develop new analytical methods.*

- *Coagulants: Examples of common coagulants are ferric sulfate, aluminum sulfate, and ferric chloride. Therefore, the constituents of these chemicals (i.e. aluminum, chloride, etc.) will be analyzed for in the ion and metals analyses already listed in the chemical list.*

- *Coal: Coal, which is a form of carbon, can be detected by total organic carbon (TOC) analysis. Trace metals may also be present in coke so an option for metals analysis is also included.*

- *Coke: Coke, which is a form of carbon, can be detected by total organic carbon (TOC) analysis. Trace metals may also be present in coke so an option for metals analysis is also included.*

- *Filter Aid: Diatomaceous earth and silica products are used as filter aid, so the methods for silica analysis will be applied.*

- *Flocculants include organic and inorganic constituents such as alum, caustic, ferric chloride, ferric sulfate, ferrous sulfate, lime, sulfides, and polyelectrolytes*

(high molecular weight polymer with ionic constituents). The test methods associated with inorganic constituents have been listed. No individual test method could be found for polyelectrolytes; however, the carbon portion of these organic polymers would be detected in the TOC analysis.

- *Graphite: Graphite, which is carbon, can be detected by total organic carbon (TOC) analysis.*

- *Synthetic Detergent: Because surfactants are the principle ingredient of synthetic detergents, the analytical method for surfactants will be used.*

d. *The analysis for sodium alpha olefin sulfonate has been changed to EPA 6010B as sodium.*

e. *Test method EPA 8015B is used to analyze for TPH flammable substances. Test method EPA 8260B is used to test for VOCs that are flammable. In addition, flammables will be analyzed by ASTM E681-04 to measure the relative flammability of suspect, unknown flammables. Test method ASTM E681-04 determines the lower and upper concentration limits of flammability of chemicals having sufficient vapor pressure to form flammable mixtures in air at atmospheric pressure at the test temperature. In addition, EPA 1010 (flashpoint) can be used to determine the ignitability for each of the substances.*

f. *In response to NDEP's comment number 20f, pH analysis by method EPA 150.1 has been added to strong acids and bases. A footnote has also been added to the table that states: pH testing: chemicals that are not listed for method EPA 150.1 pH test may be tested, if necessary, on a case by case basis in soil or aqueous medium.*

g. *For boron tribromide, analytical method EPA 300.0 as bromide has been added. For boron trichloride, analytical method EPA 300.0 as chloride has been added. In response to the issue of alkalinity analysis, method EPA 310.1 alkalinity as carbon has been added to boron carbide.*

Kerr-McGee chose to include EPA 310.1 alkalinity based on the relative neutralizing characteristics of the followings elements: ammonium perchlorate as ammonium, barium hydroxide as hydroxide, barium sulfide as sulfide, diatomaceous earth as silica, silica as silica, sodium hexametaphosphate as phosphate, sodium borate as borate, sodium hydrosulfide as sulfide, sodium hydroxide ad hydroxide, phosphates as phosphates, and sulfides as sulfides. These elements were chosen based on the strength of these materials acting as basic neutralizing agents. With regard to testing for more elements, a note of explanation was added to the bottom of the table. The note reads: alkalinity testing: chemicals that are not listed for method EPA 310.1 may be tested, if necessary, on a case by case basis in soil or aqueous medium.

h. *The table has been edited and corrected.*

i. *Based on Advanced Technology Laboratories (ATL) recommendation, Kerr-McGee will use EPA 330.3 to test for residual chlorine in water. Chlorine has the capability of dissolving in small amounts in water from the vapor phase. Kerr-McGee will not test for chlorine as a vapor contaminant due to its low volatility.*

j. *The VOC analysis for paints has been changed to 8260B.*

k. *The analytical method for silica, silicon tetrabromide and silicon tetrachloride has been changed to EPA 6010B as silica.*

l. *EPA 7196A as Chromium VI was added to sodium dichromate.*

m. *Sodium hydrosulfide has been modified to include "EPA 6010B as sodium." Please note the NDEP comment is taken in reference to sodium hydrosulfide rather than sodium hyposulfide. Sodium hyposulfide was removed from the SRC list because it was not recognized as a chemical.*

n. *Ion analysis, pH, and hexavalent chromium analysis have been added to tank mud as requested.*

o. *Tetrachloride was changed to chloride as requested.*

p. *Both methods EPA 350.1 and EPA 350.2 can detect ammonia but with slightly different methodologies. The two methods were listed to provide options. EPA 350.2 has a higher detection limit than EPA 350.1. The table has been modified to include only EPA 350.1 for urea, ammonia and ammonium perchlorate.*

q. *According to NEMI, both EPA 300.0 as sulfate and EPA 300.1 as sulfate will provide similar results with approximately the same detection limit, 0.02 and 0.019 mg/L, respectively. Both methods use the ion chromatographic methodology of inorganic anion detection. The development of these methods by two separate organizations highlights the fundamental difference. EPA 300.0 was developed by the U.S. EPA National Exposure Research Laboratory (NERL), while EPA 300.1 method by the U.S. EPA Office of Groundwater and Drinking Water/Technical Support Center. For uniformity, analytical method EPA 300.0 has been used in the SRC list.*

r. *CAS number 7723-14-0 and EPA method 200.7 have been added to the table under phosphorus.*

s. *EPA 8015C and 8021B are viable test methods for ethylbenzene, methanol, MIBK, chlorinated organics and chlorinated paraffins. EPA 8260B is a more expensive method but may be more appropriate for a site-wide analysis, lower detection methods, and a redundancy of testing. For that reason and in response to your comment, EPA 8260B has been listed for these chemicals.*

t. *Gasoline, diesel, paraffin wax, grease and crude oils have been added to the synonyms column in response to your comment.*

Table 3 - Characterization of Unknowns

Method	*Chemical, Compound, Category or Element*
EPA 6010B	*Metals, including aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, molybdenum, nickel, potassium, platinum, selenium, silica, silver, sodium, strontium, thallium, tin, titanium, tungsten, vanadium, and zinc*
EPA 7470B/7471A	*Mercury*
EPA 200.7	*Phosphorous*
EPA 255.1	*Platinum*
EPA 7740or 0270.2	*Selenium*
EPA 300.0	*Anions, including chlorate, chloride, nitrate, phosphate, sulfate*
EPA 335.1 or 335.3	*Cyanide*
EPA 8270C or 8310	*Semivolatile organic compounds/ Polynuclear aromatic hydrocarbons*
EPA 8260B	*Volatile organic compounds*
EPA 8081A	*Organochlorine pesticides*
EPA 8141A	*Organophosphorous pesticides*
EPA 8015M	*Petroleum hydrocarbons*
EPA 8082	*Polychlorinated biphenyls*
EPA 1613	*Dioxins and furans*
EPA 8151A	*Chlorinated herbicides*
EPA 900, 901.1, 904.0, 903.1, 909, 913; SW9310; EML HASL 300; ASTM D5174	*Radionuclides*

Note: The laboratories will be instructed to identify tentatively identified compounds (TICs). As the historical data are reviewed, TICs, if present, will be identified. The procedure for a TIC to become identified as a site related compound will be observed.

Table 4 - Broad Class Characterizations.

Category	*Method*
Acids	*pH according to EPA Method 150.1, also ions and metal analysis with EPA Methods EPA 300, 335.1, 335.3, 314, 376.2, 6010B, 7470A, 7471A, 7196A, 7199, 255.1, 20.7, 0270.2*
Caustics or Bases	*pH according to EPA Method 150.1, also ions and metal analysis with EPA Methods EPA 300, 335.1, 335.3, 314, 376.2, 6010B, 7470A, 7471A, 7196A, 7199, 255.1, 20.7, 0270.2*
Glycols	*EPA Method 8015C or 8260B*
Organochlorine pesticides	*EPA 8081A*
Chlorinated herbicides	*EPA 8151A*
Solvents	*EPA 8260B, 8270C*

i. *Based on Advanced Technology Laboratories (ATL) recommendation, Kerr-McGee will use EPA 330.3 to test for residual chlorine in water. Chlorine has the capability of dissolving in small amounts in water from the vapor phase. Kerr-McGee will not test for chlorine as a vapor contaminant due to its low volatility.*

j. *The VOC analysis for paints has been changed to 8260B.*

k. *The analytical method for silica, silicon tetrabromide and silicon tetrachloride has been changed to EPA 6010B as silica.*

l. *EPA 7196A as Chromium VI was added to sodium dichromate.*

m. *Sodium hydrosulfide has been modified to include "EPA 6010B as sodium." Please note the NDEP comment is taken in reference to sodium hydrosulfide rather than sodium hyposulfide. Sodium hyposulfide was removed from the SRC list because it was not recognized as a chemical.*

n. *Ion analysis, pH, and hexavalent chromium analysis have been added to tank mud as requested.*

o. *Tetrachloride was changed to chloride as requested.*

p. *Both methods EPA 350.1 and EPA 350.2 can detect ammonia but with slightly different methods. The two methods were listed to provide options. EPA 350.2 has a higher detection limit than EPA 350.1. The table has been modified to include only EPA 350.1 for urea, ammonia and ammonium perchlorate.*

q. *According to NEMI, both EPA 300.0 as sulfate and EPA 300.1 as sulfate will provide similar results with approximately the same detection limit, 0.02 and 0.019 mg/L, respectively. Both methods use the ion chromatographic method of inorganic anion detection. The development of these methods by two separate organizations highlights the fundamental difference. EPA 300.0 was developed by the U.S. EPA National Exposure Research Laboratory (NERL), while EPA 300.1 method by the U.S. EPA Office of Groundwater and Drinking Water/Technical Support Center. For uniformity, analytical method EPA 300.0 has been used in the SRC list.*

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t. *Gasoline, diesel, paraffin wax, grease and crude oils have been added to the synonyms column in response to your comment.*

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
September 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products	ammonia	anhydrous ammonia, aqua ammonia, aqueous ammonia	7664-41-7	V,S,A	EPA 350.2 as ammonia	0.75	30.00	Historically present in vapor form; Phase I; possibility of sorbing in soil and/or water; LDLs from ATL[11]
	ammonium perchlorate	perchloric acid ammonium salt	7790-98-9	S, A	EPA 350.2 as ammonia	0.75	30.00	Phase I; LDLs from ATL
					EPA 314 as perchlorate	40 (µg/kg)	2.00	LDLs from ATL
					EPA 310.1 alkalinity as ammonium [10]	NA[8]	NA[8]	
	anti-foam agent	surfactants	NA	A	EPA 425.1	NA	25.0	NDEP request in 6/21/04 letter
	argon		7440-37-1	V	EPA 3CM	NA	NA	Historically present in the gas form. NDEP request in 6/21/04 letter
	barium hydroxide	barium dihydroxide	17194-00-2	S, A	EPA 6010B as barium	1.0	3.0	Phase I; LDLs from ATL
					EPA 150.1 as pH [9]	0-14 range	0-14 range	
					EPA 310.1 alkalinity as hydroxide [10]	NA[8]	NA[8]	Phase I; LDLs from ATL
	barium sulfide	barium sulphide	21109-95-5	S, A	EPA 6010B as barium	1.0	3.0	
					EPA 376.2 as sulfide, EPA 9030	0.5	50.0	
					EPA 310.1 alkalinity as sulfide [10]	NA[8]	NA[8]	
	barium sulfate	barite	7727-43-7	S, A	EPA 6010B as barium	1.0	3.0	LDLs from ATL
					EPA 300.0 as sulfate	10.0	1000.0	
	barite	barium sulfate	7727-43-7	S, A	EPA 6010B as barium	1.0	3.0	LDLs from ATL
					EPA 300.0 as sulfate	10.0	1000.0	
	boric acid		10043-35-5	S,A	EPA 6010B as boron	10.0	50.0	LDLs from ATL
					EPA 150.1 as pH [9]	0-14 range	0-14 range	
	boron carbide	B4-C; Tetrabor	12069-32-8	S, A	EPA 6010B as boron, carbide not analyzed	10.0	50.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as carbon [10]	NA[8]	NA[8]	
	boron tribromide	boron bromide	10294-33-4	S, A	EPA 6010B as boron	10.0	50.0	Phase I; LDLs from ATL
					EPA 300.0 as bromide	0.5	50.0	
	boron trichloride	trichloroborane, boron chloride	10294-34-5	S, A	EPA 6010B as boron	0.5	50.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0,20.0	500.0, 2000.0	
	calcium carbonate	calcium salt of carbonic acid	471-34-1	S,A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$ [10]	50.0	5000.0	
	calcium chloride	scale	10043-52-4	S, A	EPA 6010B as calcium	10.0	500.0	NDEP request in 6/21/04 letter; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0,20.0	500.0, 2000.0	
	calcium hypochlorite	losantin, calcium hypochloride, hypochlorous acid calcium salt, bleaching powder	777-54-3	S, A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
					EPA 330.3 as residual chlorine	2.0	200.0	
	calcium oxide (lime)	lime, calx, quicklime, calcium monoxide, burnt lime, airlock, calcia, caloxol cp2, calxyl, desical P, rhenosorb C	1305-78-8	S, A	EPA 6010B as calcium	10.0	500.0	LDLs from ATL
					EPA 150.1 as pH [9]	0-14 range	0-14 range	

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	calcium sulfate	anhydrous calcium sulfate, Anhydrous gypsum, Anhydrous sulfate of lime, Calcium salt of sulfuric acid	7778-18-1	S, A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
					EPA 300.0 as sulfate	10.0	1000.0	
	chlorine	molecular chlorine	7782-50-5	A,V	EPA 330.3 as residual chlorine	NA	200.0	Phase I; vapor contaminant will not be tested; possibility of dissolving in water.
	chelant (Nalco 1745)	Nalco 1745, dithiocarbamates	NA	A	None identified for long chain polymers present in dithiocarbamates	NA	NA[6]	NDEP request in 6/21/04 letter
	coagulants	ferric sulfide, aluminum sulfate, ferric chloride	various	S, A	Coagulants will be analyzed using the ion and metal analysis identified under the specific chemicals listed and EPA 425.1 for surfactants	varies	varies	NDEP request in 6/21/04 letter
	coal	carbon, trace metals	7440-44-0	A	Total Organic Carbon (TOC)-ASTM 5997, metals 6010B	NA	0.06	NDEP request in 6/21/04 letter
	coke	carbon, trace metals	NA	A	Total Organic Carbon (TOC)-ASTM 5997, metals 6010B	NA	0.06	NDEP request in 6/21/04 letter
	diatomaceous earth	diatomaceous silica, diatomite, precipitated amorphous silica, silica gel, silicon dioxide (amorphous)	7631-86-9	S,A	0370.1 dissolved silica, 6010B as silica	NA[6], 20.0	2000.0, 100.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as silica [10]	NA[6]	NA[6]	
	filter aid	diatomaceous earth	NA	NA	see diatomaceous earth	NA	NA	NDEP request in 6/21/04 letter
	flammables		varies	S, A, V	EPA 1010 (flashpoint), ASTM E681-04	varies	varies	NDEP request in 6/21/04 letter; LDLs from ATL
	flocculants	alum; caustic; ferric chloride; ferric sulfate; ferrous sulfate; lime; sulfides; and polyelectrolytes	varies	S,A	Flocculants will be analyzed using the ion and metal analysis identified under the specific chemical listed, 6010 and 6020 for alum as aluminum, EPA 425.1 for surfactants, and ASTM 5997 TOC analysis for polyelectrolytes.	varies	varies	NDEP request in 6/21/04 letter
	graphite	carbon	7440-44-0	A	Total Organic Carbon (TOC)-ASTM 5997	NA	0.06	NDEP request in 6/21/04 letter
	hydrogen chloride	anhydrous hydrogen chloride; Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid)	7647-01-0	S,A	EPA 325.3; Not analyzed as gas.	20.0	2000.00	Historically present in gas form, could enter soil or water if absorbed into water; LDLs from ATL
	hydrogen peroxide	high-strength hydrogen peroxide, Hydrogen dioxide, Hydrogen peroxide (aqueous), Hydroperoxide, Peroxide	7722-84-1	A	EPA 150.1 as pH [9]	NA	0-14 range	Strong oxidizer; relatively unstable compound that requires stabilization to avoid deterioration over time; no known analysis method

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	hydrogen sulfide	hydrosulfuric acid, sewer gas, sulfuretted hydrogen	7783-06-4	S,A	EPA 376.2 as sulfide, EPA 9030, ASTM D5504 (vapor)	0.5	50.0	Historically present in vapor form; Phase I; LDLs from ATL (soil and water); LDL (vapor) 5 ppb (CAS)[12]
	iron oxide	ferric oxide, iron(III) oxide	1332-37-2	S, A	EPA 6010B as iron	10.0	500.0	Phase I; LDLs from ATL
					EPA 150.1 as pH	0-14 range	0-14 range	
	magnesium carbonate	carbonate magnesium, hydromagnesite, magnesium (II) carbonate	7439-95-4	S, A	EPA 6010B as magnesium	10.0	100.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$[10]	50.0	5000.0	
	magnesium chlorate		NA	S, A	EPA 6010B as magnesium	10.0	100.0	Phase I; LDLs from ATL
					EPA 300.0 as chlorate	See Note 5	300.0	
	magnesium chloride	magnesium (II) chloride	7786-30-3	S, A	EPA 6010B as magnesium	10.0	100.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	
	magnesium perchlorate	perchloric acid magnesium salt	10034-81-8	S, A	EPA 6010B as magnesium	10	100.0	Phase I; LDLs from ATL
					EPA 314 as perchlorate	40 (µg/kg)	2.0	
	manganese dioxide	Manganese (IV) oxide	1313-13-9	S, A	EPA 6010B as manganese	10.0	500.0	Phase I; LDLs from ATL
	manganese oxide	manganomanganic oxide, trimanganese tetraoxide, trimanganese tetroxide	1344-43-0	S, A	EPA 6010B as manganese	10.0	500.0	Phase I; LDLs from ATL
					EPA 150.1 as pH[9]	0-14 range	0-14 range	
	manganese sulfate	manganese (II) sulphate, manganous sulphate, manganese (II) sulfate, manganese (2+) sulfate monohydrate, sulfuric acid manganese salt	7785-87-7	S, A	EPA 6010B as manganese	10.0	500.0	Phase I; LDLs from ATL
					EPA 300.0 as sulfate	10.0	1000.0	
	methyl mercury	mercury metal: colloidal mercury, metallic mercury, quicksilver	7439-97-6	S, A	EPA 7470A/7471A as mercury	0.1	0.2	LDLs from ATL
	paints		NA	S,A	EPA 6010B for metals	See Note 4	varies	Phase I
					EPA 8260B VOCs, EPA 8270 SVOCs	varies	varies	
	paraffin wax	paraffin	NA	S,A	EPA 8015M (C_{13}-C_{22} range)	30	0.50	Phase I
	potassium chlorate	chloric acid potassium salt, berthollet salt, chlorate of potash	3811-04-9	S, A	EPA 6010B as potassium, EPA 7610	See Note 4, 25.0	1000.0, 500.0	Phase I; LDLs from ATL
					EPA 300.0 as chlorate	See Note 5	300.0	
	potassium chloride	potassium monochloride, potassium muriate, monopotassium chloride, kalitabs, rekawan, slow K, super K, pfiklor, enseal, kaochlor, kaon-cl, potavescent	7447-40-7	S, A	EPA 6010B as potassium, EPA 7610	See Note 4, 25.0	1000.0, 500.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0,20.0	500.0, 2000.0	
	potassium perchlorate	perchloric acid potassium salt	7440-09-7	S, A	EPA 6010B as potassium, EPA 7610	See Note 4, 25.0	1000.0, 500.0	Phase I; LDLs from ATL
					EPA 314 as perchlorate	40 (µg/kg)	2.0	

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	potassium phosphate	potassium phosphate tribasic, potassium orthophosphate, tripotassium phosphate	7758-11-4	S, A	EPA 6010B as potassium, EPA 7610	See Note 4, 25.0	1000.0, 500.0	Phase I; LDLs from ATL
					EPA 365.3.0 as phosphate	0.2	20.0	
					EPA 310.1 alkalinity as phosphate [10]	NA[8]	3.0	
	silica	diatomaceous earth, diatomaceous silica, diatomite, precipitated amorphous silica, silica gel, silicon dioxide (amorphous)	7631-86-9	S, A	0370.1 dissolved silica, 6010B as silica	NA, 20.0	2000.0, 100.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as silica [10]			
	silicon tetrabromide	silicon (IV) bromide, silicon bromide, tetrabromosilane	7789-66-4	S, A	0370.1 dissolved silica, 6010B as silica	NA, 20.0	2000.0, 100.0	Phase I; LDLs from ATL
					EPA 300.0 as bromide	0.5	50.0	
	silicon tetrachloride	silicon chloride, tetrachlorosilane, silicon (IV) chloride	10026-04-7	S, A	0370.1 dissolved silica, 6010B as silica	NA[8], 20.0	2000.0, 100.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	
	sodium arsenite	sodium (meta)arsenite, arsenous acid sodium salt, sodium metaarsenite, Atlas A, chem pels C, chem-sen 56, Kill-all, penite, prodalumnol, sodanit, various trade names	7784-46-5	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	LOU Response; LDLs from ATL
					EPA 6010B as arsenic	1.00	10.0	
	sodium alpha olefin sulfonate	sodium tetradecene sulfonate, sodium C14-16 olefin sulfonate;C14-16-alkane hydroxy and C14-16-alkene	68439-57-6	S,A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
	sodium borate	anhydrous borax, borax dehydrated, disodium salt of boric acid, disodium tetraborate, fused borax, sodium borate (anhydrous), sodium tetraborate	1330-43-4	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as borate [10]	NA[8]	NA[8]	
	sodium carbonate	soda ash, disodium carbonate, carbonic acid disodium salt	497-19-8	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$ [10]	50	5000	

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	sodium chlorate	agrosan, asex, atlacide, atratol, b-herbatox, desolet, drexel defol, evau-super, grain sorghum harvest-aid, granex O, Harvest-aid, hibar C, kusatol, leafex 2, ortho C-1 defoliant & weed killer, oxycil, rasikal, shed-a-leaf, soda chlorate, sodakem, travex, tumbleaf, val-drop	7775-09-9	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 300.0 as chlorate	See Note 5	300.0	
	sodium chloride	extra fine 200 salt, extra fine 325 salt, H.G. blending, salt, sea salt, table salt, common salt, dendritis, rock salt, top flake, white crystal, saline, halite, purex, USP sodium chloride	7647-14-5	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	
	sodium dichromate	sodium bichromate	7789-12-0	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 7196A as hexavalent chromium	0.1	10.0	
					EPA 6010B as chromium	1.0	3.0	
	sodium hexametaphosphate	metaphosphoric acid hexasodium salt, glassy sodium metaphosphate, SHMP	10124-56-8	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 365.3 as total PO_4	0.2	20.0	
					EPA 310.1 alkalinity as phosphate [10]	NA[8]	3.0	
	sodium hydrosulfide	sodium hydrogen sulphide, sodium hydrogen sulfide, sodium sulfhydrate, sodium bisulphide, sodium hydrosulphide, sodium bisulfide	16721-80-5	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 376.2 as sulfide, EPA 9030	0.5	50.0	
					EPA 310.1 alkalinity as sulfide [10]	NA[8]	NA[8]	
	sodium hydroxide	caustic soda, lye, soda lye, sodium hydrate	1310-73-2	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as hydroxide	NA[8]	NA[8]	
					EPA 150.1 as pH [9]	0-14 range	0-14 range	
	sodium oxide	disodium monoxide, sodium monoxide, disodium oxide	1313-59-3	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 150.1 as pH	0-14 range	0-14 range	
	sodium perchlorate	perchloric acid sodium salt	7601-89-0	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 314 as perchlorate	40 (µg/kg)	2.0	

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Misc. Compounds, Chemicals, and Products (cont'd)	sodium sulfite	anhydrous sodium sulfite, sodium sulphite, S-WAT, sulftech, sulfurous acid sodium salt, disodium sulfite, exsiccated sodium sulfite	7757-83-7	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
					EPA 377.1 as sulfite	NA[6]	2000.0	
	strontium carbonate	carbonic acid strontium salt	1633-05-2	S, A	EPA 6010B as strontium	0.5	100.0	Phase I; LDLs from ATL
					EPA 310.1 alkalinity as $CaCO_3$ [10]	NA[6]	NA[6]	
	sulfur dioxide	sulfurous acid anhydride, sulfurous oxide, sulfur oxide	7446-09-5	V	NIOSH Method 6004	NA	NA	Historically present in gas form; detection limit 3 µg/sample
	synthetic detergent	surfactants	NA	A	EPA 425.1	NA	25.0	NDEP request in 6/21/04 letter
	tank mud	tank sediment	NA	S, A	EPA 6010B for total metals	See Note 4	varies	NDEP request in 6/21/04 letter
					EPA 150.1 as pH [9]	0-14 range	0-14 range	
					EPA 7196A for hexavalent chromium	0.1	10.0	
					Ion analysis (see ions below)	see below	see below	
	tricalcium phosphate	calcium phosphate tribasic; tricalcium diphosphate; bone phosphate; calcium orthophosphate; calcium phosphate; calcium phosphate (3:2); calcium tertiary phosphate; phosphoric acid, calcium salt (2:3)	7758-87-4	S, A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
					EPA 300.0 as phosphate, EPA 365.3	0.5, 0.2	50.0, 20.0	
					EPA 310.1 alkalinity as phosphate [10]	NA[6]	3.0	
	titanium tetrachloride			S, A	EPA 6010B as titanium	15.0	300.0	
					EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	
	unknowns	not known, not identified, non specific	NA		Various methods would be used as appropriate depending on the data available to refine the analytical suite. Refer to Table 3 or the complete list of analytical methods.	varies	varies	NDEP request in 6/21/04 letter
	urea	B-I-K, carbamide, carbamide resin, isourea, pseudourea, carbonyldiamine	57-13-6	A	EPA 350.2 as ammonia	0.75	30.0	Phase I; LDLs from ATL
	various lab wastes		NA	S, A,.V	Various methods would be used as appropriate. Refer to Table 3 for the complete list of analytical methods.	varies	varies	NDEP request in 6/21/04 and 8/5/04 letters

Table 1
Site Related Chemical List
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Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Ions	chlorate		14866-68-3	A	EPA 300.0 as chlorate	See Note 5	300.0	
	chloride		16887-00-6	S, A	EPA 300.0 as chloride, EPA 325.3	5.0, 20.0	500.0, 2000.0	NDEP request in 6/21/04 letter; LDLs from ATL
	cyanide		57-12-5	S, A	EPA 335.1, EPA 335.2 as total cyanide	0.25	0.01 (mg/L)	Phase I; LDLs from ATL
	nitrate		14797-55-8	S, A	EPA 300.0 as nitrate	1.0	100.0	
	perchlorate		7601-90-3	S, A	EPA 314 as perchlorate	40 (µg/kg)	2.0	Phase I; LDLs from ATL
	phosphate		14265-44-2	S, A	EPA 300.0 as phosphate	0.5	50.0	Phase I
					EPA 310.1 alkalinity as phosphate [10]	NA[8]	3.0	
	sulfate		14808-79-8	S, A	EPA 300.0 as sulfate, EPA 375.4	1.0, 5.0	19.0,	
	sulfide		18496-25-8	S, A	EPA 376.2 as sulfide, EPA 9030	1.0, 0.5	NA[8], 50.0	
					EPA 310.1 alkalinity as sulfide [10]	NA[8]	NA[8]	
Asbestos	asbestos		1332-21-4	S, A	ISO 10312 TEC	NA	0.2 MFL*	Phase I
Metals	aluminum		7429-90-5	S, A	EPA 6010B as aluminum	10.0	500.0	LDLs from ATL
	antimony		7440-36-0	S, A	EPA 6010B as antimony	2.0	5.0	LDLs from ATL
	arsenic		7440-38-2	S, A	EPA 6010B as arsenic	1.0	10.0	LDLs from ATL
	barium		7440-39-3	S, A	EPA 6010B as barium	1.0	3.0	Phase I; LDLs from ATL
	beryllium		7440-41-7	S, A	EPA 6010B as beryllium	1.0	3.0	LDLs from ATL
	boron		7440-42-8	S, A	EPA 6010B as boron	10.0	50.0	Phase I; LDLs from ATL
	cadmium		7440-43-9	S, A	EPA 6010B as cadmium	1.0	3.0	LOU Response; LDLs from ATL
	calcium		7440-70-2	S, A	EPA 6010B as calcium	10.0	500.0	Phase I; LDLs from ATL
	chromium (hexavalent)		18540-29-9	S, A	EPA 7196A	0.1	10.0	Phase I; LDLs from ATL
	chromium (total)		7440-47-3	S, A	EPA 6010B as total chromium	1.0	3.0	Phase I; LDLs from ATL
	cobalt		7440-48-4	S, A	EPA 6010B as cobalt	1.0	3.0	Phase I; LDLs from ATL
	copper		7440-50-8	S, A	EPA 6010B as copper	2.0	5.0	Phase I; LDLs from ATL
	iron		7439-89-6	S, A	EPA 6010B as iron	1.0	500.0	Phase I; LDLs from ATL
	lead		7439-92-1	S, A	EPA 6010B as lead	10.0	5.0	Phase I; LDLs from ATL
	magnesium		7439-96-5	S,A	EPA 6010B as magnesium	10.0	100.0	LDLs from ATL
	manganese		7439-96-4	S, A	EPA 6010B as manganese	1.0	500.0	Phase I; LDLs from ATL
	mercury		7439-97-6	S,A	EPA 7470A/7471A as mercury	0.1	200.0	LDLs from ATL
	molybdenum		7439-98-7	S, A	EPA 6010B as molybdenum	1.0	5.0	LOU Response; LDLs from ATL
	nickel		7440-02-0	S, A	EPA 6010B as nickel	1.0	5.0	Phase I; LDLs from ATL
	platinum		7440-06-4	S, A	EPA 6010B	15.0	300.0	Phase I; LDLs from ATL
	phosphorous		7723-14-0	S,A	EPA 365.3	0.5	200.0	LDLs from ATL
	potassium		7440-09-7	S, A	EPA 7610	25.0	500.0	Phase I; LDLs from ATL
	selenium		7782-49-2	S, A	EPA 6010B as selenium	1.0	10.0	LDLs from ATL
	silica		7631-86-9	S,A	See Miscellaneous Compounds, Chemicals and Products listing			
	silver		744-22-4	S, A	EPA 6010B as silver	1.0	3.0	LOU Response; LDLs from ATL
	sodium		744-23-5	S, A	EPA 6010B as sodium, EPA 7770	See Note 4, 25.0	19.0, 500.0	Phase I; LDLs from ATL
	strontium		7440-24-6	S,A	EPA 6010B as strontium	0.5	100.0	LDLs from ATL
	thallium		7440-28-0	S, A	EPA 6010B as thallium	1.0	15.0	LDLs from ATL
	tin		7440-31-5	S, A	EPA 6010B as tin	1.0	300.0	LDLs from ATL
	titanium		7440-32-6	S, A	EPA 6010B as titanium	15.0	300.0	LDLs from ATL
	tungsten		7440-33-7	S, A	Flame AAS (aqueous), ICP-AES (soil)	NA[8]	100.0	
	vanadium		7440-62-2	S, A	EPA 6010B as vanadium	1.0	3.0	LDLs from ATL
	zinc		744-66-6	S, A	EPA 6010B as zinc	1.0	10.0	Phase I; LDLs from ATL

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
September 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Semi Volatile Organic Compounds (SVOCs)	nitrobenzene		98-95-3	S, A	EPA 8270C	0.33	10.0	Phase I
	pyridine*		110-86-1	S, A	EPA 8270C or 8260B	1.65	5.0	Phase I; LDLs from ATL
Volatile Organic Compounds (VOCs)[6]	1,1,1-TCA	chlorothene; 1,1,1-trichloroethane; 1,1,1-trichloroethane (stabilized), methyl chloroform	71-55-6	S, A	EPA 8260B	0.005	0.5	Phase I; LDLs from ATL
	2-butanone*	ethyl methyl ketone, MEK, methyl acetone, methyl ethyl ketone	78-93-3	S, A	EPA 8260B	0.001	1.0	LOU Response
	2-hexanone*	methyl n-butyl ketone	591-78-6	S, A	EPA 8260B	0.001	1.0	
	acetone*	dimethyl ketone, ketone propane, 2-propanone	67-64-1	S, A	EPA 8260B	0.001	1.0	Phase II ECI
	benzene	benzol, phenyl hydride	71-43-2	S, A	EPA 8260B	0.001	1.0	Phase II ECI
	chlorobenzol	benzene chloride, chlorobenzol, MCB, monochlorobenzene, phenyl chloride	108-90-7	S, A	EPA 8260B	0.001	1.0	
	chloroform	methane trichloride, trichloromethane	67-66-3	S, A	EPA 8260B	0.001	1.0	Phase II ECI
	chlorinated organics		varies	S, A	EPA 8260B	0.001	1.0	NDEP request in 6/21/04 letter
	chlorinated paraffins		varies	S, A	EPA 8260B	0.001	1.0	NDEP request in 6/21/04 letter
	ethylbenzene		100-41-4	S,A	EPA 8260B	0.005	0.5	LDLs from ATL
	glycols*	varies	varies	S,A	EPA 8015C or EPA 8260B	200	200,000	LDLs from ATL
	methanol*	carbinol, columbian spirits, methyl alcohol, pyroligneous spirit, wood alcohol, wood naphtha, wood spirit	67-56-1	S, A	EPA 8260B	0.001	1.0	Phase I
	methyl isobutyl ketone*	isobutyl methyl ketone, hexone, 4-methyl 2-pentanone, MIBK	108-10-1	S	EPA 8260B	0.001	NA[8]	NDEP request in 6/21/04 letter
	methyl tert-butyl ether	MTBE	1634-04-4	S, A	EPA 8260B	0.001	0.05	NDEP request 8/05/04 letter
	monochlorobenzene	benzene chloride, chlorobenzol, MCB,chlorobenzene, phenyl chloride	108-90-7	S, A	EPA 8260B	0.001	1.0	as 1,2-, 1,3- and 1,4- isomers; Phase I
	orthodichlorobenzene	1,2 dichlorobenzene	95-50-1	S, A	EPA 8260B	0.001	1.0	as 1,2-, 1,3- and 1,4- isomers; Phase I
	paradichlorobenzene	1,4-dichlorobenzene, PDB, paracide	106-46-7	S, A	EPA 8260B	0.001	1.0	as 1,2-, 1,3- and 1,4- isomers; Phase I
	tetrachloroethylene	perchloroethylene, PCE, TCE, tetrachloroethene	127-18-4	S, A	EPA 8260B	0.001	1.0	

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
September 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Volatile Organic Compounds (VOCs)[6] (cont'd)	toluene*	methyl benzene, methyl benzol, phenyl methane, toluol	108-88-3	S, A	EPA 8260B	0.001	1.0	Phase I
	trichloroethylene	trichloroethene, TCE	79-01-6	S, A	EPA 8260B	0.001	1.0	
	xylene	dimethylbenzene; xylol	1330-20-7	S, A	EPA 8260B as total xylenes	0.001	1.0	As total xylenes;LOU Response
Inorganic Acids	hydrochloric acid	muriatic acid	7647-01-0	S, A	EPA 325.3	20.0	2,000	Phase I; LDLs from ATL
					EPA 150.1 as pH[9]	0-14 range	0-14 range	
	sulfuric acid		7664-93-8	S, A	EPA 375.4	5.0	500.0	Phase I; LDLs from ATL
					EPA 150.1 as pH[9]	0-14 range	0-14 range	
Chlorinated Herbicides	tumbleaf defoliant		NA	A	EPA 8151A	NA[8]	NA[8]	Phase I
Organophosphorous Pesticides	all	insecticides	varies	S, A	Method 8141A	varies	varies	
Organochlorine Pesticides	DDT		50-29-3	S,A	EPA 8081A as 4,4-DDT	0.002	0.05	Phase I; LDLs from ATL
	DDE		72-55-9	S,A	EPA 8081A	0.002	0.05	LDLs from ATL
	insecticides		NA	A	EPA 8081A	NA	0.6 -0.8	Phase I
	pesticides		NA	S,A	EPA 8081A	0.0017	0.6 -0.8	Phase I
Organic Acids	citric acid		77-92-9	S,A	EPA 150.1 as pH[9]	0-14 range	0-14 range	
Petroleum Hydrocarbons	TPH				EPA 8015M full range, BTEX and MTBE by 8260B, lead by 6010B, PAHs by 8270C or 8310			Phase I
	C_4-C_{12}	gasoline		S,A	EPA 8015M	30.0	50.0	Phase I
	C_{13}-C_{22}	paraffin wax, diesel		S,A	EPA 8015M	30.0	0.5	Phase I
	C_{23+}	grease, crude oils		S,A	EPA 8015M	30.0	0.5	Phase I
Polychlorinated Biphenyls (PCBs)	PCBs				EPA 8082			Phase I
	aroclor 1016		1267-41-12	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1221		1110-42-82	S,A	EPA 8082	0.2	0.5	Phase I
	aroclor 1232		1114-11-65	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1242		5346-92-19	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1248		1267-22-96	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1254		1109-76-91	S,A	EPA 8082	0.1	0.5	Phase I
	aroclor 1260		1109-68-25	S,A	EPA 8082	0.1	0.5	Phase I
Polychlorinated Dibenzodioxins/ Dibenzofurans	dioxins/furans		varies	S,A	EPA 1613	varies	varies	

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
September 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	
Polynuclear Aromatic Hydrocarbons (PAHs)	PAHs				EPA 8270C/8310			Phase I
	acenaphthene		83-32-9	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	acenaphthylene		206-96-8	S,A	EPA 8270C/8310	0.01	5.0	
	anthracene		120-12-7	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benz(a)anthracene		56-55-3	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benzo(a)pyrene		50-32-8	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benzo(b)fluoranthene		205-99-2	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benzo(k)fluoranthene		207-08-9	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	benzo(ghi)perylene		191-24-2	S,A	EPA 8270C/8310	0.01	5.0	
	chrysene		218-01-9	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	dibenz(a,h)anthracene		53-70-3	S,A	EPA 8270C/8310	0.01	10.0	Phase I
	fluoranthene		206-44-0	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	fluorene		89-73-7	S,A	EPA 8270C/8310	0.01	5.0	Phase I
	indeno(1,2,3-cd)pyrene		193-39-5	S,A	EPA 8270C/8310	0.01	10.0	Phase I
	napthalene		97-20-3	S,A	EPA 8270C/8310	0.01	0.5	Phase I
	octachlorostyrene		29082-74-4	S,A	EPA 8080, 8081	0.01	5.0	Phase I
	phenanthrene		85-01-8	S,A	EPA 8270C/8310	0.01	5.0	
	pyrene		129-00-0	S,A	EPA 8270C/8310	0.01	5.0	Phase I
Radionuclides Note: units are picocuries per liter (pCi/L) unless noted	actinium 228		14331-83-0	S	EML HASL 300	See Note 7	NA	NDEP request 8/05/04 letter
				A	EPA 900.0(gross alpha/beta), EPA 901.1(gamma)	NA	5.0, 20.0	
	bismuth 212		14913-49-6	S	EML HASL 300	See Note 7	NA	NDEP request 8/05/04 letter
				A	EPA 900.0(gross alpha/beta), EPA 901.1(gamma)	NA	5.0, 20.0	
	gross alpha (adjusted) [3]			A	EPA 900.0/SW9310	NA	5.0	NDEP request 2/11/04 letter
				S	SW9310/EML HASL 300	See Note 7	See Note 7	
	lead (isotopic)	Pb-210	14255-04-0	S	EML HASL 300	See Note 7	NA	NDEP request 8/05/04 letter
				A	EPA 909	NA	0.2	
		Pb-212	15092-94-2	S	EML HASL 300	See Note 7	NA	
				A	EPA 901.1/SW9310	NA	20.0	
	polonium 210		13981-52-7	S, A	EML HASL 300 Po 02 RC	0.001	0.001	bq/1000 = bequerels per 1000 min
	radium 226		13982-63-3	S	EML HASL 300	See Note 7	NA	NDEP request 2/11/04 letter
				A	EPA 903.1	NA	0.2	
	radium 228		15262-20-1	A	EPA 904.0	NA	2.5	
				S	EML HASL 300	See Note 7	NA	
	radon 222		10043-92-2	A	EPA 913.0	NA	0.4 Bq/L	NDEP request 8/05/04 letter
	thorium (isotopic)	includes Th-228, Th-229, Th-230, Th-232, Th-234	varies	S,A	EML HASL-300; A-01-R Mod/HASL 300	See Note 7	See Note 7	NDEP request 2/11/04 & 8/05/04 (Th-234) letters
	uranium (isotopic)	includes U-232, U-233/234, U-235/236, U-238	varies	S,A	EML HASL 300	See Note 7	See Note 7	
	uranium (total)		7440-61-1	A	EPA ASTM D5174	NA	0.05	NDEP request 2/11/04 letter
Water Quality Parameters	TDS	total dissolved solids	NA	A	EPA 160.1 as total dissolved solids	NA	10,000	Phase I
	TSS	total suspended solids	NA	A	EPA 160.2 as total suspended solids	NA	10,000	
	pH		NA	A	EPA 150.1 as pH [5]	NA	0-14 range	

Table 1
Site Related Chemical List
Kerr-McGee Henderson Area
September 2004

Parameters of Interest	Compound List	Synonyms[13]	CAS Number	Media[1]	Analytical Method[2]	Laboratory Detection Limits		Notes
						Soil (mg/kg)	Water (µg/L)	

Notes:

[1] Abbreviations used: S = soil sample; A = aqueous sample; V = vapor sample
[2] Analytical Method may test for ions or indicators, not necessarily the compound listed
[3] Adjusted gross alpha is calculated by subtracting the effects of uranium and radon 222 from gross alpha
[4] For metals analyzed per Method 6010B, the method protocol requires soil samples to be digested into solution prior to analysis. Therefore, the Laboratory Detection Limits (LDLs) are given in units of µg/L.
[5] For EPA Method 300.0 (ion analysis) soil samples are extracted into liquid, therefore the LDLs are given in units of ug/L. These LDLs are method detection limits (MDLs)
[6] For VOCs or SVOCs analyzed per EPA Method 8260B, the method states that Method Detection Limits (MDLs) vary depending on instrument sensitivity and matrix effects. Therefore, the MDLs are estimated by dividing the estimated quantitation limits (EQLs) by a factor of 5, per the method protocol.
[7] For EML Method HASL 300, LDLs are lab specific
[8] For LDLs marked NA, there were no LDLs listed in the National Environmental Methods Index, and no other references could be found to supply LDLs for this method.
[9] pH testing : chemicals that are not listed for method EPA 150.1 pH test may be tested, if necessary, on a case by case basis in soil or aqueous medium.
[10] alkalinity testing : chemicals that are not listed for method EPA 310.1 may be tested, if necessary, on a case by case basis in soil or aqueous medium.
[11] ATL (Advanced Technology Laboratories): this lab was consulted for various analytical methods and LDLs.
[12] CAS (Columbia Analytical Services) : this air lab was consulted for various vapor analyses.
[13] Synonyms from ptcl.chem.ox.ac.uk/msds

General Notes:

* = non-halogenated organics
mg/L = milligrams per liter
µg/L = micrograms per liter
NA - not available or not applicable
LOU = Letter of Understanding between Kerr McGee Chemical Corporation (KMCC) and NDEP, August 15, 1994
Phase I = Kleinfelder, Inc. Environmental Conditions Assessment, KMCC, Henderson Nevada, April 1993
Phase II = ENSR Environmental Conditions Assessment at KMCC Henderson Nevada, August 7, 1997
MFL* = Asbestos, Million fibers per Liter
PAH's and PCB's are itemized, not all may be present on site.
If cell is blank, the compound was not on the referenced regulatory list.

Table 2
Alphabetical Site Related Chemical List
Kerr-McGee Henderson Area
September 2004

1,1,1-TCA	chlorinated paraffins	nitrate	thallium
2-butanone	chlorine	nitrobenzene	thorium (isotopic)
2-hexanone	chlorobenzol	octachlorostyrene	tin
acenaphthene	chloroform	orthodichlorobenzene	titanium
acenaphthylene	chromium (hexavalent)	PAHs	titanium tetrachloride
acetone	chromium (total)	paints	toluene
actinium 228	chrysene	paradichlorobenzene	TPH
all organophosphorous pesticides	citric acid	paraffin wax	tricalcium phosphate
aluminum	coagulants	PCBs	trichloroethylene
ammonia	coal	perchlorate	TSS
ammonium perchlorate	cobalt	pesticides	tumbleaf defoliant
anthracene	coke	pH	tungsten
anti-foam agent	copper	phenanthrene	unknowns
antimony	cyanide	phosphate	uranium (isotopic)
argon	DDE	phosphorous	uranium (total)
aroclor 1016	DDT	platinum	urea
aroclor 1221	diatomaceous earth	polonium 210	vanadium
aroclor 1232	dibenz(a,h)anthracene	potassium	various lab wastes
aroclor 1242	dioxins/furans	potassium chlorate	xylene
aroclor 1248	ethylbenzene	potassium chloride	zinc
aroclor 1254	filter aid	potassium perchlorate	
aroclor 1260	flammables	potassium phosphate	
arsenic	flocculants	pyrene	
asbestos	fluoranthene	pyridine	
barite	fluorene	radium 226	
barium	glycols	radium 228	
barium hydroxide	graphite	radon 222	
barium sulfate	gross alpha (adjusted)	selenium	
barium sulfide	hydrochloric acid	silica	
benz(a)anthracene	hydrogen chloride	silicon tetrabromide	
benzene	hydrogen peroxide	silicon tetrachloride	
benzo(a)pyrene	hydrogen sulfide	silver	
benzo(b)fluoranthene	indeno(1,2,3-cd)pyrene	sodium	
benzo(ghi)perylene	insecticides	sodium alpha olefin sulfonate	
benzo(k)fluoranthene	iron	sodium arsenite	
beryllium	iron oxide	sodium borate	
bismuth 212	lead	sodium carbonate	
boric acid	lead (isotopic)	sodium chlorate	
boron	magnesium	sodium chloride	
boron carbide	magnesium carbonate	sodium dichromate	
boron tribromide	magnesium chlorate	sodium hexametaphosphate	
boron trichloride	magnesium chloride	sodium hydrosulfide	
C_{13}-C_{22}	magnesium perchlorate	sodium hydroxide	
C_{23+}	manganese	sodium oxide	
C_4-C_{12}	manganese dioxide	sodium perchlorate	
cadmium	manganese oxide	sodium sulfite	
calcium	manganese sulfate	strontium	
calcium carbonate	mercury	strontium carbonate	
calcium chloride	methanol	sulfate	
calcium hypochlorite	methyl isobutyl ketone	sulfide	
calcium oxide (lime)	methyl mercury	sulfur dioxide	
calcium sulfate	methyl tert-butyl ether	sulfuric acid	
chelant (Nalco 1745)	molybdenum	synthetic detergent	
chlorate	monochlorobenzene	tank mud	
chloride	napthalene	TDS	
chlorinated organics	nickel	tetrachloroethylene	

Table 3 - Characterization of Unknowns

Method	*Chemical, Compound, Category or Element*
EPA 6010B	*Metals, including aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, molybdenum, nickel, potassium, platinum, selenium, silica, silver, sodium, strontium, thallium, tin, titanium, tungsten, vanadium, and zinc*
EPA 7470B/7471A	*Mercury*
EPA 200.7	*Phosphorous*
EPA 255.1	*Platinum*
EPA 7740or 0270.2	*Selenium*
EPA 300.0	*Anions, including chlorate, chloride, nitrate, phosphate, sulfate*
EPA 335.1 or 335.3	*Cyanide*
EPA 8270C or 8310	*Semivolatile organic compounds/ Polynuclear aromatic hydrocarbons*
EPA 8260B	*Volatile organic compounds*
EPA 8081A	*Organochlorine pesticides*
EPA 8141A	*Organophosphorous pesticides*
EPA 8015M	*Petroleum hydrocarbons*
EPA 8082	*Polychlorinated biphenyls*
EPA 1613	*Dioxins and furans*
EPA 8151A	*Chlorinated herbicides*
EPA 900, 901.1, 904.0, 903.1, 909, 913; SW9310; EML HASL 300; ASTM D5174	*Radionuclides*

Note: The laboratories will be instructed to identify tentatively identified compounds (TICs). As the historical data are reviewed, TICs, if present, will be identified. The procedure for a TIC to become identified as a site related compound will be observed.

Table 4 - Broad Class Characterizations.

Category	*Method*
Acids	*pH according to EPA Method 150.1, also ions and metal analysis with EPA Methods EPA 300, 335.1, 335.3, 314, 376.2, 6010B, 7470A, 7471A, 7196A, 7199, 255.1, 20.7, 0270.2*
Caustics or Bases	*pH according to EPA Method 150.1, also ions and metal analysis with EPA Methods EPA 300, 335.1, 335.3, 314, 376.2, 6010B, 7470A, 7471A, 7196A, 7199, 255.1, 20.7, 0270.2*
Glycols	*EPA Method 8015C or 8260B*
Organochlorine pesticides	*EPA 8081A*
Chlorinated herbicides	*EPA 8151A*
Solvents	*EPA 8260B, 8270C*

Administrator – Acting
Jolaine Johnson & Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations & Reclamation
Facsimile 684-5259

State of Nevada
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Federal Facilities

Corrective Actions
Facsimile 687-8335

NDEP.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
1771 E. Flamingo Rd. Suite 121-A
Las Vegas, Nevada 89701

September 20, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Characterization of GW-11 Pond Contents
dated September 16, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides comments in Attachment A. The NDEP requests that KM respond to these issues **by October 18, 2004**.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Al Tinney, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

ATTACHMENT A

1. A revised "Sample Collection Procedures" section was provided to the NDEP via electronic mail due to a number of spelling errors in the original version. It should be noted that the corrected version contains four errors (grammatical, spelling and formatting). Quality appears to be a lingering problem on this project and the NDEP requests that KM discuss this issue with their consultants. Please note that Table 1 and the "detailed narrative discussing quality control issues..." have similar errors.
2. In the revised "Sample Collection Procedures" it is stated that uranium, thorium, cyanide, TPH, organophosphorous pesticides, and octachlorostyrene were not included among the analyses. These parameters were all included in Table 1 that was presented to the NDEP at our July 23, 2004 meeting. It is not clear why these parameters were eliminated and why the NDEP was not notified. The NDEP requests that a sample be taken and analyzed for the parameters that were not included.
3. In the narrative from the lab discussing quality control issues it is stated that "the pahs in general may be either biased low or subject to degradation in this sample matrix." Regardless of the grammatical and formatting errors of this sentence, this concerns the NDEP because the detection limits for some of the PAHs are above ARARs or guidance levels; including (but not limited to): benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. There are a number of other chemicals that have detection limits above corresponding ARARs or guidance levels. For example, PCBs (except Aroclor 1016), alpha-BHC, aldrin, beta-BHC, chlordane, etc. were reported with elevated detection limits. KM should be advised that this is an issue that will need to be addressed in the future.
4. The NDEP has comments regarding the analytical data as listed below.
   a. Gross Alpha concentrations must be presented in a summary as Adjusted Gross Alpha for comparison to USEPA MCLs. Also, Radium 226 and 228 concentrations should be presented as combined Radium 226, 228 for comparison to USEPA MCLs.
   b. Given the concentrations of a number of chemicals in the GW-11 pond (gross alpha radionuclides, arsenic, boron, hexavalent chromium, nitrate, and TDS), the NDEP requests that KM sample and analyze a minimum of one representative sample from each of the well fields. This includes the on-site well field, the Athens Road well field, and the Seep Area well field. These samples should be collected in a manner that is representative of the composite flow of each of the well fields. The NDEP requests that these samples be analyzed using the complete analyte list presented in Table 1.

1500 9/24

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: September 16, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Meeting on September 16, 2004 at 1:30 PM via telephone

1. Attendance:
   a. NDEP: Todd Croft, Alan Tinney, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Reviewed FBR system operations.
   a. System is currently receiving 45 gpm of the blended water from the GWTS and the GW-11 pond. 20 gpm of GW-11 pond water is being put into the blend and approximately 58 gpm of GWTS water. 45 gpm of this is forwarded to the FBR whereas the remaining 33 gpm is recycled to the GW-11 pond.
   b. Influent concentration is approximately 155-163 ppm perchlorate.
   c. Equalization tanks are still being filled and should be full by the end of tomorrow.
   d. KM hopes to continue to ramp up and be using approximately 50 gpm of the blend water by next week.
   e. In general, KM has been seeing ND in their discharge. There have been occasional spikes up to approximately 180 ppb when the influent to the FBR has been modified. Monthly average for last month is approx. 45 ppb.
   f. Detection limits have varied from ~2.5 ppb to ~16 ppb.
   g. KM noted that Veolia now has an IC on site for perchlorate analysis.
   h. KM noted that the hydrogen peroxide system is still operating in manual mode. KM will work to switch this to an auto mode.
   i. KM noted that it will be a few weeks before revised P&IDs are generated and submitted to Nadir.
   j. KM noted that the static mixer has been installed and is working well.
3. Discussed permit.
   a. KM requested that (during the performance test) they be allowed to submit a composite sample instead of a grab sample for perchlorate analysis. This composite would consist of grab samples collected every 15 minutes through out the day.
   b. Alan Tinney to review and discuss with KM tomorrow.
4. Discussed NDEP observations.

a. Discharge contains a few solids but is clear. Discharge appears clear once it reaches the culvert area.

5. Discussed discharge relocation. KM noted that they are still pursuing this with BOR.
6. Discussed DO concentrations.
   a. DO has been 3-4 mg/L at the end of pipe and decreases through the swamp area. Also, DO is greater at the beginning of the pipe and decreases throughout the length of the pipe.
   b. KM to provide updates on bi-weekly calls and written updates to Todd monthly.
7. Next meeting: Thursday, September 29, 2004 at 1:30 PM. Call-in number to be provided.

ISSUED 9/23

Meeting Minutes

Project:	Kerr-McGee
Location:	Kerr-McGee
Time and Date:	1:00 PM, Tuesday, September 14, 2004
Meeting Number:	---
In Attendance:	NDEP-BCA – Las Vegas – Brian Rakvica, Jeff Johnson (via telephone) Kerr-McGee (KM) Susan Crowley, Tom Reed (via video phone) ENSR- David Gerry, Sally Bilodeau, Ed Krish

CC: Jennifer Carr, Todd Croft

1. Meeting was held to review ECA progress.
2. Discussed GW-11 characterization.
    a. Characterization will be submitted on Friday, September 17, 2004. this will discuss some of the QA/Qc issues as well due to matrix interference due to high salinity of GW-11.
3. Discussed GW monitoring well report. The revisions have been sent to NDEP.
4. Discussed quarterly reports.
    a. Perchlorate report. Brian indicated that Todd would provide comments on this report as he is the case officer.
    b. Chromium report. KM to review feasibility of achieving the due date and discuss with NDEP if necessary.
    c. KM requested copies of the TIMET quarterly GW reports. Brian to prepare for pick up by Copy Cats.
5. Discussed Site-Related Chemicals (SRC).
    a. KM noted that problems with detection being higher than action levels will be dealt with in future work products. In general, these issue will be dealt with per the USEPA guidance.
    b. Discussed items to be included on the list or excluded. Extensive discussion on the format of the list and clarification of NDEP expectations. NDEP suggested that KM or ENSR contact NDEP by phone or email to discuss these issues as they arise. If a comment is not clear or if there is confusion on the intent, please contact Brian to discuss.
    c. Discussed silica. Noted that while it is inert it may present a respirable dust hazard.
    d. Discussed overlap of analytical methods.
    e. Discussed compounds that have higher toxicity than their components. This will need to be looked at in the future.
6. Reviewed data usability.
7. Discussed site cleanup. Noted that the cleanup issues on the Plant Site may end being driven by OSHA regulations and the need to prevent off-site migration.
8. Reviewed Conceptual Site Model.

a. ENSR is developing based on the ASTM framework which appear to include the elements outlined in the USEPA guidance. KM has also reviewed the comments on the TIMET CSM.
b. Discussed format of document.
c. Tables will include: SRC, soil data summary, GW data summary, pond GW-11 summary, surface water data.
d. Figures will include: site location, site features, source areas, perchlorate plume, chromium plume, top of Muddy Creek Formation, cross-sections, air photos and the CSM diagram.

9. Discussed regional issues.
    a. Brief discussion on background. KM is thinking of looking near the southern part of their property. Brian cautioned them that TIMET did not have much success with this in the past, however, KM was welcome to try to find a location. Discussed impacts at Fiesta site upgradient and historic BMI usage upgradient.
10. Discussed DQOs.
11. Discussed other issues.
    a. Susan to contact Jennifer regarding reimbursement money due to the NDEP.
12. Next Meeting: Tuesday, November 9, 2004, 1:00 PM at KM; call-in number to be provided

KERR-MCGEE MEETING WITH NDEP
September 14, 2004

PROPOSED AGENDA

WELCOME (tie-in remote participants) ✓

OBJECTIVE

1. Discuss Status of ECA-related activities and deliverables
2. Address emerging issues, questions

ECA ISSUES - KM Henderson Facility

1. GW-11 Impoundment Characterization ✓
   - Status, Schedule ✓
2. Groundwater Monitoring Report ✓
   - Status, Comments ✓
3. Comments on Quarterly Reports (submitted 7/28/04) ✓
   - Chromium Remediation Performance Report (semi-annual) ✓
   - Perchlorate Remediation Performance Report (quarterly) ✓
4. Site-related Chemical Report/List ✓
   - Status, schedule ✓
5. Conceptual Site Model ✓
   - Discuss format and scope ✓
   - Comments on the Timet CSM Example ✓
6. Data Quality Objectives
   - Discuss format and Scope
7. Other issues....

REGIONAL ISSUES (if any to discuss)

1. Background Studies
2. Others

SCHEDULE

1. Next deliverables ✓
2. Next Meeting ✓

OTHER ISSUES (if any to discuss)

KERR-MCGEE MEETING WITH NDEP
September 14, 2004

ATTENDEES

Name	Representing	Phone Number
Tom Reed	KM	(405) 270-2654
Ed Krish	KM/ENSR	(405) 359-1604
Susan Crowley	KM	(702) 651-2234
Brian Rakvica	NDEP	702 486 2870
Jeff Johnson	NDEP	~~702~~ 775 687 9377
Dave Gerry	ENSR	805 388-3775
Sally Bloodeau	ENSR	805 388-3775 x 208

9/29

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: September 21, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson

RE: KM Meeting on September 21, 2004 at 9:15 AM

1. Attendance:
   a. NDEP: Todd Croft (via telephone), Sara Piper, Brian Rakvica
   b. KM: Susan Crowley
2. Meeting was held to discuss NDEP concerns regarding quality.
   a. Brian reviewed some of the quality issues in documents that have been submitted by KM/ENSR.
   b. Brian noted the NDEP's desire to work with KM to minimize the number of iterations of documents submitted, however, this requires an increase in document quality.
   c. Discussed schedule as it relates to quality. Susan noted that the CSM and DQOs may have to be delayed. Brian noted that this would be okay and that Susan could follow the standard notification procedure.
   d. Brian also noted the desire to not revisit the same items in every meeting that is held to discuss the ECI process. The NDEP desires to move this process forward and not dwell on issues that have already been covered.
   e. Brian also noted that it is important for ENSR to have specific comments during the meeting or to address these concerns as they arise. If needed, we can revisit these items in summary form during the meetings.
3. Discussed Brian's GW-11 comments.
   a. Susan noted that data was available for the Athens Road and Seep area from ~1998 when the NPDES was issued. Susan noted that Cathy Poole of BWPC used this information to develop the list of analytes for the permit. Brian acknowledged that this information should satisfy his request.

Administrator – Acting
Jolaine Johnson & Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations & Reclamation
Facsimile 684-5259

State of Nevada
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Federal Facilities

Corrective Actions
Facsimile 687-8335

NDEP.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
1771 E. Flamingo Rd. Suite 121-A
Las Vegas, Nevada 89701

September 20, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Characterization of GW-11 Pond Contents
dated September 16, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides comments in Attachment A. The NDEP requests that KM respond to these issues **by October 18, 2004**.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Al Tinney, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

ATTACHMENT A

1. A revised "Sample Collection Procedures" section was provided to the NDEP via electronic mail due to a number of spelling errors in the original version. It should be noted that the corrected version contains four errors (grammatical, spelling and formatting). Quality appears to be a lingering problem on this project and the NDEP requests that KM discuss this issue with their consultants. Please note that Table 1 and the "detailed narrative discussing quality control issues..." have similar errors.
2. In the revised "Sample Collection Procedures" it is stated that uranium, thorium, cyanide, TPH, organophosphorous pesticides, and octachlorostyrene were not included among the analyses. These parameters were all included in Table 1 that was presented to the NDEP at our July 23, 2004 meeting. It is not clear why these parameters were eliminated and why the NDEP was not notified. The NDEP requests that a sample be taken and analyzed for the parameters that were not included.
3. In the narrative from the lab discussing quality control issues it is stated that "the pahs in general may be either biased low or subject to degradation in this sample matrix." Regardless of the grammatical and formatting errors of this sentence, this concerns the NDEP because the detection limits for some of the PAHs are above ARARs or guidance levels; including (but not limited to): benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. There are a number of other chemicals that have detection limits above corresponding ARARs or guidance levels. For example, PCBs (except Aroclor 1016), alpha-BHC, aldrin, beta-BHC, chlordane, etc. were reported with elevated detection limits. KM should be advised that this is an issue that will need to be addressed in the future.
4. The NDEP has comments regarding the analytical data as listed below.
   a. Gross Alpha concentrations must be presented in a summary as Adjusted Gross Alpha for comparison to USEPA MCLs. Also, Radium 226 and 228 concentrations should be presented as combined Radium 226, 228 for comparison to USEPA MCLs.
   b. Given the concentrations of a number of chemicals in the GW-11 pond (gross alpha radionuclides, arsenic, boron, hexavalent chromium, nitrate, and TDS), the NDEP requests that KM sample and analyze a minimum of one representative sample from each of the well fields. This includes the on-site well field, the Athens Road well field, and the Seep Area well field. These samples should be collected in a manner that is representative of the composite flow of each of the well fields. The NDEP requests that these samples be analyzed using the complete analyte list presented in Table 1.

Todd Croft

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Monday, September 20, 2004 3:22 PM
To: Todd Croft
Subject: FW: Landscaping in the COH Expanding WRF Area

Todd,
See my message to Brenda below. We've started to see the impacts of the COH development in the WRF area. We'll minimize the impacts but I wanted to predict the problems before we're blocked in again. Just a FYI. Thanks..

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Crowley, Susan
Sent: Monday, September 20, 2004 3:20 PM
To: Brenda Pohlmann (brenda.pohlmann@cityofhenderson.com)
Cc: Bailey, Keith; Jeff Lambeth (jeffrey.lambeth@VeoliaWaterNA.com)
Subject: Landscaping in the COH Expanding WRF Area

Brenda,
As the COH expands its WRF we're hopeful that we can maintain a continuity of groundwater collection along the Athens Road transect. To do that, we need to fit ourselves into the City's plans. Is there any way we can review the intentions for the area, to see what the future holds for us. This has become most apparent recently ... one of our pumping wells is blocked by landscaping so that we'll be unable to pull the pump when the time comes for maintenance. I suspect that if we can review the City's plans we can predict problems and minimize their impact. Can you point us in the right direction? Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

If you are not the intended recipient of this e-mail message, any use, distribution or copying of the message is prohibited. Please let me know by return e-mail if you received this message by mistake, then delete the e-mail message. Thank you.

Charles Reynolds
Contractor
of Montgomery Watson nearby
For COH
⇒ Mike Nolen

Todd Croft

From: Alan Tinney
Sent: Friday, September 17, 2004 2:31 PM
To: 'Bailey, Keith'
Cc: Todd Croft; Diana Silsby
Subject: RE: Kerr-McGee Bioplant Performance Demonstration Sampling

Keith, I approve your request for the indicated sampling during the Performance Demonstration period of 30 days. Please advise when this Performance Period starts.

If you have any questions, please contact me at (775) 687-9414.

E. Alan Tinney
Supervisor, Permit Branch
Bureau of Water Pollution Control
Nevada Division of Environmental Protection
(775) 687-9414

-----Original Message-----
From: Bailey, Keith [mailto:KBAILEY@KMG.com]
Sent: Friday, September 17, 2004 1:59 PM
To: Alan Tinney
Cc: Crowley, Susan
Subject: Kerr-McGee Bioplant Performance Demonstration Sampling

As we discussed during our conference call yesterday, the Kerr-McGee Chemcal LLC perchlorate biological treatment plant is projected to reach its design capacity in early October 2004. Immediately thereafter, we expect to begin the Performance Demonstration required in our contract with Veolia Water North America (formerly US Filter). Our Demonstration plan requires that a daily plant effluent sample be collected in a single large bottle, receiving input from a rented automatic sampler every 15 minutes. The individual daily samples will be refrigerated, stored and at the end of each week composited to form the weeky composite sample to be shipped to a certified lab for analysis.

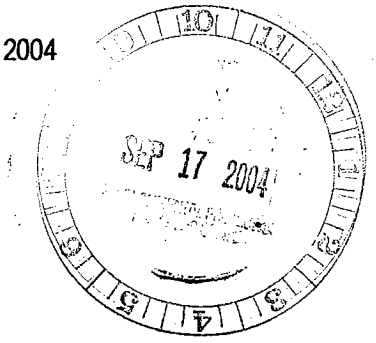
The Kerr-McGee NPDES permit (NV0023060) requires monitoring perchlorate concentrations in our effluent by analyzing "Daily discrete samples, composited weekly". For the period of our Performance Demonstration (completion of which requires 30 consecutive days of operation in compliance with the contract specifications) we request that the daily samples collected using the automated sampler be considered "discrete". Compositing these discrete samples for weekly analysis will allow us to avoid possible confusion in maintaining two sets of daily samples for permit and contractual purposes, along with the increased sampling effort and analytical requirements.

I hope this brief description is sufficient to approve our request. If you have questions or comments, please call me at (405) 270-3651.

Keith Bailey
Director, Waste Minimization
Kerr-McGee Shared Services

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

September 16, 2004



Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Characterization of GW-11 Pond Contents

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) at the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the "Deliverable Schedule", supplied with the second quarter 2004 progress report, Kerr-McGee has characterized the GW-11 pond contents and included that information with this correspondence.

In summary, the pond currently contains water associated with Kerr-McGee perchlorate remedial efforts at the Henderson site. The pond was originally built and placed into service in late 1998, to serve as a repository for on-site groundwater which had been collected and treated for hexavalent chromium reduction. This treated groundwater was then placed into GW-11 pond to await treatment for perchlorate reduction before discharge. At NDEP's request, Kerr-McGee also collected, and placed into GW-11 pond, 35 million gallons of groundwater collected from the "Seep" area. This later collection effort was intended to begin the groundwater capture effort in the "Seep" area, in order to make as immediate an impact as possible on the Las Vegas wash conditions. Kerr-McGee received authorization from NDEP to collect this water and hold it until a treatment technology was in place to reduce the perchlorate content prior to discharge. In addition, there have been several short diversions of the perchlorate remedial process effluent to the pond.

Currently, the contents of this pond make up a very small portion of the feed matrix to the perchlorate remediation process. Note the discharge requirements associated with perchlorate remediation process are covered in NDEP Discharge Permit # NV0023060. The pond water is treated to assure hexavalent chromium, which may have concentrated over time, is removed before the water is directed to the perchlorate remedial process, again as a small part of the overall matrix. Attached please find the Sample Collection Procedures used to collect and analyze for constituents in the pond contents, as well as the analytical data resulting from this sampling effort.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc:

Tom Reed
Don Shandy
Brad Daugherty, AIG
Todd Croft, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Carrie Stowers, CCCP
Rick Stater
Dave Gerry, ENSR
Ed Krish, ENSR
Sally Bilodeau, ENSR
Jeff Johnson, NDEP
Jon Palm, NDEP
Brenda Pohlmann, COH
Jim Najima, NDEP

Attachment 1

Sample Collection Procedures

Sample Collocation Procedures
GW-11 Pond
Kerr-McGee Henderson Facility, Nevada

In response to requests from the Nevada Department of Environmental protection (NDEP) Kerr-McGee collected and analyzed water samples from pond GW-11 in August 2004.

The data required to support the impoundment characterization was identified through the historical land use evaluation and review of previous investigations. During the development of the NPDES permit Kerr-McGee worked closely with NDEP to identify and characterize the waste streams that would be placed in GW-11. Extensive sampling was jointly developed and that program is what has been applied to the GW-11 characterization. In addition Kerr-McGee and NDEP are in the process of developing a list of site related chemicals. This list was also considered in developing of the GW-11 sampling program.

Table 1 Sample Containers, Preservatives and Holding Times, was provided to Mr. Brain Rakvica of the NDEP during the July 23, 2004 meeting at the Henderson Facility. Although not formally reviewed, Mr. Rakvica indicated that the list appeared acceptable. The NDEP was notified regarding the schedule prior to sampling.

Approximately two weeks prior to the sampling event, MHW Laboratories was contacted to provide appropriately sterilized and preserved bottles for the sample collection effort. Dr. Andy Eaton, the project manager, provided the bottle order. Each bottle came pre labeled with the analysis and preservative noted. The bottle order also contained the analysis request which is referenced on the chain of custody documentation.

The sampling bottles were filled from the GW-11 outlet pipe. The VOC bottles were filled with no headspace. When bottles contained preservative they were filled in a manner that headspace remained so that none of the preservative was lost. The bottles were placed in ice chests with blue or wet ice. Packing material was added to minimize the chance of bottle breakage.

The chain of custody accompanied the samples via Federal Express shipment to MHW Laboratories in Monrovia, California. Upon arrival, the samples were logged in and acknowledgement of samples received.

The laboratory report #132038 contains the following items:

1) Group comments that identify variations in the quality control for specific samples.
2) The list of all chemicals and compounds that were detected above the method reporting limit
3) The list of all compounds including tentatively identified compounds that were analyzed

Dr. Eaton also provided a narrative discussion of the quality control issues which is attached.

The analysis was consistent with Table 1 with the exception of uranium, thorium, cyanide, TPH, organophosphorous pesticides and octachlorostyrene. These constituents were not included in the analysis.

Brian Rakvica

From: Bilodeau, Sally [SBilodeau@ensr.com]
Sent: Thursday, September 16, 2004 5:26 PM
To: Brian Rakvica
Cc: Gerry, Dave; 'Crowley, Susan'
Subject: Corrected Sample Collection procedures

<<Sample Collection Procedures GW-11 Aug 3 2004.doc>> Brian,
I am enclosing a corrected version of the sample collection procedures that you will be receiving in the federal express tomorrow. I mistakenly sent Susan Crowley a version that had some spelling errors. Please discard the earlier version. Thanks so much.

Sally Bilodeau, **ENSR** *International*
1220 Avenida Acaso
Camarillo, California 93012-8727
Office: 805 388-3775 X208
Cell: 805 551-0649
Fax: 805 388-3577
e-mail sbilodeau@ensr.com

Sample Collection Procedures
GW-11 Impoundment
Kerr-McGee Henderson Facility, Nevada

In response to requests from the Nevada Division of Environmental Protection (NDEP) Kerr-McGee collected and analyzed water samples from the GW-11 Impoundment (GW-11) in August 2004.

The data required to support the impoundment characterization was identified through an evaluation of the historical land use and a review of previous investigations. During the development of the Kerr-McGee Henderson facility NPDES permit for discharges from its groundwater remediation processes, Kerr-McGee worked closely with NDEP to identify and characterize the waste streams that would be placed in GW-11. An extensive sampling suite was jointly developed and applied to the GW-11 characterization. In addition, Kerr-McGee and NDEP are currently in the process of developing a comprehensive list of site related chemicals as part of the facility environmental conditions assessment (ECA). This site related chemical list was also considered in developing of the GW-11 sampling program.

Table 1 - *Sample Containers, Preservatives and Holding Times*, was provided to Mr. Brian Rakvica of the NDEP during the July 23, 2004 meeting at the Henderson Facility. Although not formally reviewed, Mr. Rakvica indicated that the list appeared acceptable. The NDEP was notified of the sampling schedule prior to the data being collected.

Approximately two weeks prior to the sampling event, MWH Laboratories was contacted to provide appropriately sterilized and preserved bottles for the sample collection effort. Dr. Andy Eaton, the MWH project manager, provided the bottle order. Each bottle was delivered to the KM Henderson facility pre-labeled with the analysis and preservative noted. The bottle order also contained the analysis request which is referenced on the chain of custody documentation.

The sampling bottles were filled from the GW-11 outlet pipe. The VOC bottles were filled with no headspace. Bottles containing a preservative were filled in a manner that headspace remained so that none of the preservative was lost. The bottles were placed in ice chests with blue or wet ice. Packing material was added to minimize the chance of bottle breakage.

The chain of custody accompanied the samples which were shipped via Federal Express to MWH Laboratories in Monrovia, California. Upon arrival, the samples were logged in and acknowledgement of samples returned to the KM Henderson facility.

The MWH laboratory report #132038 contains the following items:

1) Group comments that identify variations in the quality control for specific samples.
2) The list of all chemicals and compounds that were detected above the method reporting limit.
3) The list of all compounds including tentatively identified compounds that were analyzed.

MWH Laboratories also provided a narrative discussion of the quality control issues which is attached.

The analyses conducted were consistent with Table 1 except for uranium, thorium, cyanide, TPH, organophosphorous pesticides and octachlorostyrene, which were not included among the analyses. Why?

Table 1
Sample Containers, Preservatives and Holding Times

Constituent	Test Method	Container	Preservatives	Holding time to extraction
VOCs	8260B or 624	Three 40 ml VOA vials	HCL and ice	14 days
TPH and VOCs	8015M	Three 40 ml VOA vials	ice	7 days
Metals	6000/7000 series as needed	One 500 milliliter plastic bottle	HNO_3	6 months
Metals	200.7, 200.8	One 500 milliliter plastic bottle	HNO_3	6 months
Hexevalent Cr	7196A or 218.6	One 250 milliliter plastic bottle	buffer/ice	24 hours
Mercury	7470/7471A	One 500 milliliter plastic bottle (with metals)	HNO_3	28 days
SVOCs	8270C, 625 or 525	Two 1 liter amber glass bottle	ice	7 days
PAHs	8270C, 8310, 625 or 525	Two 1 liter amber glass bottle	ice	7 days
Cyanide	9010 or 335.3	One 500 milliliter plastic bottle	NaOH and ice	14 days
OPP Pesticides	8141A or 614			40 days
Organocholrine Pesticides	8081A or 608	One 1 liter amber glass bottle	ice	40 days
PCBs	8082 or 608	Two 1 liter amber glass bottle	ice	40 days
Doixins/furans	1613	One 1 liter amber glass bottle	ice	1 year
Herbicides	8151A or 615	Two 1 liter amber glass bottle	Ice	
R226	903.1M	One 1 liter poly (must be full)	HNO_3	
R228	904.2M	Two 1 liter poly (must be full)	HNO_3 and ice	
RAD CWB		Two bottles: one 125 ml poly with no perservative and one 4 ml with HNO_3	HNO_3	
gross alpha	900	Two bottles: one 125 ml poly with no perservative and one 1 liter with HNO_3	HNO_3	
Thorium	EML HASL 300	Ten 1 liter amber glass	none	
Uranium (total)	EML HASL 300 or ASTM D5174 (total) or 200.8	Ten 1 liter amber glass or if sing 200.8 one 500 milliliter plastic bottle	none, if 200.8 HNO_3	
Oil and Grease	1664	Three 1 liter amber glass bottle	HCl and ice	28 days
TDS *	160.1	Two 1 liter plastic bottles	ice	7 days
TSS *	160.2	* Same Bottles	ice	7 days
pH *	150.1	* Same Bottles	ice	24 hours
Chloride *	300	* Same Bottles	ice	28 days
Nitrate as N *	300	* Same Bottles	ice	48 hours
Sulfate *	300	* Same Bottles	ice	28 days
Perchlorate	314	One 125 milliliter plastic bottle	none	28 days
Octachlorostyrene	8270	One 1 liter amber glass bottle	ice	14 days

Detailed narrative discussing the quality control issues with the August 3, 2004 GW-11 water sample from Andy Eaton, Project Manager MHW Labratories
Via e-mail September 16, 2004

The following constituents had one more QC anomalies on the subject report. We have described each anomaly with the implication.

1) Gross alpha and Beta radioactivity - due to high solids a small sample had to be used. This resulted in high reporting limts (MRL) and large counting errors. However the actual results are still well above the MRL

2) COD - the matrix spike recovery was outside of internal MWH Labs limits. There is no direct impact on the data because the result was ND and there is no method required limit and the Lab control standard was acceptable. There is an elevated detection limit for this sample due to the high salt content.

3) Volatile organics - the matrix spike and spike duplicate recovery (using this sample as the matrix spike) was low on vinyl acetate and styrene. LCS recoveries were acceptable so the method is judged to be in control. Results for these two compounds may be biased low. The matrix spike recovery on dichlorodifluoromethane was biased slightly high but as results were non detect there is no impact on that compound.

4) For total suspended solids, the second LCS was recovered slighlty high however because TSS was below the MRL for this sample, there is no impact on the data.

5) Hexavalent chromium was received and analyzed outside of the 24 hour holding time, but within 1 day of receipt - there is no impact expected on the results because EPA is proposing extending the holding time for hexavalent chromium.

6) Semivolatile organics by method 525 - several compounds (Benzo(a)pyrene, hexachlorcyclopentadiene, and simzazine were recovered in the matrix spike and/or matrix spike duplicate (performed on this sample) below method limits. Because LCS recoveries were acceptable the method is shown to be in control. Results for these compounds may be biased low. Because they were all ND, we would recommend elevating the reporting limit for these compounds. Benzo(a)pyrene also had high variability in the matrix spike/spike duplicate and results should be considered semiquantiative. Hexachlorocyclopentadiene and simazine was only slightly below the limits and does not appear to be subject to significant interference. The surrogate standard, perylene d-12 was also below limits in both the MS and the MSD and also in the original sample and had high variability, similar to the benzo(a) pyrene. This suggests that the pahs in general may be either biased low or subject to degradation in this sample matrix.

All other QC were within limits on this sample.

Attachment 2

Analytical Results

C:\Documents and
Settings\zsmc1\My D

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GW-11 Pond
Contents
August 2004

Laboratory Report

for

Kerr McGee Henderson Plant
P.O. Box 55

Henderson , NV 89009

Attention: Susan Crowley
Fax: (702) 651-2310

DATE OF ISSUE
SEP 1 4 2004
MWH LABORATORIES

ACCREDITED IN ACCORDANCE WITH nelac 01114CA

ADE Andy Eaton
Project Manager
Report#132038R replaces the original Report.

Report#: 132038R
CLO4
Revised to add TICs

Laboratory certifies that the test results meet all **NELAC** requirements unless noted in the Comments section or the Case Narrative. Following the cover page are Comments,QC Report,QC Summary,Data Report,Hits Report, totaling 42 page[s].

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Report
Comments
#132038

Group Comments

Analytical results for Oil and Grease by method 413.1 are submitted by Sierra Environmental Monitoring, Reno, NV.
Herbicides analyzed by APPL, Fresno CA
Analytical results for BNA extractables by 625/8270 and Pesticides by 608 submitted by SVL/Anatek Labs.
Report revised to include TICS for 625,525, and 524

(QC Ref#: 2408040106)
Test: 525 Semivolatiles by GC/MS (ML/EPA 525.2)
Perylene-d12(70-130) out of limit
Perylene-d12(70-130) out of limit
Perylene-d12(70-130) out of limit
Result out of limits: @525REG SURR5251 in sample 2408040106
Test: Gross Alpha Radiation (ML/EPA 900.0)
Radiochemistry MRLs are elevated due to high dissolved solid . This will impact the precision and accuracy of the analys is.
Test: Chemical Oxygen Demand (COD) (ML/EPA 410.4)
MB- Matrix spike recovery was below laboratory acceptance limits. Not method requirement but NELAC requirement. Laboratory fortified blank recovery was acceptable.
Test: Hexavalent chromium (Cr VI) (ML/SW 7196)
H3- Sample was received and analyzed past holding time.
Test: Styrene (ML/EPA 624)
M2- Matrix spike recovery was low, the method control sample recovery was acceptable.
Test: Vinyl Acetate (ML/EPA 624)
M2- Matrix spike recovery was low, the method control sample recovery was acceptable.

(QC Ref#: 241682)
Test: Total Suspended Solids (TSS) (ML/EPA 160.2)
QC Type: LCS2
The LCS2 recovery is outside the method limit 80-120%.

(QC Ref#: 241719)
Test: Dichlorodifluoromethane (ML/EPA 524.2)

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QC Type: MS
MS/MSD recoveries are outside the method limit. Please default to LCS recoveries.
Test: Styrene (ML/EPA 624)
QC Type: MS
MS/MSD recoveries are outside the method limit. Please default to LCS recoveries.
QC Type: MSD
MS/MSD recoveries are outside the method limit. Please default to LCS recoveries.
Test: Vinyl Acetate (ML/EPA 624)
QC Type: MS
MS/MSD recoveries are outside the method limit. Please default to LCS recoveries.
QC Type: MSD
MS/MSD recoveries are outside the method limit. Please default to LCS recoveries.

(QC Ref#: 243153)
Test: Benzo(a)pyrene (ML/EPA 525.2)
QC Type: MS
MS/MSD recoveries are biased outside the method limit. Please default to LCS/LCSD recoveries.
QC Type: MSD
MS/MSD recoveries are biased outside the method limit. Please default to LCS/LCSD recoveries.
Test: Hexachlorocyclopentadiene (ML/EPA 525.2)
QC Type: MS
MS/MSD recoveries are biased outside the method limit. Please default to LCS/LCSD recoveries.
QC Type: MSD
MS/MSD recoveries are biased outside the method limit. Please default to LCS/LCSD recoveries.
Test: Simazine (ML/EPA 525.2)
QC Type: MSD
MS/MSD recoveries are biased outside the method limit. Please default to LCS/LCSD recoveries.
Test: Perylene-d12 (SM/EPA 525.2)
QC Type: MS
MS/MSD recoveries are biased outside the method limit.

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Please default to LCS/LCSD recoveries.

QC Type: MSD

MS/MSD recoveries are biased outside the method limit.
Please default to LCS/LCSD recoveries.

(QC Ref#: 243444)

Test: Kjeldahl Nitrogen (ML/EPA 351.2)

QC Type: LCS2

Recovery is within the 90-110%.

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Laboratory Hits Report #132038

Kerr McGee Henderson Plant
Susan Crowley
P.O. Box 55
Henderson , NV 89009

Samples Received
04-aug-2004 11:44:17

Analyzed	Sample#	Sample ID	Result	UNITS	MRL
	2408040106	**GW-11 POND**			
08/20/04		Di(2-Ethylhexyl)phthalate	1.13	ug/l	.600
08/10/04		Dichlorprop	1.9	ug/l	.500
08/16/04		Radium 226	<0.82	pCi/l	.822
08/16/04		Radium 226, Minimal Detectable	0.82	pCi/l	
08/15/04		Radium 228	<1.48	pCi/l	1.480
08/15/04		Radium 228, Minimum Detectable	1.48	pCi/l	
08/24/04		Alpha, Gross	120	pCi/l	40.500
08/24/04		Alpha, Min Detectable Activity	40.5	pCi/l	
08/24/04		Alpha, Two Sigma Error	48	pCi/l	
08/05/04		Bromoform	0.7	ug/l	.500
08/05/04		Chloroform (Trichloromethane)	0.6	ug/l	.500
08/20/04		Ammonia Nitrogen	6.4	mg/l	.500
08/04/04		Apparent Color	100	ACU	12.000
08/17/04		Arsenic III	38	ug/l	5.000
08/18/04		Arsenic, Total, ICAP/MS	77	ug/l	10.000
08/19/04		Barium, Total, ICAP/MS	60	ug/l	20.000
08/04/04		Biochemical Oxygen Demand,Totl	3.19	mg/l	3.000
08/09/04		Boron, Total, ICAP	28	mg/l	.100
08/17/04		Chlorate by IC	7600000	ug/l	******
08/04/04		Chloride	6900	mg/l	******
08/19/04		Chromium, Total, ICAP/MS	1900	ug/l	10.000
08/04/04		Hexavalent chromium (Cr VI)	2.1	mg/l	.250
08/10/04		Lab pH	8.0	Units	.001
08/06/04		Magnesium, Total, ICAP	1000	mg/l	2.000
08/19/04		Manganese, Total, ICAP/MS	110	ug/l	20.000
08/06/04		Metals digestion performed.	Y	Yes/No	
08/19/04		Molybdenum, Total, ICAP/MS	160	ug/l	20.000
08/19/04		Nickel, Total, ICAP/MS	67	ug/l	50.000
08/04/04		Nitrate as Nitrogen by IC	200	mg/l	10.000
08/17/04		PercentUnionized Ammonia 25C	5.26	%	.001
08/12/04		Perchlorate	2300000	ug/l	******

SUMMARY OF POSITIVE DATA ONLY.

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Laboratory Hits Report #132038

Kerr McGee Henderson Plant
Susan Crowley
P.O. Box 55
Henderson , NV 89009

Samples Received
04-aug-2004 11:44:17

Analyzed	Sample#	Sample ID	Result	UNITS	MRL
	2408040106	**GW-11 POND**			
08/06/04		Potassium, Total, ICAP	120	mg/l	20.000
08/06/04		Sodium, Total, ICAP	5000	mg/l	20.000
08/05/04		Strontium, ICAP	45	mg/l	.400
08/04/04		Sulfate	4100	mg/l	******
08/04/04		Surfactants	7.14	mg/l	.500
08/10/04		Total Dissolved Solid (TDS)	30500	mg/l	10.000
08/24/04		Total Inorganic Nitrogen-Calc	206.	mg/l	.200
08/10/04		Total Organic Carbon	5.0	mg/l	1.000
08/19/04		Vanadium, Total, ICAP/MS	87	ug/l	30.000

SUMMARY OF POSITIVE DATA ONLY.

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Laboratory Data Report #132038

Kerr McGee Henderson Plant
Susan Crowley
P.O. Box 55
Henderson , NV 89009

Samples Received
08/04/04

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
GW-11 POND (2408040106) Sampled on 08/03/04 11:00								
08/17/04	08/17/04 00:00	242273	(ML/EPA 200.8)	Arsenic III	38	ug/l	5.0	5
	08/18/04 00:00	242673	(ML/EPA 200.8)	Arsenic, Total, ICAP/MS	77	ug/l	10	10
	08/09/04 00:00	241330	(ML/EPA 200.7)	Boron, Total, ICAP	28	mg/l	0.10	2
	08/19/04 13:56	242751	(ML/EPA 200.8)	Barium, Total, ICAP/MS	60	ug/l	20	10
	08/19/04 13:56	242726	(ML/EPA 200.8)	Beryllium, Total, ICAP/MS	ND	ug/l	10	10
	08/04/04 00:00	241641	(SM5210B 405.1)	Biochemical Oxygen Demand,Totl	3.19	mg/l	3.0	1
	08/04/04 00:00	241639	(ML/SM 5210B)	Carbonaceous BOD	ND	mg/l	3.0	1
	08/19/04 13:56	242746	(ML/EPA 200.8)	Cadmium, Total, ICAP/MS	ND	ug/l	5.0	10
	08/04/04 13:54	240902	(ML/EPA 300)	Chloride	6900	mg/l	100	100
	08/17/04 00:00	242438	(ML/EPA 300.1B)	Chlorate by IC	7600000	ug/l	100000	10000
	08/12/04 00:00	242081	(CADHS/EPA314)	Perchlorate	2300000	ug/l	200000	50000
	08/19/04 12:00	243146	(ML/EPA 410.4)	Chemical Oxygen Demand (COD)	ND(MB)	mg/l	100	1
	08/04/04 00:00	241209	(ML/S2120B)	Apparent Color	100	ACU	12	4
	08/19/04 13:56	242760	(ML/EPA 200.8)	Chromium, Total, ICAP/MS	1900	ug/l	10	10
	08/04/04 17:30	240965	(ML/SW 7196)	Hexavalent chromium (Cr VI)	2.1(H3)	mg/l	0.25	50
	08/19/04 13:56	242769	(ML/EPA 200.8)	Copper, Total, ICAP/MS	ND	ug/l	20	10
	08/06/04 11:09		(EPA 200 Prep)	Metals digestion performed.	Y	Yes/No	0.0000	1
	08/09/04 00:00	241341	(ML/EPA 200.7)	Iron, Total, ICAP	ND	mg/l	0.040	2
	08/11/04 18:23	241708	(ML/EPA 245.1)	Mercury	ND	ug/l	0.20	1
	08/06/04 21:21	241278	(ML/EPA 200.7)	Potassium, Total, ICAP	120	mg/l	20	20
	08/04/04 09:45	240898	(SM5540C/E425.1)	Surfactants	7.14	mg/l	0.50	10
	08/06/04 21:21	241281	(ML/EPA 200.7)	Magnesium, Total, ICAP	1000	mg/l	2.0	20
	08/19/04 13:56	242763	(ML/EPA 200.8)	Manganese, Total, ICAP/MS	110	ug/l	20	10
	08/19/04 13:56	242743	(EPA/ML 200.8)	Molybdenum, Total, ICAP/MS	160	ug/l	20	10
	08/24/04 14:51		(ML/EPA 300.0)	Total Inorganic Nitrogen-Calc	206.	mg/l	0.20	1
	08/06/04 21:21	241283	(ML/EPA 200.7)	Sodium, Total, ICAP	5000	mg/l	20	20
	08/20/04 00:00	243027	(ML/EPA 350.1)	Ammonia Nitrogen	6.4	mg/l	0.50	10
	08/17/04 13:48		(CALC-CRC)	PercentUnionized Ammonia 25C	5.26	%	0.0010	1
	08/19/04 13:56	242768	(ML/EPA 200.8)	Nickel, Total, ICAP/MS	67	ug/l	50	10
	08/04/04 13:54	240904	(ML/EPA 300.0)	Nitrite, Nitrogen by IC	ND	mg/l	10	100
	08/04/04 13:54	240906	(ML/EPA 300.0)	Nitrate as Nitrogen by IC	200	mg/l	10	100
	08/06/04 00:00	241840	(EPA 413.1 (sub)	Oil and Grease (Grav) subbed	ND	mg/l	5.0	1

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Laboratory Data Report #132038

Kerr McGee Henderson Plant
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	08/19/04 13:56	242758	(ML/EPA 200.8)	Lead, Total, ICAP/MS	ND	ug/l	5.0	10
	08/10/04 16:50	241517	(S4500HB/E150.1)	Lab pH	8.0	Units	0.0010	1
	08/09/04 11:30	241421	(ML/EPA 376.2)	Sulfide,Total	ND	mg/l	0.10	1
	08/19/04 13:56	242749	(ML/EPA 200.8)	Antimony, Total, ICAP/MS	ND	ug/l	10	10
	08/19/04 13:56	242736	(ML/EPA 200.8)	Selenium, Total, ICAP/MS	ND	ug/l	50	10
	08/04/04 13:54	240908	(ML/EPA 300.0)	Sulfate	4100	mg/l	200	100
	08/05/04 00:00	240859	(ML/6010-200.7)	Strontium, ICAP	45	mg/l	0.40	40
	08/10/04 22:21	241976	(S4500PE/ 365.1)	Total phosphorus-P	ND	mg/l	0.010	1
08/10/04	08/10/04 13:40	241803	(SM 2540C)	Total Dissolved Solid (TDS)	30500	mg/l	10	1
	08/25/04 14:26	243444	(ML/EPA 351.2)	Kjeldahl Nitrogen	ND	mg/l	0.20	1
	08/19/04 13:56	242755	(ML/EPA 200.8)	Thallium, Total, ICAP/MS	ND	ug/l	10	10
	08/10/04 14:54	241692	(ML/SM 5310C)	Total Organic Carbon	5.0	mg/l	1.0	2
	08/10/04 15:45	241682	(ML/EPA 160.2)	Total Suspended Solids (TSS)	ND	mg/l	10	1
	08/19/04 13:56	242762	(ML/EPA 200.8)	Vanadium, Total, ICAP/MS	87	ug/l	30	10
	08/19/04 13:56	242732	(ML/EPA 200.8)	Zinc, Total, ICAP/MS	ND	ug/l	50	10
				525 Semivolatiles by GC/MS				
08/17/04	08/20/04 18:59	243153	(ML/EPA 525.2)	Atrazine	ND	ug/l	0.050	1
08/17/04	08/20/04 18:59	243153	(ML/EPA 525.2)	Benzo(a)pyrene	ND	ug/l	0.020	1
08/17/04	08/20/04 18:59	243153	(ML/EPA 525.2)	Di(2-Ethylhexyl)phthalate	1.13	ug/l	0.60	1
08/17/04	08/20/04 18:59	243153	(ML/EPA 525.2)	Di-(2-Ethylhexyl)adipate	ND	ug/l	0.60	1
08/17/04	08/20/04 18:59	243153	(ML/EPA 525.2)	Hexachlorobenzene	ND	ug/l	0.050	1
08/17/04	08/20/04 18:59	243153	(ML/EPA 525.2)	Hexachlorocyclopentadiene	ND	ug/l	0.050	1
08/17/04	08/20/04 18:59	243153	(ML/EPA 525.2)	Molinate	ND	ug/l	0.20	1
08/17/04	08/20/04 18:59	243153	(ML/EPA 525.2)	Simazine	ND	ug/l	0.050	1
08/17/04	08/20/04 18:59	243153	(ML/EPA 525.2)	Thiobencarb	ND	ug/l	0.20	1
			(ML/EPA 525.2)	Unknown	0.59	ug/L		1
			(ML/EPA 525.2)	Unknown	1.18	ug/L		1
			(ML/EPA 525.2)	Unknown	1.24	ug/L		1
			(ML/EPA 525.2)	Unknown	4.54	ug/L		1
			(ML/EPA 525.2)	Unknown Chlorinated Carboxylic	1.06	ug/L		1
			(ML/EPA 525.2)	Unknown Decanoic Acid	1.11	ug/L		1
			(ML/EPA 525.2)	Unknown Hexadecanoic Acid	1.08	ug/L		1
			(ML/EPA 525.2)	Unknown Hydrocarbon	0.63	ug/L		1
			(ML/EPA 525.2)	Unknown Hydrocarbon	1.48	ug/L		1
			(ML/EPA 525.2)	Unknown Lumichrome	2.02	ug/L		1

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Laboratory
Data Report
#132038

Kerr McGee Henderson Plant
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
			(ML/EPA 525.2)	Unknown Organic Acid	5.74	ug/L		1
			(ML/EPA 525.2)	Unknown Stigmastadienol	1.01	ug/L		1
			(ML/EPA 525.2)	Unknown Stigmastadienol	2.54	ug/L		1
			(ML/EPA 525.2)	Unknown Triiodomethane	2.98	ug/L		1
			(Surrogate)	1.3-dimethyl-2-nbenz(70-130)	107	% Rec		
			(Surrogate)	Perylene-d12(70-130)	12	% Rec		
			(Surrogate)	Triphenylphosphate(70-130)	103	% Rec		
			Gross Alpha Radiation					
	08/24/04 00:00	243952	(ML/EPA 900.0)	Alpha, Gross	120	pCi/l	40	1
	08/24/04 00:00	243952	(ML/EPA 900.0)	Alpha, Two Sigma Error	48	pCi/l	0.0000	1
	08/24/04 00:00	243952	(ML/EPA 900.0)	Alpha, Min Detectable Activity	40.5	pCi/l	0.0000	1
			Herbicides, Chlorophenoxy					
08/06/04	08/10/04 00:00	243214	(ML/SW 8151A)	2,4,5-T	ND	ug/l	0.10	1
08/06/04	08/10/04 00:00	243214	(ML/SW 8151A)	2,4,5-TP (Silvex)	ND	ug/l	0.10	1
08/06/04	08/10/04 00:00	243214	(ML/SW 8151A)	2,4-D	ND	ug/l	0.50	1
08/06/04	08/10/04 00:00	243214	(ML/SW 8151A)	2,4-DB	ND	ug/l	1.0	1
08/06/04	08/10/04 00:00	243214	(ML/SW 8151A)	Dichlorprop	1.9	ug/l	0.50	1
08/06/04	08/10/04 00:00	243214	(ML/SW 8151A)	Dalapon (Dowpon)	ND	ug/l	1.0	1
08/06/04	08/10/04 00:00	243214	(ML/SW 8151A)	Dicamba	ND	ug/l	0.10	1
08/06/04	08/10/04 00:00	243214	(ML/SW 8151A)	Dinoseb	ND	ug/l	0.25	1
08/06/04	08/10/04 00:00	243214	(ML/EPA 615)	2,4-Dichlorophenylacetic acid	ND	%R	0.0000	1
			(ML/EPA 615)	MCPA	ND	ug/L	100	1
			(ML/EPA 615)	MCPP	ND	ug/L	100	1
			(ML/EPA 615)	Pentachlorophenol(PCP)	ND	ug/L	0.10	1
			(Surrogate)	24-D(57-127)	NA	% Rec		
			Radium 226 (Sub)					
	08/16/04 00:00		(ML/EPA 903.1)	Radium 226	<0.82	pCi/l	0.82	1
	08/16/04 00:00		(ML/EPA 903.1)	Radium 226, Two Sigma Error	NA	pCi/l	0.0000	1
	08/16/04 00:00		(ML/EPA 903.1)	Radium 226, Minimal Detectable	0.82	pCi/l	0.0000	1
			Radium 228 (Sub)					
	08/15/04 00:00		(ML/EPA 904.0)	Radium 228	<1.48	pCi/l	1.5	1
	08/15/04 00:00		(ML/EPA 904.0)	Radium 228, Two Sigma Error	NA	pCi/l	0.0000	1

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#132038

Kerr McGee Henderson Plant
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	08/15/04 00:00		(ML/EPA 904.0)	Radium 228, Minimum Detectable	1.48	pCi/l	0.0000	1
				Subcontracted BNA Extractable				
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	1,2,4-Trichlorobenzene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	1,2-Diphenylhydrazine	NA	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	p-Dichlorobenzene (1,4-DCB)	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2,4,5-Trichlorophenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2,4,6-Trichlorophenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2,4-Dichlorophenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2,4-Dimethylphenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2,4-Dinitrophenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2,4-Dinitrotoluene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2,6-Dinitrotoluene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2-Chloronaphthalene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2-Chlorophenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2-Methylnaphthalene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2-Methylphenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2-Nitroaniline	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	2-Nitrophenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	3,3'-Dichlorobenzidine	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	3-Nitroaniline	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	4,6-Dinitro-o-cresol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	4-Bromophenylphenylether	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	4-Chloroaniline	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	4-Chlorophenylphenylether	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	4-Methylphenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	4-Nitroaniline	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	4-Nitrophenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Acenaphthene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Acenaphthylene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Aniline	NA	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Anthracene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Benzo(a)anthracene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Benzo(a)pyrene	ND	ug/l	0.50	1

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Kerr McGee Henderson Plant
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Benzo(b)fluoranthene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Benzo(g,h,i)perylene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Benzo(k)fluoranthene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	bis(2-Chloroethyl)ether	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	bis(2-Chloroethoxy)methane	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	bis(2-Chloroisopropyl)ether	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Di(2-Ethylhexyl)phthalate	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Butylbenzylphthalate	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Benzidine	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Benzoic Acid	NA	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Benzyl Alcohol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Chrysene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Dibenzo(a,h)anthracene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Dibenzofuran	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Diethylphthalate	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Dimethylphthalate	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Di-n-butylphthalate	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Di-n-octylphthalate	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Fluoranthene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Fluorene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Hexachlorobenzene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Hexachlorobutadiene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Hexachlorocyclopentadiene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Hexachloroethane	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Indeno(1,2,3-c,d)pyrene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Isophorone	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Naphthalene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Nitrobenzene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	N-Nitrosodimethylamine	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	N-Nitrosodi-N-propylamine	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	N-Nitrosodiphenylamine	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	p-Chloro-m-cresol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Pentachlorophenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Phenanthrene	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Phenol	ND	ug/l	0.50	1
08/10/04	08/16/04 00:00		(ML/EPA625/8270)	Pyrene	ND	ug/l	0.50	1

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Kerr McGee Henderson Plant
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
			(ML 625/8270)	1-Hexene,3,4-dimethyl	88	ug/L		1
			(ML 625/8270)	1-Pentene,2,3-dimethyl-	1555	ug/L		1
			(ML 625/8270)	2-Pentene,4-methyl-,(E)	156	ug/L		1
			(ML 625/8270)	2-Propanol,2-methyl	201	ug/L		1
			(ML 625/8270)	3-Butyn-2-ol,2,-methyl	184	ug/L		1
			(ML 625/8270)	3-Hexanol,4-methyl	55	ug/L		1
			(ML 625/8270)	Butane,2,3-dichloro-2-methyl	51	ug/L		1
			(ML 625/8270)	Dichloroiodomethane	75	ug/L		1
			(ML 625/8270)	Ethane, isothiocyanato	3576	ug/L		1
			(ML 625/8270)	Ethane,1,2-diiodo	187	ug/L		1
			(Surrogate)	2,4,6-Tribromophenol(36-141)	67	% Rec		
			(Surrogate)	2-Fluorobiphenyl(40-109)	118	% Rec		
			(Surrogate)	2-Fluorophenol(32-131)	35	% Rec		
			(Surrogate)	Nitrobenzene-d5(45-113)	123	% Rec		
			(Surrogate)	Phenol-d5(50-114)	31	% Rec		
			(Surrogate)	Terphenyl-d14(23-117)	42	% Rec		
				Subcontracted Pesticides/PCBs				
08/10/04	08/11/04 00:00		(ML/EPA 608)	PCB 1016 Aroclor	ND	ug/l	0.50	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	PCB 1221 Aroclor	ND	ug/l	0.50	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	PCB 1232 Aroclor	ND	ug/l	0.50	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	PCB 1242 Aroclor	ND	ug/l	0.50	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	PCB 1248 Aroclor	ND	ug/l	0.50	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	PCB 1254 Aroclor	ND	ug/l	0.50	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	PCB 1260 Aroclor	ND	ug/l	0.50	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Alpha-BHC	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Aldrin	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Beta-BHC	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Chlordane	ND	ug/l	0.50	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Delta-BHC	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	p,p' DDD	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	p,p' DDE	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	p,p' DDT	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Dieldrin	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Endrin Aldehyde	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Endrin Ketone	ND	ug/l	0.050	1

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Kerr McGee Henderson Plant
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
08/10/04	08/11/04 00:00		(ML/EPA 608)	Endrin	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Endosulfan I (alpha)	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Endosulfan II (beta)	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Endosulfan sulfate	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Gamma-BHC	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Heptachlor	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Heptachlor Epoxide	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Methoxychlor	ND	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Mirex	NA	ug/l	0.050	1
08/10/04	08/11/04 00:00		(ML/EPA 608)	Toxaphene	ND	ug/l	0.50	1
			(Surrogate)	Dibutyl Chlorendate(24-150)	NA	% Rec		
			(Surrogate)	Tetrachlorometaxylene(50-150)	NA	% Rec		
			Volatile Organics HSL					
	08/05/04 00:00	241719	(ML/EPA 624)	1,1,2-Trichloroethane (1,1,2-T	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	1,1-Dichloroethylene (1,1DCE)	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	1,1-Dichloroethane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	1,2-Dichloroethane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	1,2-Dichloropropane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	p-Dichlorobenzene (1,4-DCB)	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	2-Butanone (MEK)	ND	ug/l	10	1
	08/05/04 00:00	241719	(ML/EPA 624)	2-Hexanone	ND	ug/l	10	1
	08/05/04 00:00	241719	(ML/EPA 624)	4-Methyl-2-Pentanone (MIBK)	ND	ug/l	10	1
	08/05/04 00:00	241719	(ML/EPA 624)	Acetone	ND	ug/l	10	1
	08/05/04 00:00	241719	(ML/EPA 624)	Acrolein	ND	ug/l	50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Acrylonitrile	ND	ug/l	50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Benzene	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	cis-1,2-Dichloroethene	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Chlorobenzene	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	cis-1,3-Dichloropropene	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Bromoform	0.7	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Chloroform (Trichloromethane)	0.6	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Chloroethane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Carbon disulfide	ND	ug/l	0.50	1

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Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	08/05/04 00:00	241719	(ML/EPA 624)	Carbon Tetrachloride	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Dibromochloromethane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Dichlorobromomethane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Ethyl benzene	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 524.2)	Dichlorodifluoromethane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Methyl Bromide	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Methyl Chloride	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Methylene Chloride	ND	ug/l	3.0	1
	08/05/04 00:00	241719	(ML/EPA 624)	m,p-Xylenes	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	o-Xylene	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Tetrachloroethylene (PCE)	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Styrene	ND(M2)	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	trans-1,2-Dichloroethene	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	1,1,1-Trichloroethane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Trichloroethylene (TCE)	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Trichlorofluoromethane	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	trans-1,3-Dichloropropene	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Tetrahydrofuran	ND	ug/l	10	1
	08/05/04 00:00	241719	(ML/EPA 624)	Toluene	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Vinyl Chloride (VC)	ND	ug/l	0.50	1
	08/05/04 00:00	241719	(ML/EPA 624)	Vinyl Acetate	ND(M2)	ug/l	10	1
			(ML 624/SW 8260)	Unknown Peak	0.9	UG/L		1
			(Surrogate)	1,2-Dichloroethane-d4(80-120)	109	% Rec		
			(Surrogate)	4-Bromofluorobenzene(86-115)	100	% Rec		
			(Surrogate)	Toluene-d8(88-110)	94	% Rec		

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QC Summary
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Kerr McGee Henderson Plant

QC Ref #240859 - Strontium, ICAP **Analysis Date: 08/05/2004**

2408040106 GW-11 POND

QC Ref #240898 - Surfactants **Analysis Date: 08/04/2004**

2408040106 GW-11 POND

QC Ref #240902 - Chloride **Analysis Date: 08/04/2004**

2408040106 GW-11 POND

QC Ref #240904 - Nitrite, Nitrogen by IC **Analysis Date: 08/04/2004**

2408040106 GW-11 POND

QC Ref #240906 - Nitrate as Nitrogen by IC **Analysis Date: 08/04/2004**

2408040106 GW-11 POND

QC Ref #240908 - Sulfate **Analysis Date: 08/04/2004**

2408040106 GW-11 POND

QC Ref #240965 - Hexavalent chromium (Cr VI) **Analysis Date: 08/04/2004**

2408040106 GW-11 POND

QC Ref #241209 - Apparent Color **Analysis Date: 08/04/2004**

2408040106 GW-11 POND

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(continued)

QC Ref #241278 - Potassium, Total, ICAP **Analysis Date: 08/06/2004**

2408040106 GW-11 POND

QC Ref #241281 - Magnesium, Total, ICAP **Analysis Date: 08/06/2004**

2408040106 GW-11 POND

QC Ref #241283 - Sodium, Total, ICAP **Analysis Date: 08/06/2004**

2408040106 GW-11 POND

QC Ref #241330 - Boron, Total, ICAP **Analysis Date: 08/09/2004**

2408040106 GW-11 POND

QC Ref #241341 - Iron, Total, ICAP **Analysis Date: 08/09/2004**

2408040106 GW-11 POND

QC Ref #241421 - Sulfide,Total **Analysis Date: 08/09/2004**

2408040106 GW-11 POND

QC Ref #241517 - Lab pH **Analysis Date: 08/10/2004**

2408040106 GW-11 POND

QC Ref #241639 - Carbonaceous BOD **Analysis Date: 08/04/2004**

2408040106 GW-11 POND

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QC Ref #241641 - Biochemical Oxygen Demand,TotlAnalysis Date: 08/04/2004

2408040106 GW-11 POND

QC Ref #241682 - Total Suspended Solids (TSS) Analysis Date: 08/10/2004

2408040106 GW-11 POND

QC Ref #241692 - Total Organic Carbon Analysis Date: 08/10/2004

2408040106 GW-11 POND

QC Ref #241708 - Mercury Analysis Date: 08/11/2004

2408040106 GW-11 POND

QC Ref #241719 - Volatile Organics HSL Analysis Date: 08/05/2004

2408040106 GW-11 POND

QC Ref #241803 - Total Dissolved Solid (TDS) Analysis Date: 08/10/2004

2408040106 GW-11 POND

QC Ref #241840 - Oil and Grease (Grav) subbed Analysis Date: 08/06/2004

2408040106 GW-11 POND

QC Ref #241976 - Total phosphorus-P Analysis Date: 08/10/2004

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QC Ref #242081 - Perchlorate **Analysis Date: 08/12/2004**

2408040106 GW-11 POND

QC Ref #242273 - Arsenic III **Analysis Date: 08/17/2004**

2408040106 GW-11 POND

QC Ref #242438 - Chlorate by IC **Analysis Date: 08/17/2004**

2408040106 GW-11 POND

QC Ref #242673 - Arsenic, Total, ICAP/MS **Analysis Date: 08/18/2004**

2408040106 GW-11 POND

QC Ref #242726 - Beryllium, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #242732 - Zinc, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #242736 - Selenium, Total, ICAP/MS **Analysis Date: 08/19/2004**

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QC Ref #242743 - Molybdenum, Total, ICAP/MS **Analysis Date: 08/19/2004**

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QC Ref #242746 - Cadmium, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #242749 - Antimony, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #242751 - Barium, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #242755 - Thallium, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #242758 - Lead, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #242760 - Chromium, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #242762 - Vanadium, Total, ICAP/MS **Analysis Date: 08/19/2004**

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QC Ref #242763 - Manganese, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

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Kerr McGee Henderson Plant
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QC Ref #242768 - Nickel, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #242769 - Copper, Total, ICAP/MS **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #243027 - Ammonia Nitrogen **Analysis Date: 08/20/2004**

2408040106 GW-11 POND

QC Ref #243146 - Chemical Oxygen Demand (COD) **Analysis Date: 08/19/2004**

2408040106 GW-11 POND

QC Ref #243153 - 525 Semivolatiles by GC/MS **Analysis Date: 08/20/2004**

2408040106 GW-11 POND

QC Ref #243214 - Herbicides, Chlorophenoxy **Analysis Date: 08/10/2004**

2408040106 GW-11 POND

QC Ref #243444 - Kjeldahl Nitrogen **Analysis Date: 08/25/2004**

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QC Ref #243952 - Gross Alpha Radiation **Analysis Date: 08/24/2004**

2408040106 GW-11 POND
2408040106 GW-11 POND

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QC Report
#132038

Kerr McGee Henderson Plant

QC Ref #240859 Strontium, ICAP

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Strontium, ICAP	1.0	1.00	MGL	100.0	(70-130)	
LCS2	Strontium, ICAP	1.0	0.995	MGL	99.5	(70-130)	0.50
MBLK	Strontium, ICAP	ND	<0.010	MGL			
MS	Strontium, ICAP	1.0	0.964	MGL	96.4	(70-130)	
MSD	Strontium, ICAP	1.0	0.970	MGL	97.0	(70-130)	0.62

QC Ref #240898 Surfactants

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	08030158	MGL		(0-0)	
LCS1	Surfactants	0.20	0.211	MGL	105.5	(90-110)	
LCS2	Surfactants	0.20	0.206	MGL	103.0	(90-110)	2.4
MBLK	Surfactants	ND	<0.050	MGL			
MS	Surfactants	0.20	0.189	MGL	94.5	(80-120)	
MSD	Surfactants	0.20	0.175	MGL	87.5	(80-120)	7.7

QC Ref #240902 Chloride

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Chloride	25	24.8	MGL	99.2	(90-110)	
LCS2	Chloride	25	24.7	MGL	98.8	(90-110)	0.40
MBLK	Chloride	ND	<1.0	MGL			
MS	Chloride	25	25.3	MGL	101.2	(80-120)	
MSD	Chloride	25	25.3	MGL	101.2	(80-120)	0.00

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Kerr McGee Henderson Plant
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QC Ref #240904 Nitrite, Nitrogen by IC

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Nitrite, Nitrogen by IC	1.0	1.07	MGL	107.0	(90-110)	
LCS2	Nitrite, Nitrogen by IC	1.0	1.06	MGL	106.0	(90-110)	0.94
MBLK	Nitrite, Nitrogen by IC	ND	<0.10	MGL			
MS	Nitrite, Nitrogen by IC	1.0	1.1	MGL	110.0	(80-120)	
MSD	Nitrite, Nitrogen by IC	1.0	1.04	MGL	104.0	(80-120)	5.6

QC Ref #240906 Nitrate as Nitrogen by IC

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Nitrate as Nitrogen by IC	2.5	2.49	MGL	99.6	(90-110)	
LCS2	Nitrate as Nitrogen by IC	2.5	2.47	MGL	98.8	(90-110)	0.81
MBLK	Nitrate as Nitrogen by IC	ND	<0.10	MGL			
MS	Nitrate as Nitrogen by IC	2.5	2.39	MGL	95.6	(80-120)	
MSD	Nitrate as Nitrogen by IC	2.5	2.4	MGL	96.0	(80-120)	0.42

QC Ref #240908 Sulfate

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Sulfate	50	49	MGL	98.0	(90-110)	
LCS2	Sulfate	50	48.6	MGL	97.2	(90-110)	0.82
MBLK	Sulfate	ND	<2.0	MGL			
MS	Sulfate	50	47.4	MGL	94.8	(80-120)	
MSD	Sulfate	50	47.5	MGL	95.0	(80-120)	0.21

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Kerr McGee Henderson Plant
(continued)

QC Ref #240965 Hexavalent chromium (Cr VI)

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Hexavalent chromium (Cr VI)	0.050	0.049	MGL	98.0	(85-115)	
LCS2	Hexavalent chromium (Cr VI)	0.050	0.049	MGL	98.0	(85-115)	0.00
MBLK	Hexavalent chromium (Cr VI)	ND	<0.005	MGL			
MS--2408040151	Hexavalent chromium (Cr VI)	0.050	0.048	MGL	96.0	(70-130)	
MSD--2408040151	Hexavalent chromium (Cr VI)	0.050	0.049	MGL	98.0	(70-130)	

QC Ref #241209 Apparent Color

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
DUP	Apparent Color	ND	ND	ACU		(0-20)	

QC Ref #241278 Potassium, Total, ICAP

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Potassium, Total, ICAP	20	18.8	MGL	94.0	(85-115)	
LCS2	Potassium, Total, ICAP	20	19.2	MGL	96.0	(85-115)	2.1
MBLK	Potassium, Total, ICAP	ND	<1.0	MGL			
MS	Potassium, Total, ICAP	20	19	MGL	95.0	(70-130)	
MSD	Potassium, Total, ICAP	20	19	MGL	95.0	(70-130)	0.00

QC Ref #241281 Magnesium, Total, ICAP

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Magnesium, Total, ICAP	20	19.1	MGL	95.5	(85-115)	
LCS2	Magnesium, Total, ICAP	20	19.4	MGL	97.0	(85-115)	1.6
MBLK	Magnesium, Total, ICAP	ND	<0.10	MGL			
MS	Magnesium, Total, ICAP	20	19.1	MGL	95.5	(70-130)	
MSD	Magnesium, Total, ICAP	20	19.2	MGL	96.0	(70-130)	0.52

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QC Ref #241283 Sodium, Total, ICAP

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Sodium, Total, ICAP	50	46	MGL	92.0	(85-115)	
LCS2	Sodium, Total, ICAP	50	47.1	MGL	94.2	(85-115)	2.4
MBLK	Sodium, Total, ICAP	ND	<1.0	MGL			
MS	Sodium, Total, ICAP	50	46.3	MGL	92.6	(70-130)	
MSD	Sodium, Total, ICAP	50	45.5	MGL	91.0	(70-130)	1.7

QC Ref #241330 Boron, Total, ICAP

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	08030214	MGL		(0-0)	
LCS1	Boron, Total, ICAP	0.5	0.515	MGL	103.0	(85-115)	
LCS2	Boron, Total, ICAP	0.5	0.502	MGL	100.4	(85-115)	2.6
MBLK	Boron, Total, ICAP	ND	<0.050	MGL			
MS	Boron, Total, ICAP	0.5	0.475	MGL	95.0	(70-130)	
MSD	Boron, Total, ICAP	0.5	0.506	MGL	101.2	(70-130)	6.3

QC Ref #241341 Iron, Total, ICAP

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Iron, Total, ICAP	5.0	5.03	MGL	100.6	(85-115)	
MBLK	Iron, Total, ICAP	ND	<0.020	MGL			
MS	Iron, Total, ICAP	5.0	4.84	MGL	96.8	(70-130)	
MSD	Iron, Total, ICAP	5.0	4.97	MGL	99.4	(70-130)	2.7

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Kerr McGee Henderson Plant
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QC Ref #241421 Sulfide,Total

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	08040455	MGL		(0-0)	
LCS1	Sulfide,Total	0.5	0.450	MGL	90.0	(90-110)	
LCS2	Sulfide,Total	0.5	0.501	MGL	100.2	(90-110)	11
MBLK	Sulfide,Total	ND	<0.10	MGL			
MS	Sulfide,Total	0.5	0.487	MGL	97.4	(80-120)	
MSD	Sulfide,Total	0.5	0.500	MGL	100.0	(80-120)	2.6

QC Ref #241517 Lab pH

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
DUP	Lab pH	7.5	7.5	UNIT		(0-20)	0.0

QC Ref #241639 Carbonaceous BOD

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Carbonaceous BOD	198	190	MGL	96.0	(85-115)	
MBLK	Carbonaceous BOD	ND	<3.0	MGL			

QC Ref #241641 Biochemical Oxygen Demand,Totl

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Biochemical Oxygen Demand,Totl	198	190	MGL	96.0	(85-115)	
MBLK	Biochemical Oxygen Demand,Totl	ND	<3.0	MGL			

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QC Ref #241682 Total Suspended Solids (TSS)

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	08040465	MGL		(0-0)	
LCS1	Total Suspended Solids (TSS)	175	186	MGL	106.3	(80-120)	
LCS2	Total Suspended Solids (TSS)	175	220	MGL	125.7	(80-120)	17
MBLK	Total Suspended Solids (TSS)	ND	<10	MGL			

QC Ref #241692 Total Organic Carbon

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	08060287	MGL		(0-0)	
LCS1	Total Organic Carbon	0.5	0.504	MGL	100.8	(50-150)	
LCS2	Total Organic Carbon	4.5	4.28	MGL	95.1	(90-110)	
MBLK	Total Organic Carbon	ND	<0.50	MGL			
MS	Total Organic Carbon	4.0	3.90	MGL	97.5	(90-110)	
MSD	Total Organic Carbon	4.0	3.89	MGL	97.2	(90-110)	0.26

QC Ref #241708 Mercury

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	08030032	UGL		(0-0)	
LCS1	Mercury	1.50	1.58	UGL	105.3	(85-115)	
LCS2	Mercury	1.50	1.59	UGL	106.0	(85-115)	0.63
MBLK	Mercury	ND	<0.20	UGL			
MS	Mercury	1.50	1.60	UGL	106.7	(70-130)	
MSD	Mercury	1.50	1.59	UGL	106.0	(70-130)	0.63

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QC Ref #241719 Volatile Organics HSL

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	1,1,2-Trichloroethane (1,1,2-T	4.0	3.96	UGL	99.0	(52-150)	
LCS2	1,1,2-Trichloroethane (1,1,2-T	4.0	4.00	UGL	100.0	(52-150)	1.0
MBLK	1,1,2-Trichloroethane (1,1,2-T	ND	<0.50	UGL			
MS	1,1,2-Trichloroethane (1,1,2-T	10	11.0	UGL	110.0	(52-150)	
MSD	1,1,2-Trichloroethane (1,1,2-T	10	10.9	UGL	109.0	(52-150)	0.91
LCS1	1,1-Dichloroethylene (1,1DCE)	4.0	3.95	UGL	98.8	(0-234)	
LCS2	1,1-Dichloroethylene (1,1DCE)	4.0	3.98	UGL	99.5	(0-234)	0.76
MBLK	1,1-Dichloroethylene (1,1DCE)	ND	<0.50	UGL			
MS	1,1-Dichloroethylene (1,1DCE)	10	10.2	UGL	102.0	(0-234)	
MSD	1,1-Dichloroethylene (1,1DCE)	10	10.1	UGL	101.0	(0-234)	0.99
LCS1	1,1-Dichloroethane	4.0	4.35	UGL	108.7	(59-155)	
LCS2	1,1-Dichloroethane	4.0	4.26	UGL	106.5	(59-155)	2.1
MBLK	1,1-Dichloroethane	ND	<0.50	UGL			
MS	1,1-Dichloroethane	10	10.7	UGL	107.0	(59-155)	
MSD	1,1-Dichloroethane	10	10.4	UGL	104.0	(59-155)	2.8
LCS1	o-Dichlorobenzene (1,2-DCB)	4.0	4.26	UGL	106.5	(18-190)	
LCS2	o-Dichlorobenzene (1,2-DCB)	4.0	4.14	UGL	103.5	(18-190)	2.9
MBLK	o-Dichlorobenzene (1,2-DCB)	ND	<0.50	UGL			
MS	o-Dichlorobenzene (1,2-DCB)	10	10.1	UGL	101.0	(18-190)	
MSD	o-Dichlorobenzene (1,2-DCB)	10	10.3	UGL	103.0	(18-190)	2.0
LCS1	1,2-Dichloroethane	4.0	4.28	UGL	107.0	(49-155)	
LCS2	1,2-Dichloroethane	4.0	4.33	UGL	108.2	(49-155)	1.2
MBLK	1,2-Dichloroethane	ND	<0.50	UGL			
MS	1,2-Dichloroethane	10	10.7	UGL	107.0	(49-155)	
MSD	1,2-Dichloroethane	10	10.6	UGL	106.0	(49-155)	0.94
LCS1	1,2-Dichloropropane	4.0	4.14	UGL	103.5	(0-210)	
LCS2	1,2-Dichloropropane	4.0	4.15	UGL	103.8	(0-210)	0.24
MBLK	1,2-Dichloropropane	ND	<0.50	UGL			
MS	1,2-Dichloropropane	10	10.6	UGL	106.0	(0-210)	
MSD	1,2-Dichloropropane	10	10.5	UGL	105.0	(0-210)	0.95
LCS1	m-Dichlorobenzene (1,3-DCB)	4.0	4.21	UGL	105.2	(59-156)	

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LCS2	m-Dichlorobenzene (1,3-DCB)	4.0	4.38	UGL	109.5	(59-156)	4.0
MBLK	m-Dichlorobenzene (1,3-DCB)	ND	<0.50	UGL			
MS	m-Dichlorobenzene (1,3-DCB)	10	9.75	UGL	97.5	(59-156)	
MSD	m-Dichlorobenzene (1,3-DCB)	10	9.98	UGL	99.8	(59-156)	2.3
LCS1	p-Dichlorobenzene (1,4-DCB)	4.0	4.23	UGL	105.8	(18-190)	
LCS2	p-Dichlorobenzene (1,4-DCB)	4.0	4.25	UGL	106.2	(18-190)	0.47
MBLK	p-Dichlorobenzene (1,4-DCB)	ND	<0.50	UGL			
MS	p-Dichlorobenzene (1,4-DCB)	10	9.40	UGL	94.0	(18-190)	
MSD	p-Dichlorobenzene (1,4-DCB)	10	9.71	UGL	97.1	(18-190)	3.2
LCS1	2-Butanone (MEK)	40	39.6	UGL	99.0	(64-138)	
LCS2	2-Butanone (MEK)	40	40.1	UGL	100.2	(64-138)	1.3
MBLK	2-Butanone (MEK)	ND	<10	UGL			
MS	2-Butanone (MEK)	100	99.8	UGL	99.8	(49-168)	
MSD	2-Butanone (MEK)	100	103	UGL	103.0	(49-168)	3.2
LCS1	2-Hexanone	40	35.1	UGL	87.8	(65-134)	
LCS2	2-Hexanone	40	37.9	UGL	94.8	(65-134)	7.7
MBLK	2-Hexanone	ND	<10	UGL			
MS	2-Hexanone	100	108	UGL	108.0	(45-175)	
MSD	2-Hexanone	100	111	UGL	111.0	(45-175)	2.7
LCS1	4-Methyl-2-Pentanone (MIBK)	40	37.4	UGL	93.5	(72-136)	
LCS2	4-Methyl-2-Pentanone (MIBK)	40	41.3	UGL	103.2	(72-136)	9.9
MBLK	4-Methyl-2-Pentanone (MIBK)	ND	<10	UGL			
MS	4-Methyl-2-Pentanone (MIBK)	100	111	UGL	111.0	(60-166)	
MSD	4-Methyl-2-Pentanone (MIBK)	100	115	UGL	115.0	(60-166)	3.5
MS	Spiked sample	Lab # 24	08040106	NONE		(0-0)	
LCS1	Acetone	40	38.4	UGL	96.0	(49-147)	
LCS2	Acetone	40	37.1	UGL	92.8	(49-147)	3.4
MBLK	Acetone	ND	<10	UGL			
MS	Acetone	100	87.7	UGL	87.7	(29-196)	
MSD	Acetone	100	90.1	UGL	90.1	(29-196)	2.7
LCS1	Benzene	4.0	4.13	UGL	103.2	(35-151)	
LCS2	Benzene	4.0	4.08	UGL	102.0	(35-151)	1.2
MBLK	Benzene	ND	<0.50	UGL			
MS	Benzene	10	10.5	UGL	105.0	(35-151)	
MSD	Benzene	10	10.5	UGL	105.0	(35-151)	0.00
LCS1	cis-1,2-Dichloroethene	4.0	4.16	UGL	104.0	(87-117)	

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Kerr McGee Henderson Plant
(continued)

LCS2	cis-1,2-Dichloroethene	4.0	4.15	UGL	103.8	(87-117)	0.24
MBLK	cis-1,2-Dichloroethene	ND	<0.50	UGL			
MS	cis-1,2-Dichloroethene	10	10.7	UGL	107.0	(89-120)	
MSD	cis-1,2-Dichloroethene	10	10.4	UGL	104.0	(89-120)	2.8
LCS1	Chlorobenzene	4.0	4.02	UGL	100.5	(37-160)	
LCS2	Chlorobenzene	4.0	4.10	UGL	102.5	(37-160)	2.0
MBLK	Chlorobenzene	ND	<0.50	UGL			
MS	Chlorobenzene	10	10.5	UGL	105.0	(37-160)	
MSD	Chlorobenzene	10	10.7	UGL	107.0	(37-160)	1.9
LCS1	cis-1,3-Dichloropropene	4.0	4.06	UGL	101.5	(0-227)	
LCS2	cis-1,3-Dichloropropene	4.0	3.93	UGL	98.2	(0-227)	3.3
MBLK	cis-1,3-Dichloropropene	ND	<0.50	UGL			
MS	cis-1,3-Dichloropropene	10	10.2	UGL	102.0	(0-227)	
MSD	cis-1,3-Dichloropropene	10	10.2	UGL	102.0	(0-227)	0.00
LCS1	Bromoform	4.0	4.23	UGL	105.8	(45-169)	
LCS2	Bromoform	4.0	4.30	UGL	107.5	(45-169)	1.6
MBLK	Bromoform	ND	<0.50	UGL			
MS	Bromoform	10	10.6	UGL	106.0	(45-169)	
MSD	Bromoform	10	11.1	UGL	111.0	(45-169)	4.6
LCS1	Chloroform (Trichloromethane)	4.0	4.38	UGL	109.5	(51-138)	
LCS2	Chloroform (Trichloromethane)	4.0	4.38	UGL	109.5	(51-138)	0.00
MBLK	Chloroform (Trichloromethane)	ND	<0.50	UGL			
MS	Chloroform (Trichloromethane)	10	11.0	UGL	110.0	(51-138)	
MSD	Chloroform (Trichloromethane)	10	10.7	UGL	107.0	(51-138)	2.8
LCS1	Chloroethane	4.0	4.19	UGL	104.8	(14-230)	
LCS2	Chloroethane	4.0	4.09	UGL	102.2	(14-230)	2.4
MBLK	Chloroethane	ND	<0.50	UGL			
MS	Chloroethane	10	10.5	UGL	105.0	(14-230)	
MSD	Chloroethane	10	10.4	UGL	104.0	(14-230)	0.96
LCS1	Carbon disulfide	4.0	4.68	UGL	117.0	(66-138)	
LCS2	Carbon disulfide	4.0	4.53	UGL	113.2	(66-138)	3.3
MBLK	Carbon disulfide	ND	<0.50	UGL			
MS	Carbon disulfide	10	10.7	UGL	107.0	(67-149)	
MSD	Carbon disulfide	10	10.5	UGL	105.0	(67-149)	1.9
LCS1	Carbon Tetrachloride	4.0	4.13	UGL	103.2	(70-140)	
LCS2	Carbon Tetrachloride	4.0	4.21	UGL	105.2	(70-140)	1.9

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Kerr McGee Henderson Plant
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MBLK	Carbon Tetrachloride	ND	<0.50	UGL			
MS	Carbon Tetrachloride	10	11.3	UGL	113.0	(70-140)	
MSD	Carbon Tetrachloride	10	10.9	UGL	109.0	(70-140)	3.6
LCS1	Dibromochloromethane	4.0	4.01	UGL	100.2	(53-149)	
LCS2	Dibromochloromethane	4.0	4.09	UGL	102.2	(53-149)	2.0
MBLK	Dibromochloromethane	ND	<0.50	UGL			
MS	Dibromochloromethane	10	11.2	UGL	112.0	(53-149)	
MSD	Dibromochloromethane	10	11.1	UGL	111.0	(53-149)	0.90
LCS1	Dichlorobromomethane	4.0	4.08	UGL	102.0	(35-155)	
LCS2	Dichlorobromomethane	4.0	4.09	UGL	102.2	(35-155)	0.24
MBLK	Dichlorobromomethane	ND	<0.50	UGL			
MS	Dichlorobromomethane	10	10.8	UGL	108.0	(35-155)	
MSD	Dichlorobromomethane	10	10.6	UGL	106.0	(35-155)	1.9
LCS1	Ethyl benzene	4.0	3.85	UGL	96.2	(37-162)	
LCS2	Ethyl benzene	4.0	3.87	UGL	96.8	(37-162)	0.52
MBLK	Ethyl benzene	ND	<0.50	UGL			
MS	Ethyl benzene	10	10.5	UGL	105.0	(37-162)	
MSD	Ethyl benzene	10	10.6	UGL	106.0	(37-162)	0.95
LCS1	Dichlorodifluoromethane	4.0	3.97	UGL	99.2	(57-123)	
LCS2	Dichlorodifluoromethane	4.0	3.83	UGL	95.8	(57-123)	3.6
MBLK	Dichlorodifluoromethane	ND	<0.50	UGL			
MS	Dichlorodifluoromethane	10	11.2	UGL	112.0	(69-111)	
MSD	Dichlorodifluoromethane	10	10.8	UGL	108.0	(69-111)	3.6
LCS1	Methyl Bromide	4.0	4.32	UGL	108.0	(39-163)	
LCS2	Methyl Bromide	4.0	4.22	UGL	105.5	(39-163)	2.3
MBLK	Methyl Bromide	ND	<0.50	UGL			
MS	Methyl Bromide	10	10.3	UGL	103.0	(9-171)	
MSD	Methyl Bromide	10	10.6	UGL	106.0	(9-171)	2.9
LCS1	Methyl Chloride	4.0	3.91	UGL	97.8	(51-145)	
LCS2	Methyl Chloride	4.0	4.02	UGL	100.5	(51-145)	2.8
MBLK	Methyl Chloride	ND	<0.50	UGL			
MS	Methyl Chloride	10	10.8	UGL	108.0	(2-222)	
MSD	Methyl Chloride	10	10.8	UGL	108.0	(2-222)	0.00
LCS1	Methylene Chloride	4.0	4.18	UGL	104.5	(0-221)	
LCS2	Methylene Chloride	4.0	4.30	UGL	107.5	(0-221)	2.8
MBLK	Methylene Chloride	ND	<3.0	UGL			

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MS	Methylene Chloride	10	10.2	UGL	102.0	(0-221)	
MSD	Methylene Chloride	10	10.4	UGL	104.0	(0-221)	1.9
LCS1	m,p-Xylenes	8.0	7.96	UGL	99.5	(92-115)	
LCS2	m,p-Xylenes	8.0	7.89	UGL	98.6	(92-115)	0.88
MBLK	m,p-Xylenes	ND	<0.50	UGL			
MS	m,p-Xylenes	20	14.9	UGL	74.5	(43-155)	
MSD	m,p-Xylenes	20	12.3	UGL	61.5	(43-155)	19
LCS1	o-Xylene	4.0	3.88	UGL	97.0	(91-114)	
LCS2	o-Xylene	4.0	3.84	UGL	96.0	(91-114)	1.0
MBLK	o-Xylene	ND	<0.50	UGL			
MS	o-Xylene	10	10.1	UGL	101.0	(44-162)	
MSD	o-Xylene	10	10.3	UGL	103.0	(44-162)	2.0
LCS1	1,1,2,2-Tetrachloroethane	4.0	4.06	UGL	101.5	(46-157)	
LCS2	1,1,2,2-Tetrachloroethane	4.0	4.09	UGL	102.2	(46-157)	0.74
MBLK	1,1,2,2-Tetrachloroethane	ND	<0.50	UGL			
MS	1,1,2,2-Tetrachloroethane	10	10.4	UGL	104.0	(46-157)	
MSD	1,1,2,2-Tetrachloroethane	10	10.5	UGL	105.0	(46-157)	0.96
LCS1	Tetrachloroethylene (PCE)	4.0	4.39	UGL	109.7	(54-148)	
LCS2	Tetrachloroethylene (PCE)	4.0	4.33	UGL	108.2	(54-148)	1.4
MBLK	Tetrachloroethylene (PCE)	ND	<0.50	UGL			
MS	Tetrachloroethylene (PCE)	10	11.4	UGL	114.0	(54-148)	
MSD	Tetrachloroethylene (PCE)	10	11.1	UGL	111.0	(54-148)	2.7
LCS1	Styrene	4.0	3.85	UGL	96.2	(83-115)	
LCS2	Styrene	4.0	3.78	UGL	94.5	(83-115)	1.8
MBLK	Styrene	ND	<0.50	UGL			
MS	Styrene	10	0.40	UGL	4.0	(80-123)	
MSD	Styrene	10	0.38	UGL	3.8	(80-123)	5.1
LCS1	1,2-dichloroethane-d4	100	100	%R	100.0	(77-121)	
LCS2	1,2-dichloroethane-d4	100	103	%R	103.0	(77-121)	3.0
MBLK	1,2-dichloroethane-d4	100	102	%R	102.0		
MS	1,2-dichloroethane-d4	100	105	%R	105.0	(77-121)	
MSD	1,2-dichloroethane-d4	100	104	%R	104.0	(77-121)	0.96
LCS1	Toluene-d8	100	100	%R	100.0	(91-107)	
LCS2	Toluene-d8	100	102	%R	102.0	(91-107)	2.0
MBLK	Toluene-d8	100	97	%R	97.0		
MS	Toluene-d8	100	103	%R	103.0	(91-107)	

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MSD	Toluene-d8	100	102	%R	102.0	(91-107)	0.98
LCS1	4-Bromofluorobenzene	100	103	%R	103.0	(82-117)	
LCS2	4-Bromofluorobenzene	100	109	%R	109.0	(82-117)	5.7
MBLK	4-Bromofluorobenzene	100	100	%R	100.0		
MS	4-Bromofluorobenzene	100	94	%R	94.0	(82-117)	
MSD	4-Bromofluorobenzene	100	96	%R	96.0	(82-117)	2.1
LCS1	trans-1,2-Dichloroethene	4.0	4.31	UGL	107.7	(54-156)	
LCS2	trans-1,2-Dichloroethene	4.0	4.18	UGL	104.5	(54-156)	3.1
MBLK	trans-1,2-Dichloroethene	ND	<0.50	UGL			
MS	trans-1,2-Dichloroethene	10	10.5	UGL	105.0	(54-156)	
MSD	trans-1,2-Dichloroethene	10	10.3	UGL	103.0	(54-156)	1.9
LCS1	1,1,1-Trichloroethane	4.0	4.27	UGL	106.7	(52-162)	
LCS2	1,1,1-Trichloroethane	4.0	4.24	UGL	106.0	(52-162)	0.71
MBLK	1,1,1-Trichloroethane	ND	<0.50	UGL			
MS	1,1,1-Trichloroethane	10	11.2	UGL	112.0	(52-162)	
MSD	1,1,1-Trichloroethane	10	10.9	UGL	109.0	(52-162)	2.7
LCS1	Trichloroethylene (TCE)	4.0	4.25	UGL	106.2	(71-157)	
LCS2	Trichloroethylene (TCE)	4.0	4.28	UGL	107.0	(71-157)	0.70
MBLK	Trichloroethylene (TCE)	ND	<0.50	UGL			
MS	Trichloroethylene (TCE)	10	11.1	UGL	111.0	(71-157)	
MSD	Trichloroethylene (TCE)	10	10.8	UGL	108.0	(71-157)	2.7
LCS1	Trichlorofluoromethane	4.0	3.93	UGL	98.2	(17-181)	
LCS2	Trichlorofluoromethane	4.0	3.89	UGL	97.2	(17-181)	1.0
MBLK	Trichlorofluoromethane	ND	<0.50	UGL			
MS	Trichlorofluoromethane	10	11.3	UGL	113.0	(17-181)	
MSD	Trichlorofluoromethane	10	11.0	UGL	110.0	(17-181)	2.7
LCS1	trans-1,3-Dichloropropene	4.0	3.98	UGL	99.5	(17-183)	
LCS2	trans-1,3-Dichloropropene	4.0	3.93	UGL	98.2	(17-183)	1.3
MBLK	trans-1,3-Dichloropropene	ND	<0.50	UGL			
MS	trans-1,3-Dichloropropene	10	10.9	UGL	109.0	(17-183)	
MSD	trans-1,3-Dichloropropene	10	10.9	UGL	109.0	(17-183)	0.00
LCS1	Tetrahydrofuran	40	39.5	UGL	98.8	(73-137)	
LCS2	Tetrahydrofuran	40	42.1	UGL	105.2	(73-137)	6.4
MBLK	Tetrahydrofuran	ND	<10	UGL			
MS	Tetrahydrofuran	100	109	UGL	109.0	(44-162)	
MSD	Tetrahydrofuran	100	112	UGL	112.0	(44-162)	2.7

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LCS1	Toluene	4.0	3.99	UGL	99.8	(47-150)	
LCS2	Toluene	4.0	3.96	UGL	99.0	(47-150)	0.75
MBLK	Toluene	ND	<0.50	UGL			
MS	Toluene	10	10.6	UGL	106.0	(47-150)	
MSD	Toluene	10	10.5	UGL	105.0	(47-150)	0.95
LCS1	Vinyl Chloride (VC)	4.0	3.94	UGL	98.5	(0-251)	
LCS2	Vinyl Chloride (VC)	4.0	3.85	UGL	96.2	(0-251)	2.3
MBLK	Vinyl Chloride (VC)	ND	<0.50	UGL			
MS	Vinyl Chloride (VC)	10	10.3	UGL	103.0	(0-251)	
MSD	Vinyl Chloride (VC)	10	9.98	UGL	99.8	(0-251)	3.2
LCS1	Vinyl Acetate	20	19.9	UGL	99.5	(58-140)	
LCS2	Vinyl Acetate	20	16.5	UGL	82.5	(58-140)	19
MBLK	Vinyl Acetate	ND	<10	UGL			
MS	Vinyl Acetate	50	6.31	UGL	12.6	(58-140)	
MSD	Vinyl Acetate	50	6.16	UGL	12.3	(58-140)	2.4

QC Ref #241803 Total Dissolved Solid (TDS)

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	08030317	MGL		(0-0)	
DUP	Total Dissolved Solid (TDS)	400	396	MGL		(0-10)	1.0
LCS1	Total Dissolved Solid (TDS)	175	180	MGL	102.9	(85-115)	
LCS2	Total Dissolved Solid (TDS)	700	702	MGL	100.3	(85-115)	
MBLK	Total Dissolved Solid (TDS)	ND	<10	MGL			

QC Ref #241976 Total phosphorus-P

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	08040314	MGL		(0-0)	
LCS1	Total phosphorus-P	0.4	0.370	MGL	92.5	(90-110)	
LCS2	Total phosphorus-P	0.4	0.390	MGL	97.5	(90-110)	5.3
MBLK	Total phosphorus-P	ND	<0.010	MGL			
MS	Total phosphorus-P	0.4	0.380	MGL	95.0	(90-110)	
MSD	Total phosphorus-P	0.4	0.370	MGL	92.5	(90-110)	2.7

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RPD_LCS	Total phosphorus-P	92.500	97.500	MGL	5.3	(0-10)
RPD_MS	Total phosphorus-P	95.000	92.500	MGL	2.7	(0-10)

QC Ref #242081 Perchlorate

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	08050242	UGL		(0-0)	
LCS1	Perchlorate	25.0	25.0	UGL	100.0	(85-115)	
LCS2	Perchlorate	25.0	25.0	UGL	100.0	(85-115)	0.00
MBLK	Perchlorate	ND	<4.0	UGL			
MS	Perchlorate	25.0	25.0	UGL	100.0	(70-130)	
MSD	Perchlorate	25.0	25.0	UGL	100.0	(70-130)	0.00

QC Ref #242273 Arsenic III

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Arsenic III	0.02	0.0197	UGL	98.5	(85-115)	
LCS2	Arsenic III	0.02	0.0197	UGL	98.5	(85-115)	0.00
MBLK	Arsenic III	ND	<1.0	UGL			

QC Ref #242438 Chlorate by IC

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Chlorate by IC	200	194	UGL	97.0	(75-125)	
LCS2	Chlorate by IC	200	193	UGL	96.5	(75-125)	0.52
MBLK	Chlorate by IC	ND	<10	UGL			
MS	Chlorate by IC	100	95	UGL	95.0	(75-125)	
MSD	Chlorate by IC	100	95	UGL	95.0	(75-125)	0.00

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Kerr McGee Henderson Plant
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QC Ref #242673 Arsenic, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07230072	UGL		(0-0)	
LCS1	Arsenic, Total, ICAP/MS	20	19.2	UGL	96.0	(85-115)	
LCS2	Arsenic, Total, ICAP/MS	20	19.7	UGL	98.5	(85-115)	2.6
MBLK	Arsenic, Total, ICAP/MS	ND	<1.0	UGL			
MS	Arsenic, Total, ICAP/MS	20	19.1	UGL	95.5	(70-130)	
MSD	Arsenic, Total, ICAP/MS	20	18.4	UGL	92.0	(70-130)	3.7

QC Ref #242726 Beryllium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Beryllium, Total, ICAP/MS	5.00	5.01	UGL	100.2	(85-115)	
LCS2	Beryllium, Total, ICAP/MS	5.00	5.14	UGL	102.8	(85-115)	2.6
MBLK	Beryllium, Total, ICAP/MS	ND	<1.0	UGL			
MS	Beryllium, Total, ICAP/MS	5.00	4.94	UGL	98.8	(85-115)	
MSD	Beryllium, Total, ICAP/MS	5.00	4.93	UGL	98.6	(85-115)	0.20

QC Ref #242732 Zinc, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Zinc, Total, ICAP/MS	100	99.1	UGL	99.1	(85-115)	
LCS2	Zinc, Total, ICAP/MS	100	99.5	UGL	99.5	(85-115)	0.40
MBLK	Zinc, Total, ICAP/MS	ND	<5.0	UGL			
MS	Zinc, Total, ICAP/MS	100	98.2	UGL	98.2	(70-130)	
MSD	Zinc, Total, ICAP/MS	100	77.7	UGL	77.7	(70-130)	23

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Kerr McGee Henderson Plant
(continued)

QC Ref #242736 Selenium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Selenium, Total, ICAP/MS	20	19.2	UGL	96.0	(85-115)	
LCS2	Selenium, Total, ICAP/MS	20	19.6	UGL	98.0	(85-115)	2.1
MBLK	Selenium, Total, ICAP/MS	ND	<5.0	UGL			
MS	Selenium, Total, ICAP/MS	20	19.9	UGL	99.5	(70-130)	
MSD	Selenium, Total, ICAP/MS	20	18.6	UGL	93.0	(70-130)	6.8

QC Ref #242743 Molybdenum, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Molybdenum, Total, ICAP/MS	100	94.2	UGL	94.2	(85-115)	
LCS2	Molybdenum, Total, ICAP/MS	100	95.7	UGL	95.7	(85-115)	1.6
MBLK	Molybdenum, Total, ICAP/MS	ND	<2.0	UGL			
MS	Molybdenum, Total, ICAP/MS	100	92.9	UGL	92.9	(70-130)	
MSD	Molybdenum, Total, ICAP/MS	100	89.8	UGL	89.8	(70-130)	3.4

QC Ref #242746 Cadmium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Cadmium, Total, ICAP/MS	20	19.1	UGL	95.5	(85-115)	
LCS2	Cadmium, Total, ICAP/MS	20	19.4	UGL	97.0	(85-115)	1.6
MBLK	Cadmium, Total, ICAP/MS	ND	<0.50	UGL			
MS	Cadmium, Total, ICAP/MS	20	18.5	UGL	92.5	(70-130)	
MSD	Cadmium, Total, ICAP/MS	20	17.7	UGL	88.5	(70-130)	4.4

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Kerr McGee Henderson Plant
(continued)

QC Ref #242749 Antimony, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Antimony, Total, ICAP/MS	50	50	UGL	100.0	(85-115)	
LCS2	Antimony, Total, ICAP/MS	50	51.4	UGL	102.8	(85-115)	2.8
MBLK	Antimony, Total, ICAP/MS	ND	<1.0	UGL			
MS	Antimony, Total, ICAP/MS	50	50.2	UGL	100.4	(70-130)	
MSD	Antimony, Total, ICAP/MS	50	48	UGL	96.0	(70-130)	4.5

QC Ref #242751 Barium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Barium, Total, ICAP/MS	100	92.8	UGL	92.8	(85-115)	
LCS2	Barium, Total, ICAP/MS	100	95.1	UGL	95.1	(85-115)	2.4
MBLK	Barium, Total, ICAP/MS	ND	<2.0	UGL			
MS	Barium, Total, ICAP/MS	100	99.4	UGL	99.4	(70-130)	
MSD	Barium, Total, ICAP/MS	100	92.3	UGL	92.3	(70-130)	7.4

QC Ref #242755 Thallium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Thallium, Total, ICAP/MS	20.0	18.8	UGL	94.0	(85-115)	
LCS2	Thallium, Total, ICAP/MS	20.0	19.2	UGL	96.0	(85-115)	2.1
MBLK	Thallium, Total, ICAP/MS	ND	<1.0	UGL			
MS	Thallium, Total, ICAP/MS	20.0	19	UGL	95.0	(70-130)	
MSD	Thallium, Total, ICAP/MS	20.0	18.4	UGL	92.0	(70-130)	3.2

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Kerr McGee Henderson Plant
(continued)

QC Ref #242758 Lead, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Lead, Total, ICAP/MS	20	20.3	UGL	101.5	(85-115)	
LCS2	Lead, Total, ICAP/MS	20	20.9	UGL	104.5	(85-115)	2.9
MBLK	Lead, Total, ICAP/MS	ND	<0.50	UGL			
MS	Lead, Total, ICAP/MS	20	20	UGL	100.0	(70-130)	
MSD	Lead, Total, ICAP/MS	20	19.3	UGL	96.5	(70-130)	3.6

QC Ref #242760 Chromium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Chromium, Total, ICAP/MS	100	91.3	UGL	91.3	(85-115)	
LCS2	Chromium, Total, ICAP/MS	100	94.9	UGL	94.9	(85-115)	3.9
MBLK	Chromium, Total, ICAP/MS	ND	<1.0	UGL			
MS	Chromium, Total, ICAP/MS	100	95.8	UGL	95.8	(70-130)	
MSD	Chromium, Total, ICAP/MS	100	90.5	UGL	90.5	(70-130)	5.7

QC Ref #242762 Vanadium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Vanadium, Total, ICAP/MS	100	93.3	UGL	93.3	(85-115)	
LCS2	Vanadium, Total, ICAP/MS	100	95.8	UGL	95.8	(85-115)	2.6
MBLK	Vanadium, Total, ICAP/MS	ND	<3.0	UGL			
MS	Vanadium, Total, ICAP/MS	100	101	UGL	101.0	(70-130)	
MSD	Vanadium, Total, ICAP/MS	100	97.6	UGL	97.6	(70-130)	3.4

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Kerr McGee Henderson Plant
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QC Ref #242763 Manganese, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Manganese, Total, ICAP/MS	50	47.7	UGL	95.4	(85-115)	
LCS2	Manganese, Total, ICAP/MS	50	48.9	UGL	97.8	(85-115)	2.5
MBLK	Manganese, Total, ICAP/MS	ND	<2.0	UGL			
MS	Manganese, Total, ICAP/MS	50	46.9	UGL	93.8	(70-130)	
MSD	Manganese, Total, ICAP/MS	50	45.1	UGL	90.2	(70-130)	3.9

QC Ref #242768 Nickel, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Nickel, Total, ICAP/MS	50	47.1	UGL	94.2	(85-115)	
LCS2	Nickel, Total, ICAP/MS	50	48.9	UGL	97.8	(85-115)	3.7
MBLK	Nickel, Total, ICAP/MS	ND	<5.0	UGL			
MS	Nickel, Total, ICAP/MS	50	43.4	UGL	86.8	(70-130)	
MSD	Nickel, Total, ICAP/MS	50	42.1	UGL	84.2	(70-130)	3.0

QC Ref #242769 Copper, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	07310072	UGL		(0-0)	
LCS1	Copper, Total, ICAP/MS	100	93.6	UGL	93.6	(85-115)	
LCS2	Copper, Total, ICAP/MS	100	96.9	UGL	96.9	(85-115)	3.5
MBLK	Copper, Total, ICAP/MS	ND	<2.0	UGL			
MS	Copper, Total, ICAP/MS	100	93.8	UGL	93.8	(70-130)	
MSD	Copper, Total, ICAP/MS	100	86.8	UGL	86.8	(70-130)	7.8

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Kerr McGee Henderson Plant
(continued)

QC Ref #243027 Ammonia Nitrogen

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	08030018	MGL		(0-0)	
LCS1	Ammonia Nitrogen	1.00	0.996	MGL	99.6	(90-110)	
LCS2	Ammonia Nitrogen	1.00	0.99	MGL	99.0	(90-110)	0.60
MBLK	Ammonia Nitrogen	ND	<0.050	MGL			
MS	Ammonia Nitrogen	1.00	0.94	MGL	94.0	(90-110)	
MSD	Ammonia Nitrogen	1.00	0.934	MGL	93.4	(90-110)	0.64

QC Ref #243146 Chemical Oxygen Demand (COD)

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Chemical Oxygen Demand (COD)	250	249	MGL	99.6	(90-110)	
LCS2	Chemical Oxygen Demand (COD)	250	247	MGL	98.8	(90-110)	0.81
MBLK	Chemical Oxygen Demand (COD)	ND	<5.0	MGL			

QC Ref #243153 525 Semivolatiles by GC/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Atrazine	2	2.17	UGL	108.5	(70-130)	
LCS2	Atrazine	2	2.14	UGL	107.0	(70-130)	1.4
MBLK	Atrazine	ND	<0.050	UGL			
MS	Atrazine	2	1.71	UGL	85.5	(70-130)	
MSD	Atrazine	2	1.58	UGL	79.0	(70-130)	7.9
RPD_LCS	Atrazine	108.500	107.000	UGL	1.4	(0-20)	
RPD_MS	Atrazine	85.500	79.000	UGL	7.9	(0-20)	
LCS1	Benzo(a)pyrene	2	2.08	UGL	104.0	(70-130)	
LCS2	Benzo(a)pyrene	2	2.13	UGL	106.5	(70-130)	2.4
MBLK	Benzo(a)pyrene	ND	<0.020	UGL			
MS	Benzo(a)pyrene	2	0.24	UGL	12.0	(70-130)	
MSD	Benzo(a)pyrene	2	0.96	UGL	48.0	(70-130)	120

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RPD_LCS	Benzo(a)pyrene	104.000	106.500	UGL	2.4	(0-20)	
RPD_MS	Benzo(a)pyrene	12.000	48.000	UGL	120.0	(0-20)	
LCS1	Di(2-Ethylhexyl)phthalate	2	2.15	UGL	107.5	(70-130)	
LCS2	Di(2-Ethylhexyl)phthalate	2	2.30	UGL	115.0	(70-130)	6.7
MBLK	Di(2-Ethylhexyl)phthalate	ND	<0.60	UGL			
MS	Di(2-Ethylhexyl)phthalate	2	2.24	UGL	112.0	(70-130)	
MSD	Di(2-Ethylhexyl)phthalate	2	2.00	UGL	100.0	(70-130)	11
RPD_LCS	Di(2-Ethylhexyl)phthalate	107.500	115.000	UGL	6.7	(0-20)	
RPD_MS	Di(2-Ethylhexyl)phthalate	112.000	100.000	UGL	11.3	(0-20)	
LCS1	Di-(2-Ethylhexyl)adipate	2	2.20	UGL	110.0	(70-130)	
LCS2	Di-(2-Ethylhexyl)adipate	2	2.13	UGL	106.5	(70-130)	3.2
MBLK	Di-(2-Ethylhexyl)adipate	ND	<0.60	UGL			
MS	Di-(2-Ethylhexyl)adipate	2	1.73	UGL	86.5	(70-130)	
MSD	Di-(2-Ethylhexyl)adipate	2	1.52	UGL	76.0	(70-130)	13
RPD_LCS	Di-(2-Ethylhexyl)adipate	110.000	106.500	UGL	3.2	(0-20)	
RPD_MS	Di-(2-Ethylhexyl)adipate	86.500	76.000	UGL	12.9	(0-20)	
LCS1	Hexachlorobenzene	2	2.03	UGL	101.5	(70-130)	
LCS2	Hexachlorobenzene	2	2.02	UGL	101.0	(70-130)	0.49
MBLK	Hexachlorobenzene	ND	<0.050	UGL			
MS	Hexachlorobenzene	2	2.26	UGL	113.0	(70-130)	
MSD	Hexachlorobenzene	2	2.01	UGL	100.5	(70-130)	12
RPD_LCS	Hexachlorobenzene	101.500	101.000	UGL	0.5	(0-20)	
RPD_MS	Hexachlorobenzene	113.000	100.500	UGL	11.7	(0-20)	
LCS1	Hexachlorocyclopentadiene	2	1.64	UGL	82.0	(70-130)	
LCS2	Hexachlorocyclopentadiene	2	1.61	UGL	80.5	(70-130)	1.8
MBLK	Hexachlorocyclopentadiene	ND	<0.050	UGL			
MS	Hexachlorocyclopentadiene	2	1.37	UGL	68.5	(70-130)	
MSD	Hexachlorocyclopentadiene	2	1.27	UGL	63.5	(70-130)	7.6
RPD_LCS	Hexachlorocyclopentadiene	82.000	80.500	UGL	1.8	(0-20)	
RPD_MS	Hexachlorocyclopentadiene	68.500	63.500	UGL	7.6	(0-20)	
LCS1	Molinate	2	2.04	UGL	102.0	(70-130)	
LCS2	Molinate	2	2.08	UGL	104.0	(70-130)	1.9
MBLK	Molinate	ND	<0.20	UGL			
MS	Molinate	2	1.88	UGL	94.0	(70-130)	
MSD	Molinate	2	2.20	UGL	110.0	(70-130)	16
RPD_LCS	Molinate	102.000	104.000	UGL	1.9	(0-20)	

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RPD_MS	Molinate	94.000	110.000	UGL	15.7	(0-20)	
LCS1	Simazine	2	2.04	UGL	102.0	(70-130)	
LCS2	Simazine	2	2.10	UGL	105.0	(70-130)	2.9
MBLK	Simazine	ND	<0.050	UGL			
MS	Simazine	2	1.47	UGL	73.5	(70-130)	
MSD	Simazine	2	1.35	UGL	67.5	(70-130)	8.5
RPD_LCS	Simazine	102.000	105.000	UGL	2.9	(0-20)	
RPD_MS	Simazine	73.500	67.500	UGL	8.5	(0-20)	
LCS1	Perylene-d12	100	101	%R	101.0	(70-130)	
LCS2	Perylene-d12	100	100	%R	100.0	(70-130)	1.00
MBLK	Perylene-d12	100	93	%R	93.0		
MS	Perylene-d12	100	15	%R	15.0	(70-130)	
MSD	Perylene-d12	100	47	%R	47.0	(70-130)	103
LCS1	1,3-dimethyl-2-nitrobenzene	100	100	%R	100.0	(70-130)	
LCS2	1,3-dimethyl-2-nitrobenzene	100	101	%R	101.0	(70-130)	1.00
MBLK	1,3-dimethyl-2-nitrobenzene	100	104	%R	104.0		
MS	1,3-dimethyl-2-nitrobenzene	100	101	%R	101.0	(70-130)	
MSD	1,3-dimethyl-2-nitrobenzene	100	98	%R	98.0	(70-130)	3.0
LCS1	Triphenylphosphate	100	110	%R	110.0	(70-130)	
LCS2	Triphenylphosphate	100	109	%R	109.0	(70-130)	0.91
MBLK	Triphenylphosphate	100	106	%R	106.0		
MS	Triphenylphosphate	100	102	%R	102.0	(70-130)	
MSD	Triphenylphosphate	100	100	%R	100.0	(70-130)	2.0
LCS1	Thiobencarb	2	2.08	UGL	104.0	(70-130)	
LCS2	Thiobencarb	2	2.08	UGL	104.0	(70-130)	0.00
MBLK	Thiobencarb	ND	<0.20	UGL			
MS	Thiobencarb	2	1.78	UGL	89.0	(70-130)	
MSD	Thiobencarb	2	1.97	UGL	98.5	(70-130)	10
RPD_LCS	Thiobencarb	104.000	104.000	UGL	0.0	(0-20)	
RPD_MS	Thiobencarb	89.000	98.500	UGL	10.1	(0-20)	

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Kerr McGee Henderson Plant
(continued)

QC Ref #243444 Kjeldahl Nitrogen

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	08110348	MGL		(0-0)	
LCS1	Kjeldahl Nitrogen	4	4.00	MGL	100.0	(90-110)	
LCS2	Kjeldahl Nitrogen	4	4.40	MGL	110.0	(90-110)	9.5
MBLK	Kjeldahl Nitrogen	ND	<0.20	MGL			
MS	Kjeldahl Nitrogen	4	4.03	MGL	100.8	(90-110)	
MSD	Kjeldahl Nitrogen	4	4.01	MGL	100.2	(90-110)	0.50
RPD_LCS	Kjeldahl Nitrogen	100.000	110.000	MGL	9.5	(0-20)	
RPD_MS	Kjeldahl Nitrogen	100.750	100.250	MGL	0.5	(0-10)	

QC Ref #243952 Gross Alpha Radiation

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Alpha, Gross	39.5	34.7	PCIL	87.8	(80-120)	
LCS2	Alpha, Gross	39.5	34.6	PCIL	87.6	(80-120)	0.29
MBLK	Alpha, Gross	ND	<3.0	PCIL			
MS	Alpha, Gross	131	119	PCIL	90.8	(80-120)	

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Tentatively Identified Compounds
EPA 8270C/625
Sample: 2408040106 SVL JOB# 113146
Lab#: 04X1980-01
Report Date: 9/13/04
Analysis Date: 8/16/04
Internal Standard Reference: Phenanthrene-d10
Internal Standard Area: 2774823
Internal Standard Equivalent Concentration (ppb): 25

Compound	*CAS*	*Area*	*Approximate Concentration (ug/L)*
Ethane, isothiocyanato	542-85-8	396956043	3576
1-Pentene, 2,3-dimethyl-	3404-72-6	172569181	1555
2-Propanol, 2-methyl	75-65-0	22303628	201
Ethane, 1,2-diiodo	624-73-7	20748134	187
3-Butyn-2-ol, 2,-methyl	115-19-5	20463873	184
2-Pentene, 4-methyl-, (E)	674-76-0	17284453	156
1-Hexene, 3,4-dimethyl	16745-94-1	9722745	88
Dichloroiodomethane	594-04-7	8344105	75
3-Hexanol, 4-methyl	615-29-2	6109089	55
Butane, 2,3-dichloro-2-methyl	507-45-9	5704376	51

Dennis Fagel
626/386.1095

Thank You.

Approved by: John Colt

09/24/04
TCroft

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: September 16, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Meeting on September 16, 2004 at 1:30 PM via telephone

1. Attendance:
   a. NDEP: Todd Croft, Alan Tinney, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Reviewed FBR system operations.
   a. System is currently receiving 45 gpm of the blended water from the GWTS and the GW-11 pond. 20 gpm of GW-11 pond water is being put into the blend and approximately 58 gpm of GWTS water. 45 gpm of this is forwarded to the FBR whereas the remaining 33 gpm is recycled to the GW-11 pond.
   b. Influent concentration is approximately 155-163 ppm perchlorate.
   c. Equalization tanks are still being filled and should be full by the end of tomorrow.
   d. KM hopes to continue to ramp up and be using approximately 50 gpm of the blend water by next week.
   e. In general, KM has been seeing ND in their discharge. There have been occasional spikes up to approximately 180 ppb when the influent to the FBR has been modified. Monthly average for last month is approx. 45 ppb.
   f. Detection limits have varied from ~2.5 ppb to ~16 ppb.
   g. KM noted that Veolia now has an IC on site for perchlorate analysis.
   h. KM noted that the hydrogen peroxide system is still operating in manual mode. KM will work to switch this to an auto mode.
   i. KM noted that it will be a few weeks before revised P&IDs are generated and submitted to Nadir.
   j. KM noted that the static mixer has been installed and is working well.
3. Discussed permit.
   a. KM requested that (during the performance test) they be allowed to submit a composite sample instead of a grab sample for perchlorate analysis. This composite would consist of grab samples collected every 15 minutes through out the day.
   b. Alan Tinney to review and discuss with KM tomorrow.
4. Discussed NDEP observations.

a. Discharge contains a few solids but is clear. Discharge appears clear once it reaches the culvert area.

5. Discussed discharge relocation. KM noted that they are still pursuing this with BOR.
6. Discussed DO concentrations.
   a. DO has been 3-4 mg/L at the end of pipe and decreases through the swamp area. Also, DO is greater at the beginning of the pipe and decreases throughout the length of the pipe.
   b. KM to provide updates on bi-weekly calls and written updates to Todd monthly.
7. Next meeting: Thursday, September 29, 2004 at 1:30 PM. Call-in number to be provided.

Todd Croft

From: Brian Rakvica
Sent: Friday, September 24, 2004 7:10 AM
To: Todd Croft; Jennifer Carr; Jeff Johnson; Jim Najima; Jon Palm; Alan Tinney; Leo Drozdoff; Valerie King
Subject: KM mtg notes from 9/16/04

All,

attached are the above for your use

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

Administrator – Acting
Jolaine Johnson & Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations & Reclamation
Facsimile 684-5259

State of Nevada
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Federal Facilities

Corrective Actions
Facsimile 687-8335

NDEP.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
1771 E. Flamingo Rd. Suite 121-A
Las Vegas, Nevada 89701

September 16, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Kerr-McGee Groundwater Monitoring Summary- Revision 1
dated September 13, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and finds that the document is acceptable. Please provide updated versions of this document (as needed) with the quarterly ECI progress reports. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

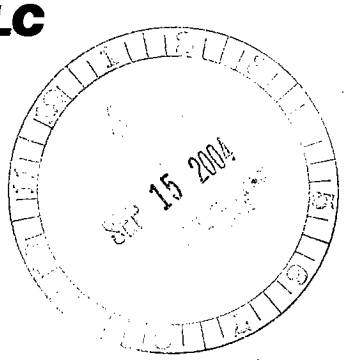
Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

September 13, 2004



Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee Groundwater Monitoring Summary – Revision 1

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) at the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the "Deliverable Schedule", supplied with the second quarter 2004 progress report, Kerr-McGee submitted a *Groundwater Monitoring Summary* dated August 10, 2004 to your office. We received your comments, dated August 11, 2004, related to this document and have revised the *Groundwater Monitoring Summary* accordingly. Attached please find the revised document.

As with the earlier version, this summary includes groundwater monitoring which is directed by several vehicles, including a Consent Order and a UIC permit (issued by NDEP). In addition, Kerr-McGee also has summarized groundwater monitoring which is being conducted in support of the perchlorate remedial project. This later summary is modified as needed to provide the hydrogeologists the information needed for an evaluation of the remedial system performance.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

CERTIFIED MAIL

7000 1670 0002 1246 1346

Cc: Tom Reed
Richard Waters
Brad Daugherty, AIG
Todd Croft, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Carrie Stowers, CCCP
Rick Stater
Dave Gerry, ENSR
Ed Krish, ENSR
Sally Bilodeau, ENSR
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Jim Najima, NDEP
Jon Palm, NDEP

Attachment 1

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Groundwater Monitoring Summary

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KERR-McGEE GROUNDWATER MONITORING SUMMARY revision: September 9, 2004			CONSENT ORDER - APPENDIX D GROUNDWATER MONITORING (1987) Monitoring upgradient and downgradient to track water quality changes				CONSENT ORDER - APPENDIX J GROUNDWATER MONITORING (1987) Monitoring a north-south line of wells to track water quality across facility		UIC Permit 98203 (modified 12-29-98)/ UNEV #94218 Underground Injection Control Permit Monitoring to evaluate groundwater quality and elevation a the facility		Perchlorate Remediation Groundwater Monitoring Plan February 5, 2003		Additional KM Monitoring - Input to Remediation Evaluation Reports	
Count	Well	Location	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters
1	M-5A	Landfill - Upgradient											Annual (subsequent as needed)	Landfill Closure Plan Required Analytes
2	M6-A	Landfill - Downgradient											Annual (subsequent as needed)	Landfill Closure Plan Required Analytes
3	M-7B	Landfill - Downgradient											Annual (subsequent as needed)	Landfill Closure Plan Required Analytes
4	H-28A	Landfill - Downgradient											Annual (subsequent as needed)	Landfill Closure Plan Required Analytes
5	M-10	Facility Upgradient - S of Unit 4			Monthly	Water Level	Quarterly	Total Cr, water level	Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4	Quarterly	NV0023060 analytes
6	M-11	CO Upgradient - near source - N of Unit 5			Monthly	Water Level	Quarterly	Total Cr, water level	Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4		
7	M-12A	CO Upgradient - N of Unit 4							Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4		
8	M-13	N of Unit 3									Annual	ClO_4	Annual	pH, SpCd, total Cr
9	M-14	CO Upgradient	Quarterly	SpCd, pH, total Cr							Quarterly	ClO_4		
10	M-15	CO Upgradient	Quarterly	SpCd, pH, total Cr										
11	M-17A	Upgradient of AP-2											Quarterly	pH, SpCd, total Cr
12	M-18	CO Upgradient	Quarterly	SpCd, pH, total Cr	Monthly	Water Level								
13	M-19				Monthly	Water Level							Quarterly	pH, SpCd, total Cr
14	M-22A	CO Upgradient	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4		
15	M-23	CO Downgradient, N of berm			Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
16	M-25	CO Upgradient, Downgradient of AP1,2,3 and 4, crossgradient AP 5 & 6	Quarterly	SpCd, pH, total Cr	Monthly	Water Level	Quarterly	Water level	Quarterly	Water Level	Quarterly	ClO_4		
17	M-27	CO Downgradient - N of recharge							Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4		
18	M-31A	CO Upgradient					Quarterly	Water level						
19	M-32	Tails Pile Area									Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
20	M-35	Mn-1 Area											Annual	pH, SpCd, total Cr
21	M-36	CO Upgradient - south of interceptor	Quarterly	SpCd, pH, total Cr	Monthly	Water Level	Quarterly	Total Cr, water level	Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4		
22	M-37	CO Upgradient - south of new D-1	Quarterly	SpCd, pH, total Cr	Monthly	Water Level			Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4		
23	M-38	CO Upgradient	Quarterly	SpCd, pH, total Cr	Monthly	Water Level			Quarterly	Water level	Quarterly	ClO_4		
24	M-39	CO Upgradient			Monthly	Water Level	Quarterly	Water level			Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
25	M-44	N of NV Pickapart			Monthly	Water Level			Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4		
26	M-48	Potter area			Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
27	M-50	N of Chemstar			Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
28	M-52	E of Chemstar									Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
29	M-53	Vicinity of interception system	Quarterly	Water level										
30	M-55	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
31	M-56	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
32	M-58	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
33	M-60	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
34	M-61	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
35	M-64	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
36	M-65	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
37	M-66	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
38	M-67	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
39	M-68	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
40	M-69	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
41	M-70	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
42	M-71	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
43	M-72	Vicinity of interception system - between interceptor and recharge	Quarterly	Water level	Monthly	Water Level	Quarterly	Total Cr			Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
44	M-73	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
45	M-74	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
46	M-76	Vicinity of interception system									Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
47	M-78	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level								
48	M-79	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
49	M-80	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level	Quarterly	Water level	Quarterly	Water level				
50	M-81A	Treating Vicinity	Quarterly	Water level			Quarterly	Water level			Quarterly	ClO_4		
51	M-83	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Monthly	ClO_4	Quarterly	pH, SpCd, total Cr
52	M-84	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level	Quarterly	Water level	Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4		
53	M-85	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
54	M-86	CO Downgradient - N of recharge	Quarterly	SpCd, pH, total Cr, water level	Monthly	Water Level	Quarterly	Total Cr, water level	Quarterly	Water level	Quarterly	ClO_4		
55	M-87	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level					Monthly	ClO_4	Quarterly	pH, SpCd, total Cr
56	M-88	Vicinity of interception system	Quarterly	Water level	Monthly	Water Level	Quarterly	Total Cr, water level			Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
57	M-89	Downgradient AP-1, 2, 3 & 4, and crossgradient AP5, Upgradient AP6			Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
58	M-94	N of NV Pickapart							Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4	Monthly	Water level
59	M-96	N of NV Pickapart							Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4	Quarterly on Analyses, Monthly on water level	pH, SpCd, total Cr Water Level
60	M-98	N of Unit 1							Quarterly	Water level	Quarterly	ClO_4	Quarterly on Analyses, Monthly on water level	pH, SpCd, total Cr Water Level
61	M-99	N of Unit 1							Quarterly	Water level	Quarterly	ClO_4	Quarterly on Analyses, Monthly on water level	pH, SpCd, total Cr Water Level
62	M-100	N of berm							Quarterly	pH, SpCd, Total Cr, Cr+6, ClO_4 (Na + NH4), TDS	Quarterly	ClO_4	Quarterly on Analyses, Monthly on water level	pH, SpCd, total Cr Water Level

KERR-McGEE GROUNDWATER MONITORING SUMMARY revision: September 9, 2004			CONSENT ORDER - APPENDIX D GROUNDWATER MONITORING (1987) Monitoring upgradient and downgradient to track water quality changes				CONSENT ORDER - APPENDIX J GROUNDWATER MONITORING (1987) Monitoring a north-south line of wells to track water quality across facility		UIC Permit 98203 (modified 12-29-98) UNEV #94218 Underground Injection Control Permit Monitoring to evaluate groundwater quality and elevation a the facility		Perchlorate Remediation Groundwater Monitoring Plan February 5, 2003		Additional KM Monitoring - Input to Remediation Evaluation Reports	
Count	Well	Location	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters
63	M-101	N of berm									Quarterly	ClO_4	Quarterly on Analyses, Monthly on water level	pH, SpCd, total Cr Water Level
64	M-102	N of berm							Quarterly	Water level	Quarterly	ClO_4	Quarterly on Analyses, Monthly on water level	pH, SpCd, total Cr Water Level
65	M-103	Facility Upgradient - S of Lake Mead Dr											Annual	ClO_4, pH, SpCd, total Cr, Water level
66	I-AR	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
67	I-B	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
68	I-C	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
69	I-D	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
70	I-E	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
71	I-F	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
72	I-G	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
73	I-H	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
74	I-I	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
75	I-K	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
76	I-L	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
77	I-M	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
78	I-N	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
79	I-O	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
80	I-P	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
81	I-Q	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
82	I-R	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
83	I-S	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
84	I-T	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
85	I-U	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
86	I-V	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
87	I-W	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
88	I-X	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
89	I-Z	Intercepter Well - On-Site	Quarterly	SpCd, pH, total Cr	Monthly	Water Level					Quarterly	ClO_4	Daily	Flow
90	PC-10	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
91	PC-12	Athens Road									Monthly analyses, continuous level via mini-troll	ClO_4, SpCd, water level	Quarterly	Total Cr
92	PC-17	Athens Road									Monthly analyses, continuous level via AMS	ClO_4, SpCd, water level	Quarterly	Total Cr
93	PC-18	Athens Road									Monthly analyses, continuous level via AMS	ClO_4, SpCd, water level	Quarterly	Total Cr
94	PC-19	Athens Road									Well Destroyed			
95	PC-101R	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
96	PC-37	S of old D-1									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
97	PC-53	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
98	PC-54	N of Cohen Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
99	PC-55	Athens Road									Monthly analyses, continuous level via AMS	ClO_4, SpCd, water level	Quarterly	Total Cr
100	PC-71	N of NV-Pick-a-Part									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
101	PC-72	N of NV-Pick-a-Part									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
102	PC-73	NW of NV-Pick-a-Part									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
103	PC 86	Seep Area									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
104	PC-88	Seep Area									Continuous	Water Level - AMS		
105	PC 89	Seep Area									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
106	PC 91	Seep Area									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
107	PC-95	Seep Area									Monthly analyses, continuous level via mini-troll	ClO_4, SpCd, water level	Quarterly	Total Cr
108	PC-97	Seep Area									Monthly analyses, continuous level via mini-troll	ClO_4, SpCd, water level	Quarterly	Total Cr
109	PC-98R	Athens Road									Monthly analyses, continuous level via mini-troll	ClO_4, SpCd (WRF), water level	Quarterly	Total Cr
110	PC-99 R2 / PC-93R3	Seep Area									Monthly on Level, Weekly on Analysis	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow Total Cr
111	PC-103	Seep Area									Monthly	ClO_4, SpCd (WRF), water level		
112	PC-116R	Seep Area									Monthly on Level, Weekly on Analysis	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow Total Cr
113	PC-115R	Seep Area									Monthly on Level, Weekly on Analysis	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow Total Cr
114	PC-117	Seep Area									Monthly on Level, Weekly on Analysis	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow Total Cr
115	PC-118	Seep Area									Monthly on Level, Weekly on Analysis	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow Total Cr
116	PC-119	Seep Area									Monthly on Level, Weekly on Analysis	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow Total Cr
117	PC-120	Seep Area									Monthly on Level, Weekly on Analysis	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow Total Cr
118	PC-121	Seep Area									Monthly on Level, Weekly on Analysis	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow Total Cr
119	PC-122	Athens Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
120	PC-123	Sunpac Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
121	PC-124	Sunset Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
122	PC-125	Sunset Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
123	PC-126	Sunset Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr

KERR-McGEE GROUNDWATER MONITORING SUMMARY revision: September 9, 2004			CONSENT ORDER - APPENDIX D GROUNDWATER MONITORING (1987) Monitoring upgradient and downgradient to track water quality changes				CONSENT ORDER - APPENDIX J GROUNDWATER MONITORING (1987) Monitoring a north-south line of wells to track water quality across facility		UIC Permit 98203 (modified 12-29-99) UNEV #94218 Underground Injection Control Permit Monitoring to evaluate groundwater quality and elevation a the facility		Perchlorate Remediation Groundwater Monitoring Plan February 5, 2003		Additional KM Monitoring - Input to Remediation Evaluation Reports		
Count	Well	Location	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters
124	PC-127	Sunset Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
125	PC-128	Sunset Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
126	PC-129	Sunset Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
127	PC-130	Sunset Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
128	PC-131	Sunset Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
129	PC-132	Sunset Road									Quarterly	ClO_4, SpCd, water level	Quarterly	Total Cr
130	ARP-1	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
131	ARP-2	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
132	ARP-3	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
133	ARP-4	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
134	ARP-5	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
135	ARP-6	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
136	ARP-7	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
137	ART-1	Athens Road									Weekly analysis, monthly water level, semi-annual elevation	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow, Total Cr
138	ART-2	Athens Road									Weekly analysis, monthly water level, semi-annual elevation	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow, Total Cr
139	ART-3	Athens Road									Weekly analysis, monthly water level, semi-annual elevation	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow, Total Cr
140	ART-4	Athens Road									Weekly analysis, monthly water level, semi-annual elevation	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow, Total Cr
141	ART-5	Athens Road									Weekly analysis, monthly water level, semi-annual elevation	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow, Total Cr
142	ART-6	Athens Road									Weekly analysis, monthly water level, semi-annual elevation	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow, Total Cr
143	ART-7	Athens Road									Weekly analysis, monthly water level, semi-annual elevation	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow, Total Cr
144	ART-8	Athens Road									Weekly analysis, monthly water level, semi-annual elevation	ClO_4, SpCd, water level	Daily on flow, Quarterly on Analysis	Flow, Total Cr
145	COH-SS-1	Athens Road									Semi-annual	elevation for subsidence		
146	COH-SS-2	Athens Road									Semi-annual	elevation for subsidence		
147	COH-SS-3	Athens Road									Semi-annual	elevation for subsidence		
148	COH-SS-4	Athens Road									Semi-annual	elevation for subsidence		
149	COH-SS-5	Athens Road									Semi-annual	elevation for subsidence		
150	SNWA-1	Athens Road									Semi-annual	elevation for subsidence		
151	SNWA-2	Athens Road									Semi-annual	elevation for subsidence		
152	L-635	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
153	L-637	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
154	MW-K2	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
155	MW-K4	Athens Road									Monthly	ClO_4, SpCd, water level	Quarterly	Total Cr
156	MW-K5	Athens Road									Monthly	ClO_4, SpCd (WRF), water level	Quarterly	Total Cr

Legend:
SpCd = Specific Conductance
Total Cr = Total Chromium
Cr^{+6} = Hexavalent Chromium
Na = Sodium
NH_4 = Ammonium
TDS = Total Dissolved Solids
ClO_4 = Perchlorate
WRF = Water Reclamation Facility
AMS = Automated Monitoring System
CO = 1987 Consent Order

Administrator – acting
Jolaine Johnson & Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations & Reclamation
Facsimile 684-5259

STATE OF NEVADA
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director - acting*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Federal Facilities

Corrective Actions
Facsimile 687-8335

NDEP.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
333 W. Nye Lane, Room 138
Carson City, Nevada 89706-0851

September 8, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Kerr-McGee Semi-Annual Performance Report –Chromium Mitigation Program – January to June, 2004 dated July 26, 2004

Dear Ms. Crowley,

The NDEP has received and reviewed KM's correspondence identified above and provides comments in Attachment A. The NDEP requests that KM respond to these issues **by October 22, 2004**.

If there is anything further please do not hesitate to contact me.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP-Las Vegas Office

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Alan Tinney, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

ATTACHMENT A

1. Page 8, second paragraph, it is requested that a more detailed description be provided for the treatment of hexavalent chromium at the Athens Road well field.
2. Table 4, the average total chromium treated outflow concentration has exceeded the USEPA MCL of 0.1 mg/L for the months of May and June 2004. The NDEP understands that this water is currently being impounded in pond GW-11, however, KM has been discharging from pond GW-11 periodically over the past few months. Please explain the excursions noted in May and June 2004 and what is planned (if anything) to mitigate this issue.
3. Plate 1, the NDEP advises KM to review the available TIMET data for total chromium concentrations on their property (adjacent the KM site). Incorporation of this data would significantly revise the way that the 0.05, 0.1 and 1 mg/L contours are portrayed. As noted previously, the NDEP is concerned that the existing groundwater capture system is not addressing the far eastern and western portions of the plume. Please review this data and respond. See also comments below. Also, please show the locations of Ponds P-2 and P-3 on this figure.
4. Plates 1 and 2, the NDEP needs a potentiometric surface map (of the same scale and orientation as Plates 1 and 2) to match the mapped areas of Plates 1 and 2. It is suggested that (in the future) the concentration contours map and the potentiometric surface maps be generated at the same scale as the annual perchlorate map.
5. Plate 2, it appears to the NDEP that the delineation of the chromium plume is not complete. It appears to the NDEP that the plume may continue from the Athens Road area, through well PC53, towards well PC58. Also, the plume is not defined east of wells PC53 or PC58 or west of wells M76 or PC73. This delineation is necessary for future submittal. Also, sampling of wells PC93, PC94 and MW-K8 would be useful in the delineation of this plume. If KM believes this to be unnecessary a justification should be provided.
6. Appendix B, response #1a, while the NDEP appreciates the fact that determination of the capture efficiency of the on-site well field may be difficult, the NDEP would like to note that this determination is necessary. The NDEP has no quantitative or qualitative information to suggest that the chromium (or perchlorate) plume is not traveling around the eastern and western extents of the slurry wall. The NDEP requests that a net drawdown map be submitted in response to this letter and that a complete evaluation be presented in the January 2005 chromium report.
7. Appendix B, response #1b, please refer to the NDEP's comment #3 above regarding the TIMET chromium data. Also, it appears that part of the issue with increased capacity of the chromium system is the capacity of pond GW-11. The NDEP believes that the capacity of pond GW-11 should not be the driving issue behind the design of the capture system. KM should contemplate operational changes to allow for the maximum capture of chromium (and perchlorate)-impacted water in the on-site wells.
8. Appendix B, response #1c, KM suggests that natural attenuation will be one of the mechanisms to deal with the downgradient portion of their plume. KM should

explain what chemical or microbial processes will result in the attenuation of the total and hexavalent chromium.

9. Appendix B, response #1d, please provide a schedule for the completion of the testing of the ferrous sulfate process. Also, per KM's statements in response #1b, won't this flow rate still be limited by the capacity of pond GW-11? Please explain.
10. Appendix B, response #2b, please provide the documentation or correspondence to substantiate this response. Also, please note that the chromium concentrations detected on the TIMET site appear to match the KM contours very well. Also, please be advised that the NDEP has asked TIMET to look into the issue of chromium impacted cooling water on their site.
11. Appendix B, response #3b, the NDEP would like to note that regardless of the decreases in wells M-11 and M-76 these are still significant sources of chromium concentrations in groundwater (over 50 times higher than the USEPA MCL) and nearby wells have even higher concentrations of chromium. Furthermore, it appears that well M12A would also be representative of conditions downgradient of Units 4 and 5 and this well is approximately 180 times higher than the USEPA MCL.
12. Appendix B, response #3b, the NDEP is concerned that given the distance that the plume has traveled that there is an additional 50+ years of travel time for the tail end of this plume to reach the on-site capture system. The NDEP recommends that KM perform a quantitative evaluation of the effectiveness of operating this pump-and-treat system until the tail end of the plume reaches the on-site capture system. It is suggested that KM develop a model to determine the approximate travel time for the remainder of the plume to be captured. If KM finds that continued operation of this pump-and-treat system is the most effective way to move forward it is suggested that KM contemplate additional wells installed upgradient of the slurry wall.
13. Appendix B, response #3c, the NDEP would welcome a proposal for in-situ chromium remediation. It is suggested that this remedial alternative be explored for impacted areas (soils and groundwater) downgradient of Ponds P-2 and P-3 as well. Please provide a schedule for the evaluation of the feasibility of these processes.

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

August 31, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Characterization of GW-11 Pond Contents

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) at the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the "Deliverable Schedule", supplied with the second quarter 2004 progress report, Kerr-McGee is characterizing the contents of GW-11 pond. Analytical results which will form the basis of this characterization require several weeks to complete and as such have not yet been delivered to Kerr-McGee. Kerr-McGee forwarded notice of this to your office on August 27th.

You have requested a date by which the information will be forwarded to you and after consultation with the contracted laboratory; we expect that a characterization will be submitted to your office by September 17th.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

CERTIFIED MAIL

7000 1670 0002 1245 8612

Cc:
Tom Reed
Richard Waters
Rick Simon, ENSR
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Stater
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

Brian Rakvica

From: Brian Rakvica
Sent: Wednesday, September 01, 2004 2:58 PM
To: 'Crowley, Susan'
Subject: RE: Re-Set of GW-11 Characterization Submittal

Susan,

That date will be fine.

Thanks,

Brian

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Wednesday, September 01, 2004 2:55 PM
To: Brian Rakvica
Cc: Stater, Rick; Gerry, Dave; Bilodeau, Sally; Reed, Thomas; ekrish@cox.net
Subject: Re-Set of GW-11 Characterization Submittal

Brian,
The attached has been mailed, but I thought you might want a heads up. After discussion with the lab ...we have re-set the GW-11 characterization submittal date to Sept 17th. Let me know if you have any questions. Thanks.

<<Digital_2.pdf>>

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

Brian Rakvica

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Wednesday, September 01, 2004 2:55 PM
To: Brian Rakvica
Cc: Stater, Rick; Gerry, Dave; Bilodeau, Sally; Reed, Thomas; ekrish@cox.net
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KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

August 31, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119

Dear Mr. Rakvica:

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You have requested a date by which the information will be forwarded to you and after consultation with the contracted laboratory; we expect that a characterization will be submitted to your office by September 17th.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc: Tom Reed
Richard Waters
Rick Simon, ENSR
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Stater
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

ISSUED 9/1/04

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

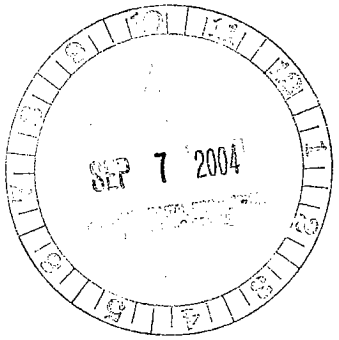
DATE: September 1, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Meeting on September 1, 2004 at 1:30 PM via telephone

1. Attendance:
   a. NDEP: Tamara Pelham, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Reviewed system operations.
   a. FBR system modifications completed. This includes: installation of the static mixer, addition of hydrogen peroxide controls, tie in to new equalization tanks. It was attempted to install the tee in the system near lift station #1, however, this was not successful.
   b. FBR was diverted to the pond from 7:30 AM on 8/31/04 until 1:30 AM on 9/1/04.
   c. Water quality is currently ~25 ntu.
   d. Reviewed operations on Sunday 8/29/04 at ~4:00 PM.
      i. Operators had diverted to the pond for two hours due to an increase in perchlorate in the discharge. This increase was due to adjustments made to the ethanol addition.
      ii. When the system was restarted the discharge to the empty transmission line scoured the pipe and resulted in the discolored discharge that Brian noted.
   e. Discussed new equalization tanks.
      i. KM is waiting to receive a control so that they can begin to divert flow to the new tanks.
      ii. The flow will consist of ~ 30 gpm from the on site GWTS and an additional 12-20 gpm from pond GW-11. Once this process is initiated it will take approximately 5 days to fill the tanks.
3. Other discussions.
   a. Noted article in the Las Vegas Review-Journal today about KM.
   b. Noted that Tamara is leaving the NDEP. In the meantime KM will contact Alan Tinney with any issues.
   c. KM noted that they have exchanged some letters and telephone calls with Valerie King. KM is responding to these issues this week in a letter.
4. Next meeting: Thursday, September 16, 2004 at 1:30 PM. Call-in number: 405-270-2643.

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009



August 31, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Characterization of GW-11 Pond Contents

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) at the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the "Deliverable Schedule", supplied with the second quarter 2004 progress report, Kerr-McGee is characterizing the contents of GW-11 pond. Analytical results which will form the basis of this characterization require several weeks to complete and as such have not yet been delivered to Kerr-McGee. Kerr-McGee forwarded notice of this to your office on August 27th.

You have requested a date by which the information will be forwarded to you and after consultation with the contracted laboratory; we expect that a characterization will be submitted to your office by September 17th.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc:
Tom Reed
Richard Waters
Rick Simon, ENSR
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
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Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

August 27, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Characterization of GW-11 Pond Contents

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) at the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the "Deliverable Schedule", supplied with the second quarter 2004 progress report, Kerr-McGee is characterizing the contents of GW-11 pond. Analytical results which will form the basis of this characterization require several weeks to complete and as such have not yet been delivered to Kerr-McGee. In turn, delivery of this information to your office in not likely possible by August 30, 2004 because of the lengthy analytical period. We expect that the analytical will be received from the consulting laboratory in September and it will be forwarded to you as available.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc:
Tom Reed
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Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

ISSUED 8/30

MEMORANDUM TO FILE

TO: Kerr McGee (KM) File

FROM: Brian Rakvica

DATE: August 25, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Quarterly Meeting on August 25, 2004 at 9:30 AM at KM

1. Attendance:
   a. NDEP: Todd Croft, Tamara Pelham, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley, Pat Corbett, Tom Reed (via phone)
   c. ENSR: Ed Krish (via phone)
   d. SNWA: Joe Leising, Peggy Roefer
   e. AIG: Brad Dougherty
   f. Veolia: Mary Cheung, Jeff Lambeth
   g. USEPA: Mitch Kaplan, Larry Bowerman
2. A number of handouts and an agenda were distributed.
3. FBR system discussion
   a. Noted that the system has operated at up to ~95% of the hydraulic and chemical load, however, due to water quality issues the load had to be cut back.
   b. Currently, the system is being operated at ~92% of the hydraulic load and 50% of the chemical load. Discharge is in the 15-20 ntu. Expect to ramp up to full capacity and complete 30 day test by sometime in November.
   c. Discussed issues with water quality.
      i. Control of ethanol injection needs to be very precise (within 1 quart/day).
      ii. Water discharged to the Seep stream is slow moving and it is believed that indigenous bacteria convert sulfate to sulfide in this area resulting in objectionable odors. The outfall is proposed for relocation to address this. This is likely to take a few months to try and obtain right-of-way agreements.
      iii. Changes in effluent concentration make system difficult to control. Additional equalization capacity is being added to address this issue.
      iv. Dissolved Oxygen (DO) has been low. KM takes samples once a week for permit requirements. NDEP requests more frequent sampling (via field probe) and reporting to NDEP for monitoring trends.
   d. A number of steps have been taken to increase the water quality (WQ).
      i. Flocculants have been changed and coagulants have been added.

ii. Hydrogen peroxide addition has been initiated to destroy sulfide (and convert it back to sulfate).
iii. A static mixer is being added to improve the delivery of ferric chloride.
iv. Discussed permit issues.
    1. KM must achieve an 18 ppb discharge by December 4, 2004.
    2. KM noted that the on-site IX has been off since March. The off-site IX has been off since June 11, 2004.
    3. Noted that the DMRs show some elevated perchlorate levels in the discharge.
    4. Noted that the permit renewal will be due in August 2005 (application due in February 2005).

4. Discussed Surface Water Trends and Data
    a. Reviewed various graphs and tables.
    b. Noted that there will be a long amount of time to get the concentrations in the Colorado below 2 ppb and to approach 1 ppb.
    c. Discussed the differences between naturally occurring and man made perchlorate.
    d. Discussed erosion control structures and effects on perchlorate loads to the Wash.
5. Reviewed 2nd Quarter 2004 Perchlorate Report, Athens Road Efficiency
    a. Noted declines in concentration downgradient of the Athens Road Well Field (ARW).
    b. Discussed calculations for percent capture at ARW. KM to clarify in 3rd quarter report.
    c. Noted that ARP-6 was damaged due to WRF construction and is likely to be replaced by the 4th quarter.
    d. KM noted that in the future dilution water will still be needed form the Seep area.
    e. KM noted that they are currently pulling water from the Wash in to the Seep Area. NDEP expressed a desire for this to be optimized and for additional high concentration water to the east to be captured. KM to review.
    f. SNWA to provide data from vegetation wells to KM.
    g. NDEP to email errors in 2nd quarter report to KM.
    h. KM noted that the May 2004 map can be expected after 9/10/04.
6. Discussed Ampac progress.
    a. Reviewed schedule for design and implementation of remedial systems.
7. Discussed tours. Reviewed tours planned for the near future per the agenda.
8. Discussed standards setting.
    a. Noted that the MCL Academy of Science review is expected by the end of the year.
    b. Noted that California is looking to develop an MCL by early 2005.
9. Discussed agricultural studies by KM and the University of Arizona.

8/25

AGENDA
August 25, 2004
Perchlorate Project Status Meeting

1) New FBR Biological Treatment System Discussion (and site visit towards the end of the meeting):
- System Start Up & Optimization Status – Keith Bailey
- NPDES Permit Status/Schedule/Components – Tamara Pelham / John Tinger
- Analytical Methods for Discharge Monitoring – Keith Bailey
- Water Quality & Clarity Discussion – Keith Bailey / Todd Croft
- Outfall Relocation Discussion and Tentative Schedule – Keith Bailey / Susan Crowley

2) Current Surface Water Data & Trends:
- Las Vegas Wash – Peggy Roefer / Joe Leising /Todd Croft
  * (Are the wash gravels clearing consistent w/ the McGinley & Assoc. Model?)
- Lake Mead – Peggy Roefer
- Colorado River – Todd Croft / Larry Bowerman
- Northshore Road Perchlorate Mass Data – Todd Croft / Larry Bowerman
- Erosion Control Structure Construction Schedule and Anticipated Impacts for 2004 & 2005 – Peggy Roefer

3) Second Quarter 2004 Performance Report – Perchlorate Remediation:
- Performance of the Various Extraction Systems – Susan Crowley
- Athens Road Capture Efficiency & Draw Down – Susan Crowley
- ARP & Down Gradient Monitoring Well data - Susan Crowley
- Seep Area Capture Efficiency Estimate, and Estimate of How Much Mass Continues to Enter Las Vegas Wash from the Seep Area – Keith Bailey / Larry Bowerman
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- Perchlorate Concentrations in the Vicinity of MW-K7 & MW-K8 – Todd Croft
- Is there a Need to Capture and Treat More than 1,000 GPM? – Larry Bowerman
- July 2004 Mass Removal Summary – Susan Crowley

4) Athens Road Well Field Efficiency:
- Additional Monitoring Wells Completed in the Vicinity of Athens Road / Sunset Road – Todd Croft
- Additional Pump Tests Needed to More Accurately Estimate Mass Flux & Groundwater Underflow – Todd Croft

5) Ground Water Monitoring Data & Reporting Results – Susan Crowley:
- Second Quarter Report, Apparent Errors – Todd Croft
- May 2004 Perchlorate Map – Todd Croft

6) Seep Area Well Shut-off Criteria (Fourth discussion):
- Throttling back of Exterior Wells & Impacts to Las Vegas Wash Mass Loading (i.e. PC-97)– Keith Bailey / Larry Bowerman

7) Future Tours of the FBR Treatment System:
- 08/26/04 (9:00 am - ~11:00 am) SNWA, AZ CAP (Tom Harbour), & AZ DWR
- 08/26/04 (1:00 pm - ~ 3:00 pm) MWD (Brad Coffee & Leslie Palencia)
- 09/09/04 (~8:00 am – Noon) ITRC Seep area through FBR

8) Other

CALCULATIONS AND DESIGN DATA

PREPARED BY

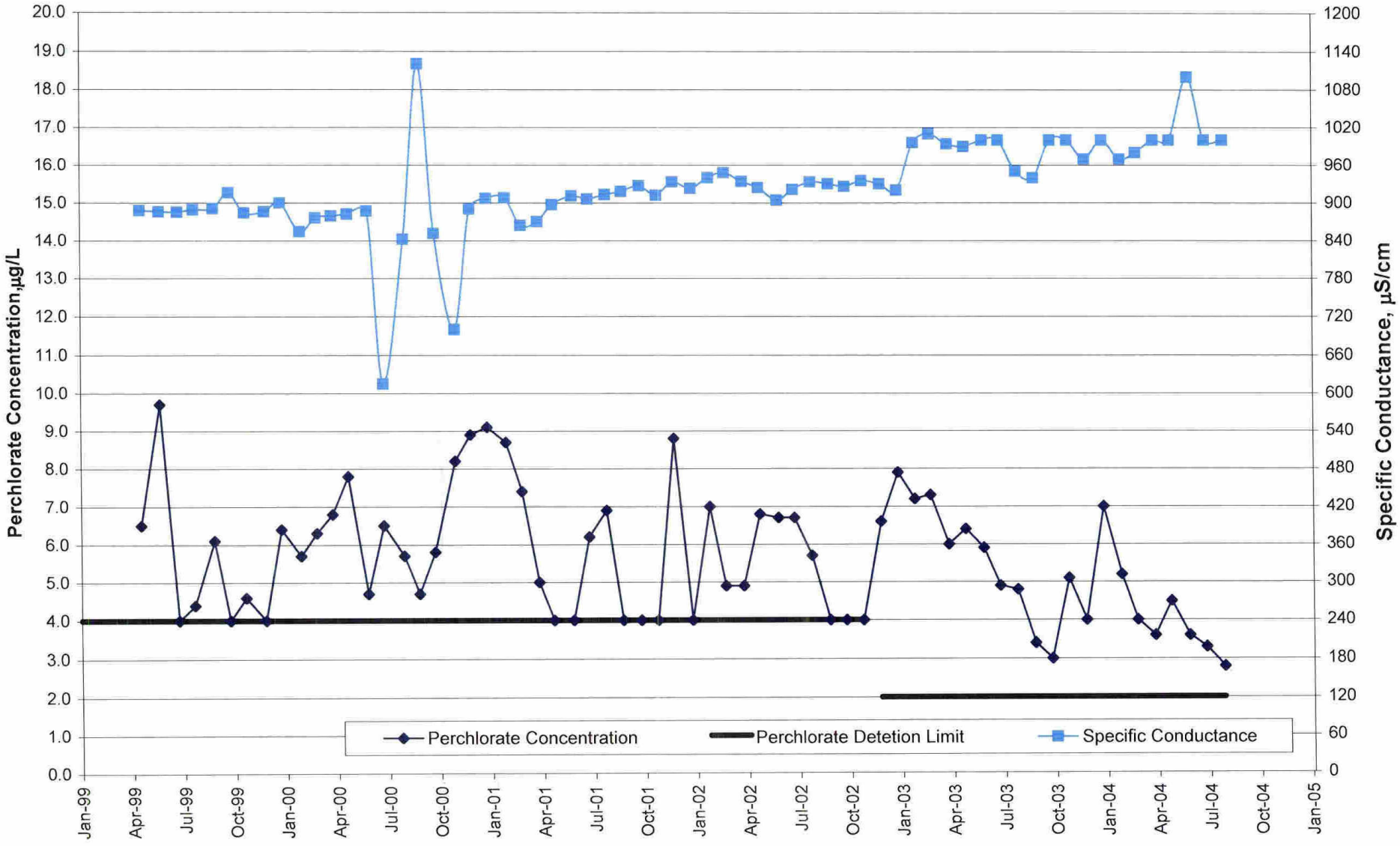
SUBJECT: Perchlorate Update Meeting

DATE: August 25, 20

SHEET 1 OF 1

Name	Organization	Phone #
Susan Crowley	Kerr-McGee	702-651-2234
Brian Rakuica	NDEP - LV	702-486-2870
Joe Leising		
Peggy Roeff	SNWA	702-822-3359
Brad Dougherty	AIG Consultants	201 631-7245
~~Keith Bailey~~	~~Kerr-McGee~~	405 270-3651
Pat Corbett	Kerr McGee	405 270 3774
Tamara Pelham	NDEP-BWPC	775 687 9434
Larry Bowerman	EPA-Region 9	415 972-3339
Mitch Kaplan	EPA-Region 9	415-972-3359
Todd Croft	NDEP	702-486-2870
Mary Cheung	VWNA	330-608-5695
Jeff Lambeth	VWNA	702-566-6001

Perchlorate Concentration & Specific Conductance
Colorado River - Willow Beach AZ Sampling Point



Notes: * Perchlorate concentration & Specific Conductance sampled on or about the 8th of each month.
* Willow Beach AZ sampling point is located along the east bank of the Colorado River approximately 11 miles downstream from Hoover Dam (Lake Mead).
* Approximate location: 35° 52' 26" N by 114° 39' 43" W

Willow Beach Sampling Point East bank of Colorado River approximately 11 mile downstream of Hoover Dam (Lake Mead)			
Date	**Perchlorate Concentration ug/L**	**Specific Conductance uS/cm**	**Perchlorate Concentration Detection Limit ug/L**
01/20/99			4
05/06/99	6.5	888	4
06/09/99	9.7 ←	886	4
07/12/99	**4.0**	885	4
08/09/99	4.4	889	4
09/13/99	6.1	891	4
10/11/99	**4.0**	916	4
11/08/99	4.6	884	4
12/13/99	**4.0**	886	4
01/10/00	6.4	900	4
02/14/00	5.7	854	4
03/13/00	6.3	876	4
04/10/00	6.8	879	4
05/08/00	7.8	882	4
06/12/00	4.7	887	4
07/10/00	6.5	615	4
08/15/00	5.7	842	4
09/11/00	4.7	1120	4
10/09/00	5.8	851	4
11/14/00	8.2	700	4
12/11/00	8.9 ←	890	4
01/10/01	9.1 ←	907	4
02/12/01	8.7	908	4
03/12/01	7.4	864	4
04/11/01	5.0	870	4
05/07/01	**4.0**	897	4
06/11/01	**4.0**	911	4
07/09/01	6.2	906	4
08/09/01	6.9	913	4
09/07/01	**4.0**	918	4
10/09/01	**4.0**	927	4
11/08/01	**4.0**	912	4
12/07/01	8.8	933	4
01/08/02	**4.0**	923	4
02/08/02	7.0	940	4
03/08/02	4.9	948	4
04/09/02	4.9	934	4
05/08/02	6.8 ←	924	4
06/10/02	6.7	904	4
07/08/02	6.7	921	4
08/08/02	5.7	933	4
09/09/02	**4.0**	930	4
10/08/02	**4.0**	926	4
11/07/02	**4.0**	935	4
12/09/02	6.6	930	2

Willow Beach Sampling Point East bank of Colorado River approximately 11 mile downstream of Hoover Dam (Lake Mead)			
Date	**Perchlorate Concentration ug/L**	**Specific Conductance uS/cm**	**Perchlorate Concentration Detection Limit ug/L**
01/08/03	7.9	920	2
02/07/03	7.2	996	2
03/07/03	7.3	1010	2
04/08/03	6.0	994	2
05/08/03	6.4	990	2
06/09/03	5.9	1000	2
07/08/03	4.9	1000	2
08/08/03	4.8	950	2
09/08/03	3.4	940	2
10/08/03	3.0	1000	2
11/07/03	5.1	1000	2
12/08/03	4.0	970	2
01/08/04	7.0	1000	2
02/09/04	5.2	970	2
03/08/04	4.0	980	2
04/08/04	3.6	1000	2
05/07/04	4.5	1000	2
06/08/04	3.6	1100	2
07/08/04	3.3	1000	2
08/09/04	2.8	1000	2

NDEP Sampling Data
Northshore Road Sampling Point
Las Vegas Wash downstream of Lake Las Vegas at or near Northshore Road
Real-Time Flow Values

Note: Number and position of gage have changed over time. The position of the gage has remained within approximately one-half mile of Northshore Bridge.

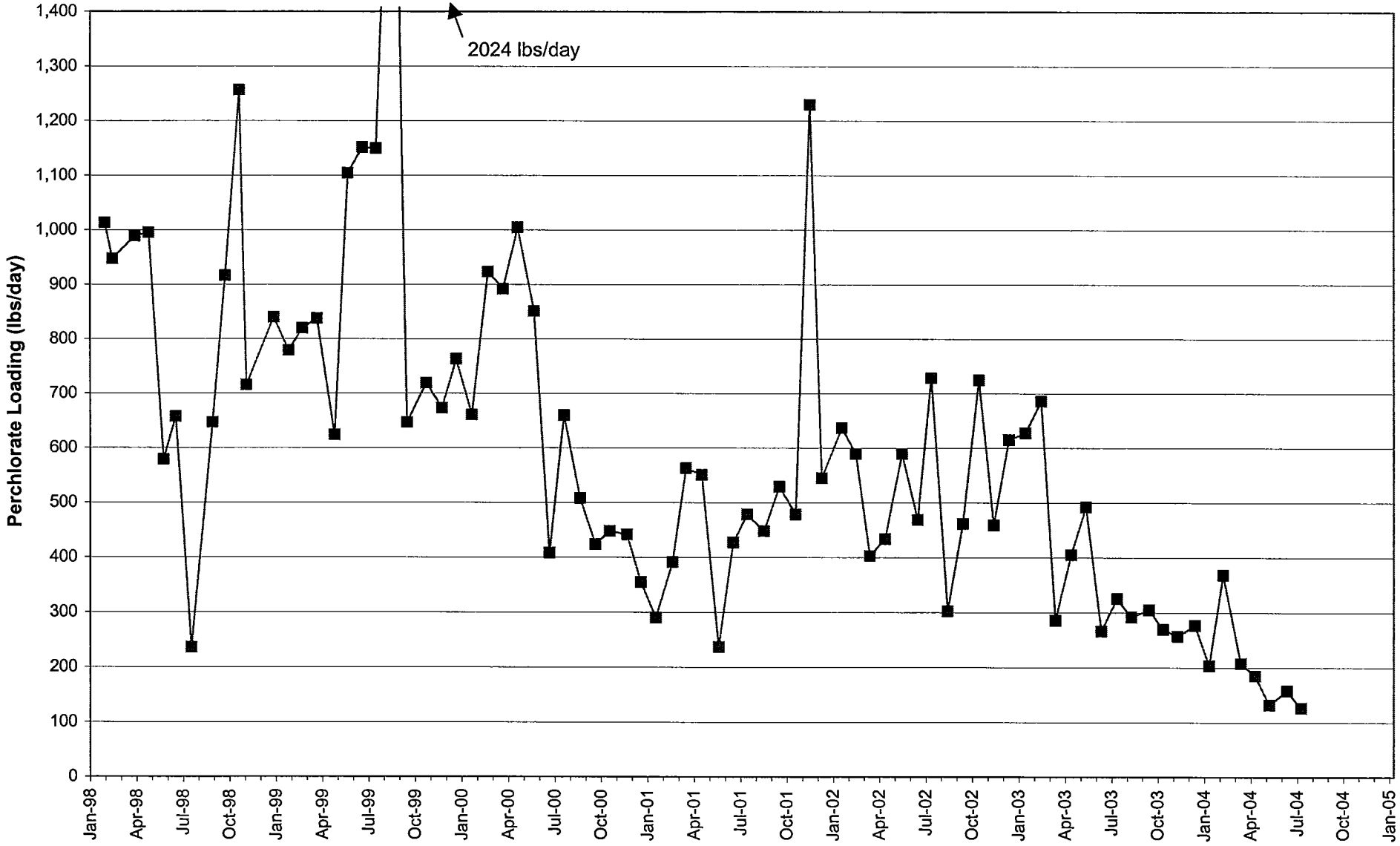
USGS Gage Notes	Sample Date/Time	Real Time Flow Rate (cfs)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	12 Month Rolling Average of Perchlorate Loading (lbs/day)	**Present Location:** 36°07' 20" N by 114°54' 15" W
Gage # 09419790	1/30/98 8:30	230	818	1,013		Del Mar Laboratory
	2/14/98 10:35	215	815	947		
	3/30/98 14:31	275	667	989		
	4/27/98 10:02	186	989	995		
	5/26/98 13:58	234	459	579		
	6/19/98 9:49	140	873	658		
	7/20/98 10:05	639	68	236		
	8/31/98 9:30	268	447	647		
	9/25/98 13:50	253	672	916		
	10/23/98 10:37	194	1,200	1,256		
	11/6/98 12:10	206	645	715		
	12/30/98 13:30	228	684	840	**816**	
	1/29/99 11:50	215	670	779	796	
	2/25/99 11:12	223	680	820	786	
	3/26/99 13:30	232	670	837	773	
	4/30/99 13:10	642	180	624	742	
	5/27/99 13:24	215	950	1,104	786	
	6/25/99 11:15	305	700	1,151	827	
	7/22/99 9:12	300	710	1,149	903	
	8/26/99 9:10	528	710	2,024	1,018	
	9/21/99 9:01	146	820	646	995	Laboratory Change to NEL Laboratory
	10/29/99 9:10	175	760	719	951	
	11/29/99 9:29	240	520	673	947	
	12/27/99 13:00	253	560	763	**941**	
	1/27/00 9:45	215	569	661	931	
	2/28/00 9:10	238	720	923	940	
	3/29/00 10:00	190	870	892	944	
	4/27/00 14:30	248	750	1,005	976	
	5/29/00 12:00	213	740	851	955	
	6/28/00 13:00	184	410	408	893	
	7/27/00 11:00	188	650	660	852	
	8/28/00 9:15	184	510	508	726	
	9/27/00 8:00	183	430	424	707	
No discharge data for 9:30. Used data collected at 8:15.	10/26/00 9:30	244	340	448	684	
No discharge data for 8:20. Used data collected at 7:00.	11/29/00 8:20	221	370	442	665	
	12/26/00 12:45	205	320	355	**631**	
No discharge data for 7:45. Used data collected at 7:00.	1/25/01 7:45	192	280	290	600	
	2/27/01 14:00	207	350	391	556	
	3/26/01 8:50	217	480	562	529	
	4/26/01 14:10	319	320	550	491	
	5/29/01 14:50	183	240	236	439	
	6/27/01 10:20	198	400	426	441	
	7/25/01 9:25	161	550	478	426	
	8/27/01 9:50	198	420	448	421	
	9/27/01 8:20	213	460	529	430	
	10/29/01 9:15	211	420	479	432	
No discharge data for 11/27/01 9:00. Used 11/29/01 10:30.	11/27/01 9:00	281	810	1,229	498	
	12/20/01 8:55	229	440	544	**514**	
	1/29/02 9:15	231	510	637	543	
	2/26/02 12:00	232	470	589	559	
	3/26/02 9:15	173	430	403	546	
	4/25/02 9:30	223	360	434	536	
	5/29/02 12:30	179	610	589	565	
	6/29/02 8:45	138	630	468	569	
	7/26/02 9:30	314	430	729	590	
	8/27/02 9:00	108	520	302	578	
	9/26/02 11:30	190	450	461	572	
	10/28/02 9:30	213	630	725	592	
	11/26/02 9:30	177	480	459	528	
	12/26/02 9:20	215	530	615	**534**	Laboratory Change to Alpha Analytical

NDEP Sampling Data
Northshore Road Sampling Point
Las Vegas Wash downstream of Lake Las Vegas at or near Northshore Road
Real-Time Flow Values

Note: Number and position of gage have changed over time. The position of the gage has remained within approximately one-half mile of Northshore Bridge.

USGS Gage Notes	Sample Date/Time	Real Time Flow Rate (cfs)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	12 Month Rolling Average of Perchlorate Loading (lbs/day)	**Present Location:** 36°07' 20" N by 114°54' 15" W
	1/28/03 9:30	197	590	627	533	
Gage # 09419800 No discharge data available for 11:30. 4:00 AM data used.	2/28/03 11:30	326	390	686	541	Change in USGS gage location and gage number
	3/28/03 9:15	115	460	285	532	
No discharge data available on or near sampling time. See note on right.	4/28/03 9:30	150	500	405	529	**Note:** Pabco Rd gage (USGS Gage #09419700) was used for discharge data for 4/28/03 sampling event. A one-hour travel time was assumed from Pabco Road gage to Northshore Road gage; therefore, the discharge value for 8:30 am is listed.
	5/28/03 9:30	228	400	492	521	
	6/27/03 9:15	214	230	266	504	
	7/28/03 9:30	274	220	325	471	
	8/26/03 9:15	200	270	291	470	
	9/30/03 9:15	209	270	304	457	
	10/28/03 9:30	192	260	269	419	
	11/25/03 14:45	280	170	257	402	
	12/30/03 9:00	256	200	276	374	
	1/27/04 9:00	171	220	203	338	
	2/24/04 8:45	359	190	368	312	**Note:** Frequent rain events for the Las Vegas Wash drainage basin have been occurring for the last three days.
	3/30/04 9:30	183	210	207	305	
	4/27/04 9:15	214	160	185	287	
	5/25/04 8:45	175	140	132	257	
	6/29/04 8:00	209	140	158	248	
	7/27/04 9:15	167	140	126	231	

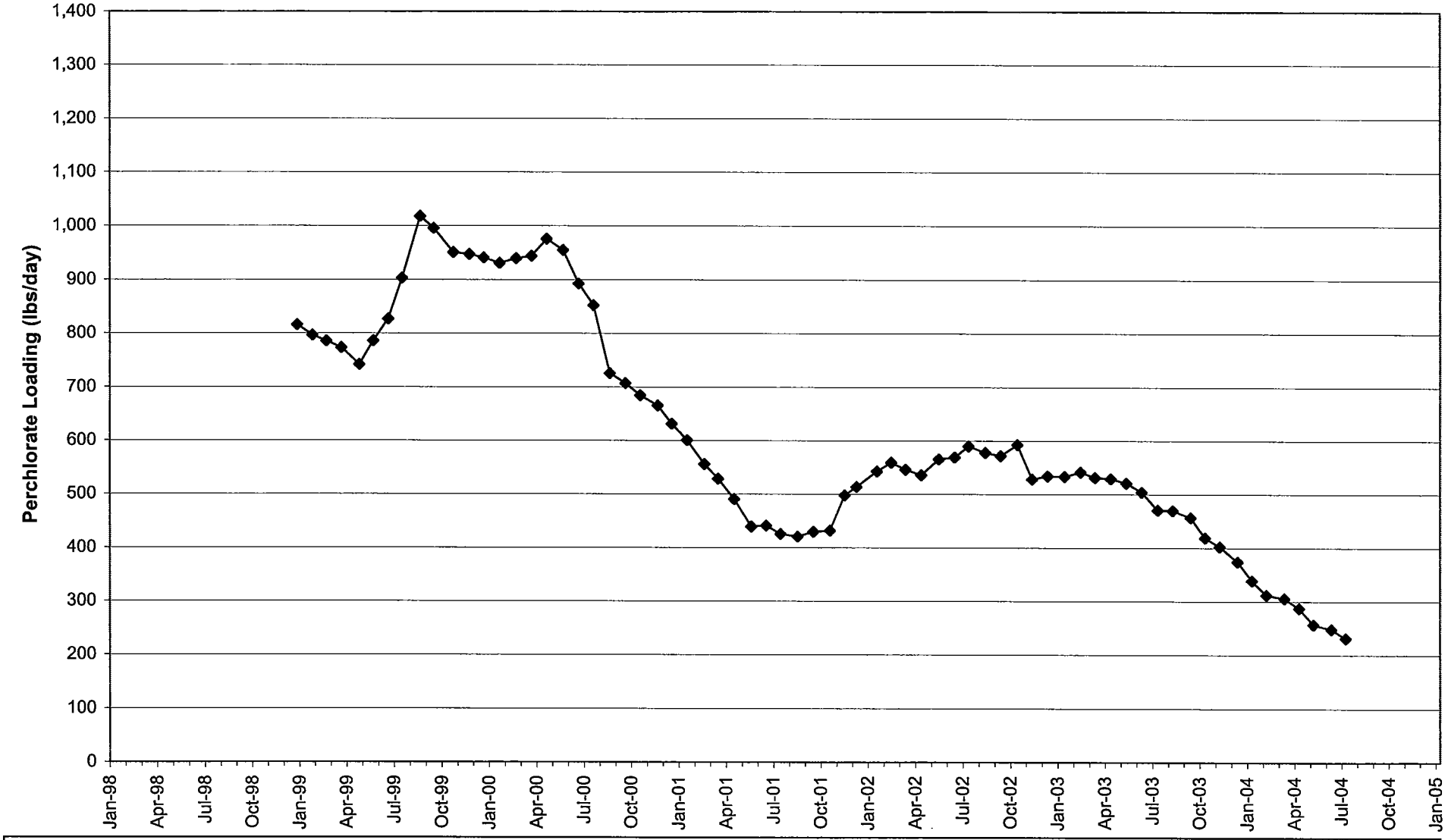
Perchlorate Loading - Las Vegas Wash - Northshore Road Sampling Point
Real-Time Flow Values



Notes:* Perchlorate concentration sampled on the last Tuesday of each month.

* Northshore Road sampling point positioned approximately one-half mile upstream from confluence of Las Vegas Wash and Lake Mead.
* Northshore Road sampling point should measure all perchlorate imputs entering the Colorado River System from the Las Vegas Valley via Las Vegas Wash.
* Approximate Location: 36°07' 20" N by 114°54' 15" W

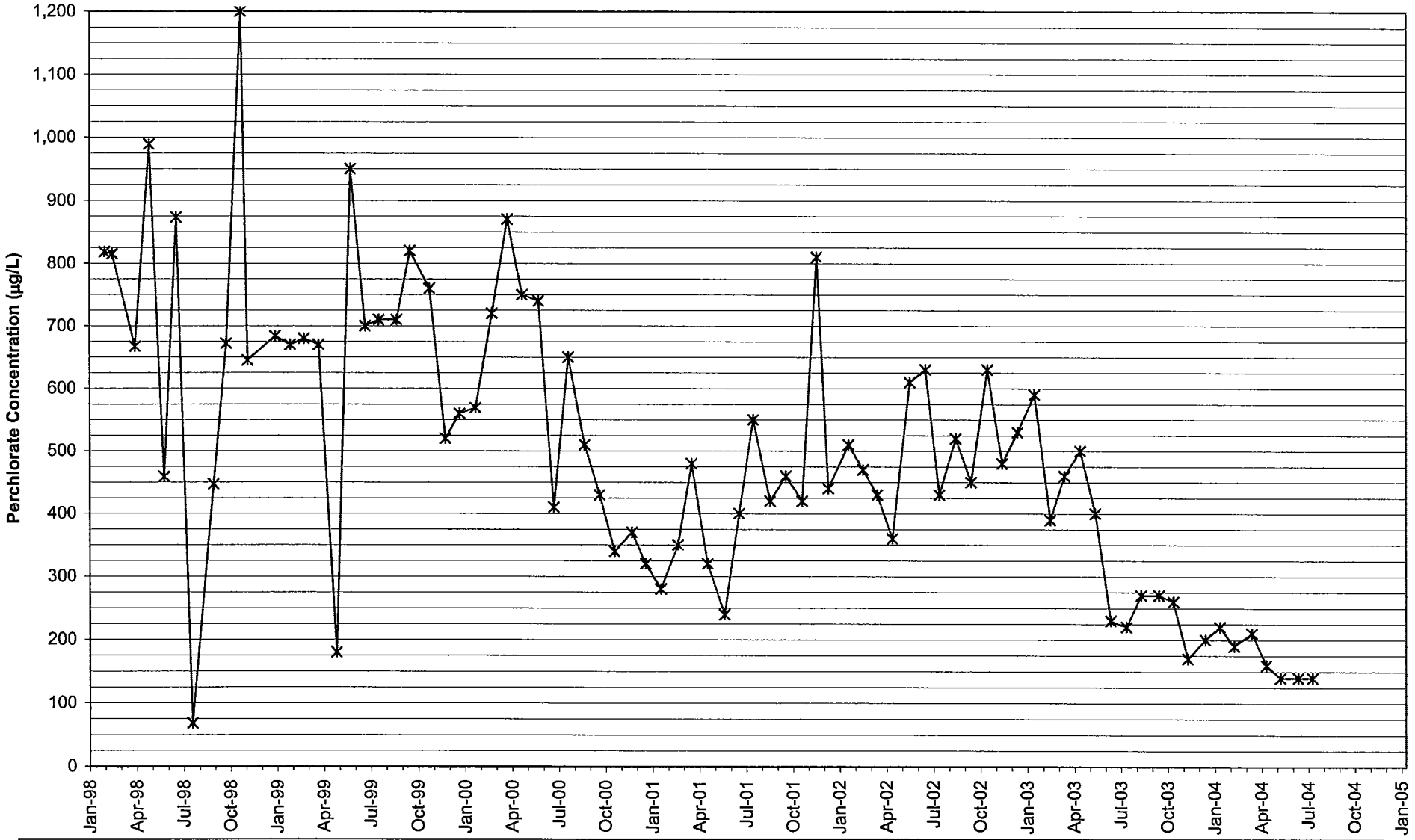
Perchlorate Loading (12-Month Rolling Average) - Las Vegas Wash - Northshore Road Sampling Point
Real-Time Flow Values



Notes: * Perchlorate concentration sampled on or about the 28th of each month. * Approximate Location: 36°07' 20" N by 114°54' 15" W

* Northshore Road sampling point positioned approximately one-half mile upstream from confluence of Las Vegas Wash and Lake Mead.
* Northshore Road sampling point should measure all perchlorate imputs entering the Colorado River System from the Las Vegas Valley via Las Vegas Wash.
* Each data point represents the average of the monthly perchlorate loading values for a 12 month interval inclusive of the sampling date shown.

Perchlorate Concentration - Las Vegas Wash - Northshore Road Sampling Point



Notes: * Perchlorate concentration sampled on or about the 28th of each month.
* Northshore Road sampling point positioned approximately one-half mile upstream from confluence of Las Vegas Wash and Lake Mead.
* Northshore Road sampling point should measure all perchlorate imputs entering the Colorado River System from the Las Vegas Valley via Las Vegas Wash.
* Approximate Location: 36°07' 20" N by 114°54' 15" W

Perchlorate Loading - Las Vegas Wash - Northshore Road Sampling Point
Real-Time Flow Values

Notes:* NDEP: Perchlorate concentration sampled on the last Tuesday of each month.

* MWD and Kerr-McGee: Perchlorate concentration sampled every Tuesday.

* Northshore Road sampling point positioned approximately one-half mile upstream from confluence of Las Vegas Wash and Lake Mead.

* Northshore Road sampling point should measure all perchlorate inputs entering the Colorado River System from the Las Vegas Valley via Las Vegas Wash.

* Approximate Location: 36°07' 20" N by 114°54' 15" W

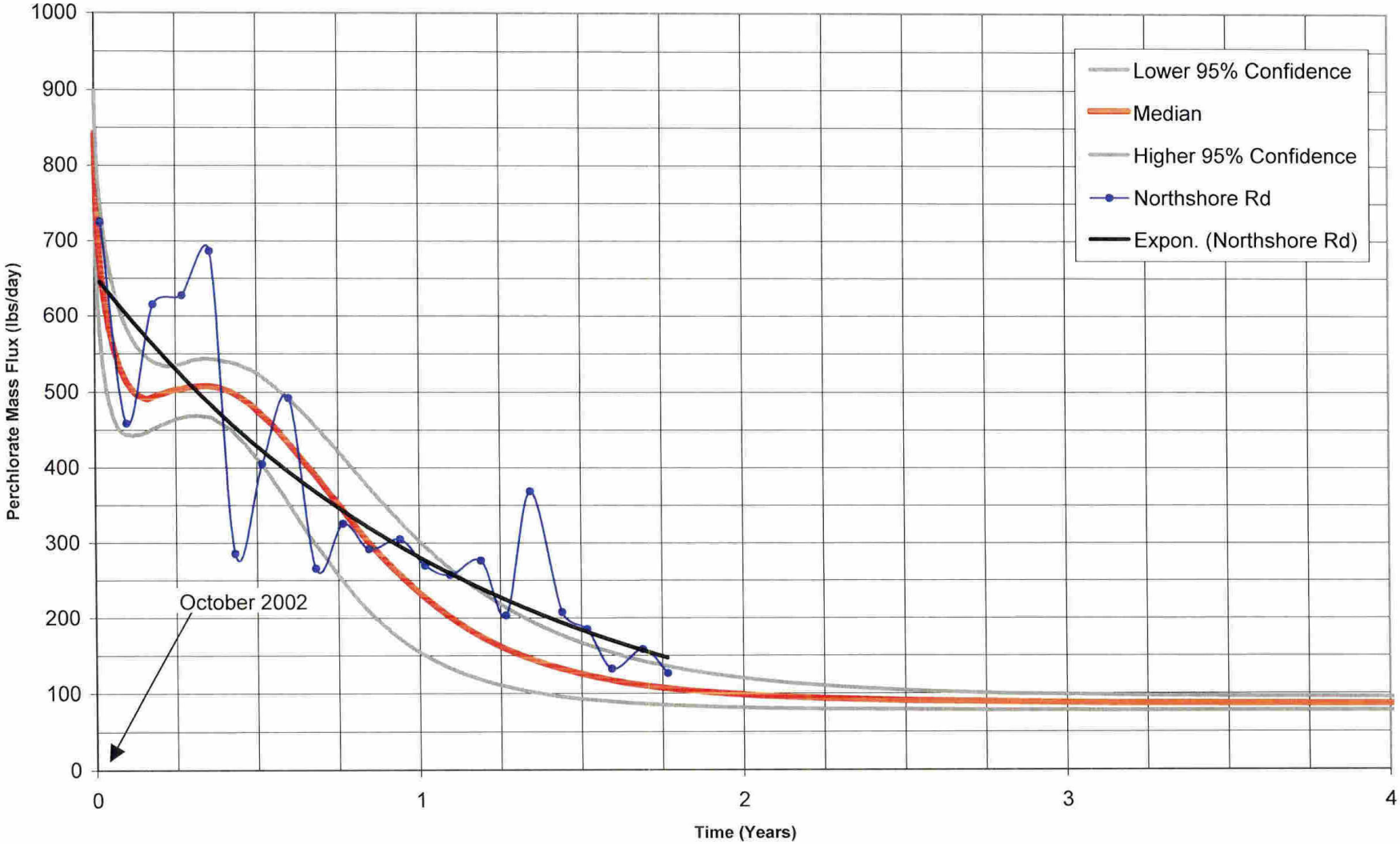
Northshore Road Sampling Point
Weekly Sampling Data
Las Vegas Wash downstream of Lake Las Vegas at or near Northshore Road
Real-Time Flow Values

			MWD		Kerr-McGee		NDEP	
USGS Gage Notes	Sample Date/Time	Real Time Flow Rate (cfs)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)
Gage # 09419790	8/26/03 9:15	200	264	285	--	--	270	291
	9/2/03 9:00	721	60	233	54	210	--	--
Gage Data from 9:30 am used	9/9/03 9:35	133	280	201	254	182	--	--
	9/16/03 9:30	158	275	234	270	230	--	--
	9/23/03 9:15	218	261	307	242	285	--	--
	9/30/03 9:15	209	273	308	249	281	270	304
	10/7/03 9:30	201	245	266	222	241	--	--
	10/14/03 9:45	209	244	275	216	244	--	--
	10/21/03 9:15	209	235	265	213	240	--	--
	10/28/03 9:30	192	261	270	237	246	260	269
	11/4/03 9:00	209	228	257	212	239	--	--
Sample collected on Wed. due to Veteran's Day	11/12/03 9:00	223	222	267	203	244	--	--
	11/18/03 9:00	227	226	277	210	257	--	--
	11/25/03 14:45	280	174	263	160	242	170	257
	12/2/03 9:00	223	217	261	202	243	--	--
	12/9/03 9:30	223	234	282	205	247	--	--
	12/16/03 9:30	209	209	236	200	226	--	--
	12/23/03 9:30	246	215	285	212	281	--	--
	12/30/03 9:00	256	190	262	182	251	200	276
	1/6/04 8:15	192	216	224	199	206	--	--
	1/13/04 9:15	163	234	206	202	178	--	--
	1/20/04 8:45	188	209	212	188	191	--	--
	1/27/04 9:00	171	213	197	198	183	220	203
	2/3/04 7:45	205	198	219	171	189	--	--
	2/10/04 9:15	214	217	251	184	212	--	--
	2/17/04 9:30	256	206	285	181	250	--	--
	2/24/04 8:45	359	208	403	181	351	190	368
	3/2/04 8:30	205	213	236	181	200	--	--
	3/9/04 8:45	179	--		194	187	--	--
	3/15/04 8:30	171	220	203	222	205	--	--
	3/23/04 9:30	175	230	217	199	188	--	--
	3/30/04 9:30	183	210	207	185	183	210	207
	4/6/04 9:15	100	230	124	184	99	--	--
	4/13/04 9:15	171	179	165	150	138	--	--
	4/20/04 9:15	183	157	155	151	149	--	--
	4/27/04 9:15	214	173	200	155	179	160	185
	5/4/04 9:00	205	167	185	158	175	--	--
	5/11/04 9:30	192	168	174	154	160	--	--
	5/18/04 9:00	171	162	149	149	137	--	--
	5/25/04 8:45	175	154	145	138	130	140	132
	6/1/04 9:30	163	156	137	141	124	--	--
	6/8/04 8:45	159	146	125	134	115	--	--
	6/15/04 9:45	171	170	157	157	145	--	--

Weekly Sampling Data
Las Vegas Wash downstream of Lake Las Vegas at or near Northshore Road
Real-Time Flow Values

			MWD		Kerr-McGee		NDEP	
USGS Gage Notes	Sample Date/Time	Real Time Flow Rate (cfs)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)
	6/22/04 8:45	167	147	132	136	123	--	--
	6/29/04 8:00	209	139	157	132	149	140	158
	7/6/04 9:45	201	155	168	143	155	--	--
	7/13/04 9:30	196	149	158	143	151	--	--
	7/20/04 8:30	179	136	131	133	128	--	--
	7/27/04 9:15	167	144	130	137	123	140	126
	8/3/04 8:15	183	138	136	131	129	--	--

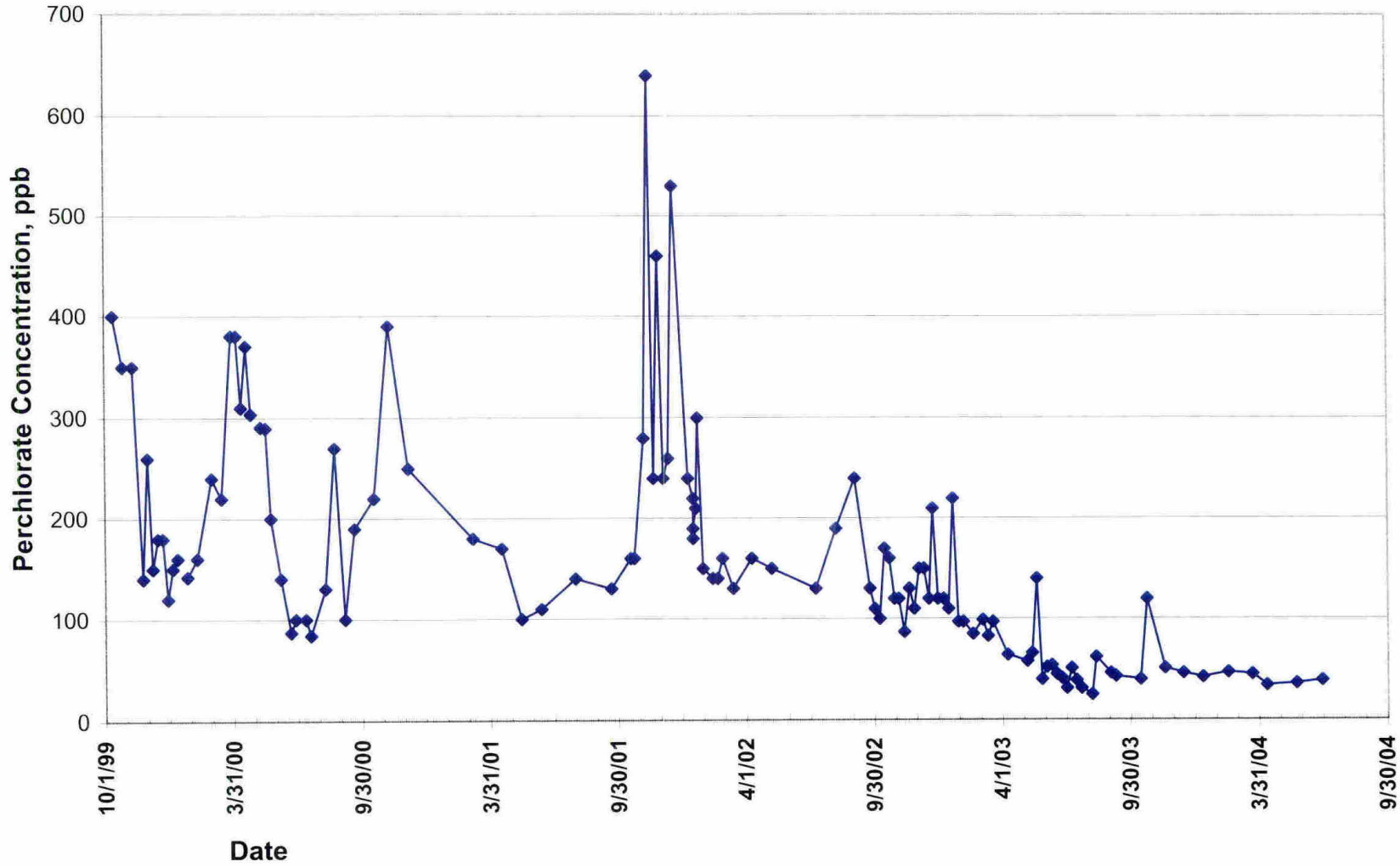
Breakthrough Curve: 90% Efficient Model Results, Mass



NDEP Sampling Data

USGS Gage Notes	Sample Date/Time	Time (Years) T=0 @ Oct 2002	Real Time Flow Rate (cfs)	Perchlorate Concentration (ug/L)	Perchlorate Loading (lbs/day)
	10/22/02 0:00	0.000			
	10/28/02 9:30	0.018	213	630	725
	11/26/02 9:30	0.097	177	480	459
	12/26/02 9:20	0.179	215	530	615
	1/28/03 9:30	0.270	197	590	627
Gage # 09419800 No discharge data available for 11:30; 4 AM data used	2/28/03 11:30	0.355	326	390	686
	3/28/03 9:15	0.431	115	460	285
No discharge data available on or near sampling time. **See note on right**	4/28/03 9:30	0.516	150	500	405
	5/28/03 9:30	0.598	228	400	492
	6/27/03 9:15	0.681	214	230	266
	7/28/03 9:30	0.765	274	220	325
	8/26/03 9:15	0.845	200	270	291
	9/30/03 9:15	0.941	209	270	304
	10/28/03 9:30	1.018	192	260	269
	11/25/03 14:45	1.095	280	170	257
	12/30/03 9:00	1.190	256	200	276
	1/27/04 9:00	1.267	171	220	203
	2/24/04 8:45	1.343	359	190	368
	3/30/04 9:30	1.439	183	210	207
	4/27/04 9:15	1.516	214	160	185
	5/25/04 8:45	1.593	175	140	132
	6/29/04 8:00	1.689	209	140	158
	7/27/04 9:15	1.765	167	140	126

Perchlorate Concentration Time Series, LW5.5 (LM-6)



AGENDA
August 25, 2004
Perchlorate Project Status Meeting

1) New FBR Biological Treatment System Discussion (and site visit towards the end of the meeting):
- System Start Up & Optimization Status – Keith Bailey
- NPDES Permit Status/Schedule/Components – Tamara Pelham / John Tinger
- Analytical Methods for Discharge Monitoring – Keith Bailey
- Water Quality & Clarity Discussion – Keith Bailey / Todd Croft
- Outfall Relocation Discussion and Tentative Schedule – Keith Bailey / Susan Crowley

2) Current Surface Water Data & Trends:
- Las Vegas Wash – Peggy Roefer / Joe Leising /Todd Croft
  * (Are the wash gravels clearing consistent w/ the McGinley & Assoc. Model?)
- Lake Mead – Peggy Roefer
- Colorado River – Todd Croft / Larry Bowerman
- Northshore Road Perchlorate Mass Data – Todd Croft / Larry Bowerman
- Erosion Control Structure Construction Schedule and Anticipated Impacts for 2004 & 2005 – Peggy Roefer

3) Second Quarter 2004 Performance Report – Perchlorate Remediation:
- Performance of the Various Extraction Systems – Susan Crowley
- Athens Road Capture Efficiency & Draw Down – Susan Crowley
- ARP & Down Gradient Monitoring Well data - Susan Crowley
- Seep Area Capture Efficiency Estimate, and Estimate of How Much Mass Continues to Enter Las Vegas Wash from the Seep Area – Keith Bailey / Larry Bowerman
- Future Considerations for the Seep Area Well Field – Keith Bailey / Todd Croft
- Perchlorate Concentrations in the Vicinity of MW-K7 & MW-K8 – Todd Croft
- Is there a Need to Capture and Treat More than 1,000 GPM? – Larry Bowerman
- July 2004 Mass Removal Summary – Susan Crowley

4) Athens Road Well Field Efficiency:
- Additional Monitoring Wells Completed in the Vicinity of Athens Road / Sunset Road – Todd Croft
- Additional Pump Tests Needed to More Accurately Estimate Mass Flux & Groundwater Underflow – Todd Croft

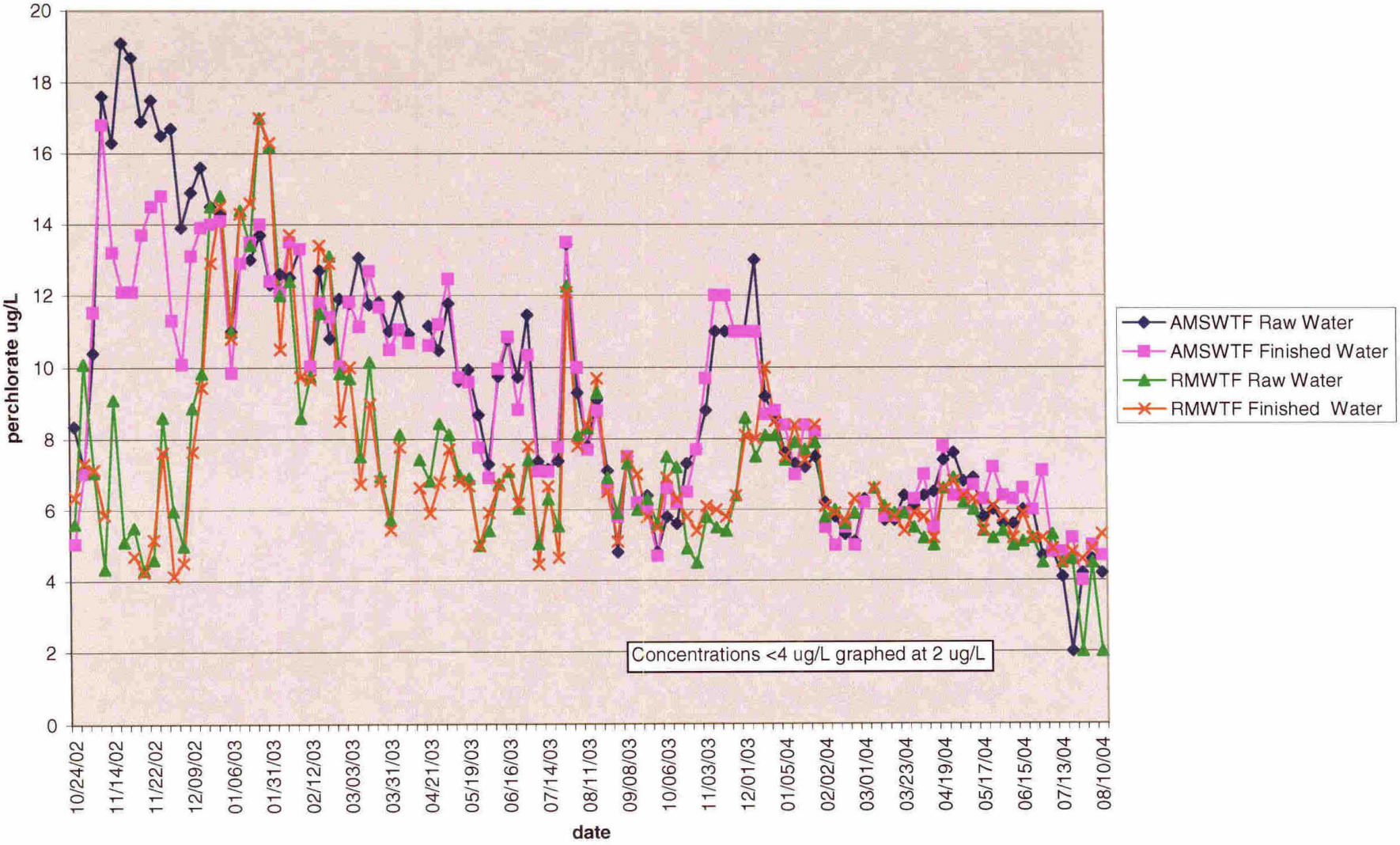
5) Ground Water Monitoring Data & Reporting Results – Susan Crowley:
- Second Quarter Report, Apparent Errors – Todd Croft
- May 2004 Perchlorate Map – Todd Croft

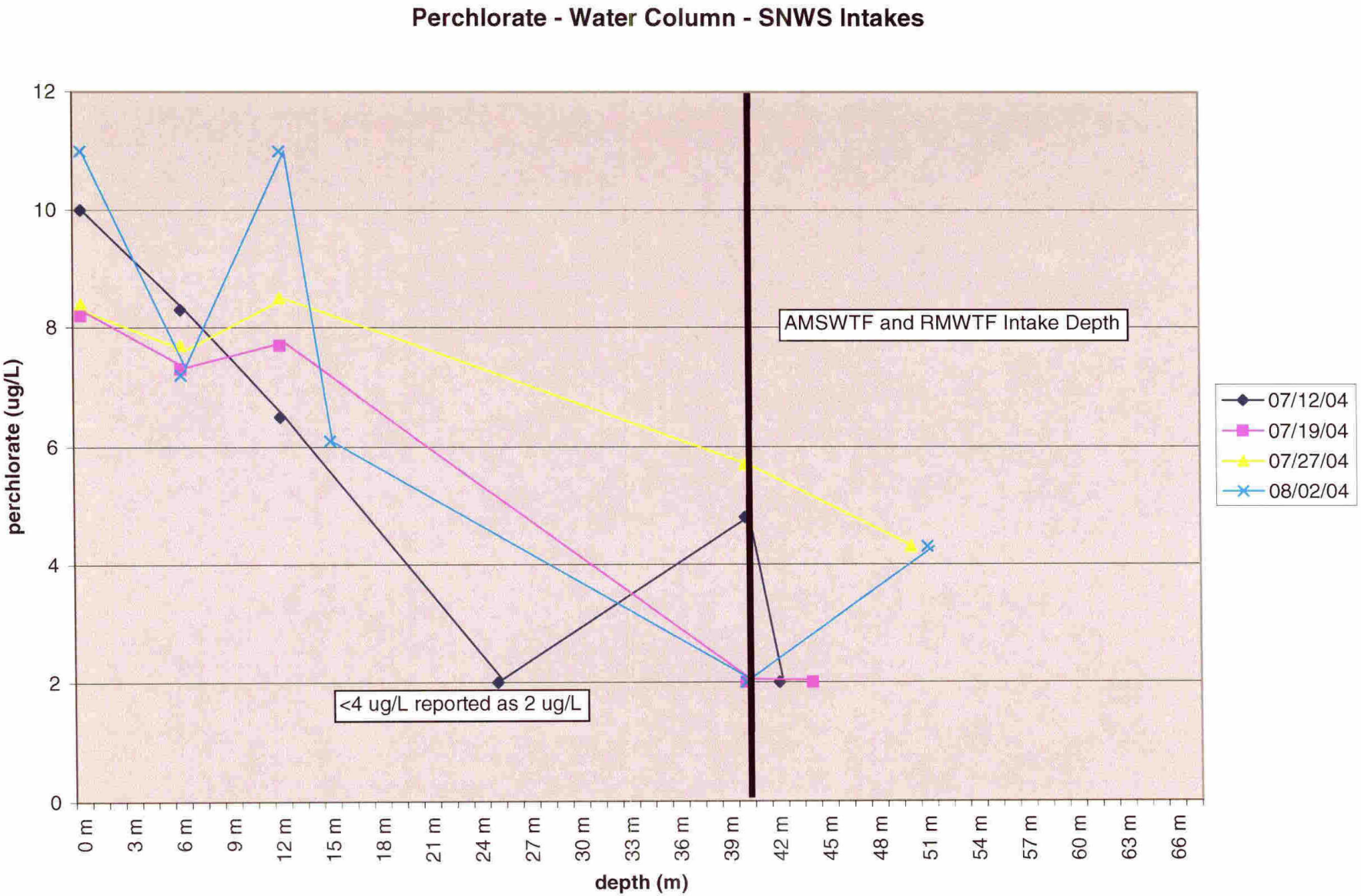
6) Seep Area Well Shut-off Criteria (Fourth discussion):
- Throttling back of Exterior Wells & Impacts to Las Vegas Wash Mass Loading (i.e. PC-97)– Keith Bailey / Larry Bowerman

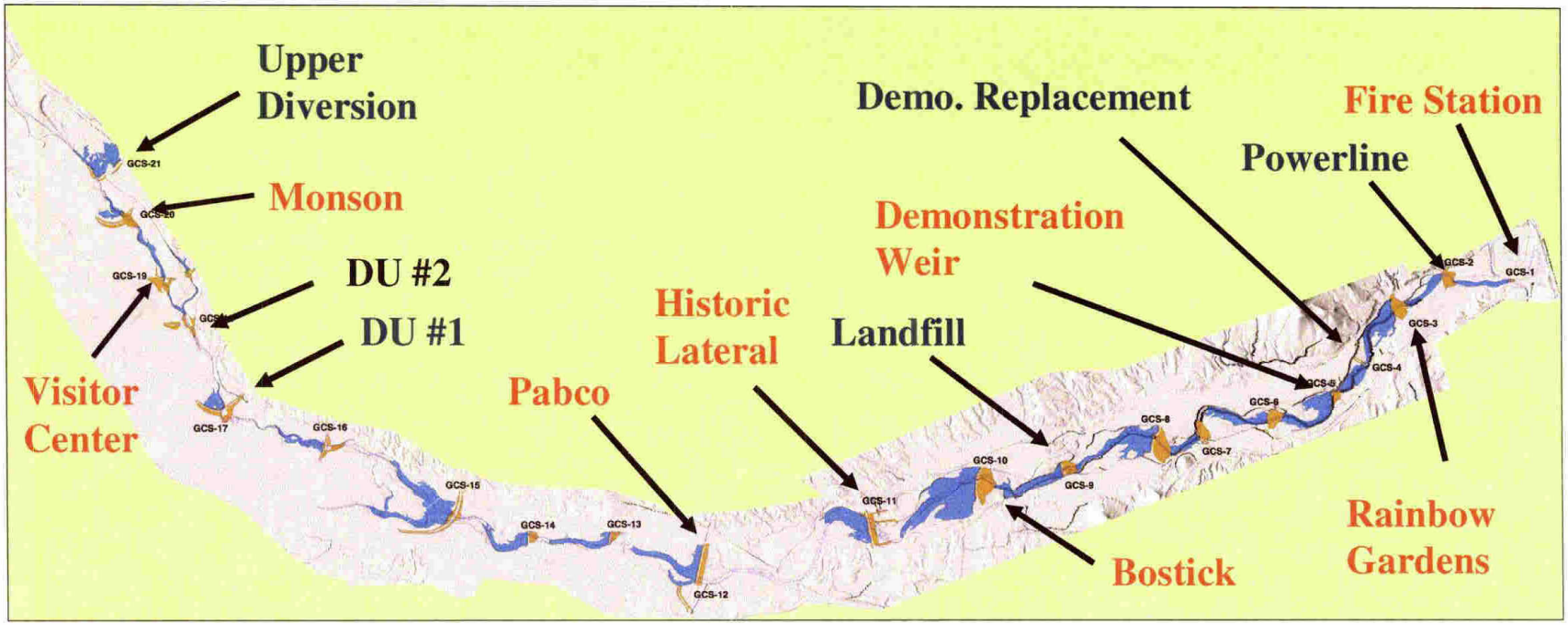
7) Future Tours of the FBR Treatment System:
- 08/26/04 (9:00 am - ~11:00 am) SNWA, AZ CAP (Tom Harbour), & AZ DWR
- 08/26/04 (1:00 pm - ~ 3:00 pm) MWD (Brad Coffee & Leslie Palencia)
- 09/09/04 (~8:00 am – Noon) ITRC Seep area through FBR

8) Other

SNWS Raw and Finished Perchlorate Concentrations




Perchlorate - Water Column - SNWS Intakes
perchlorate (ug/L)
12
10
8
6
4
2
0
0 m
3 m
6 m
9 m
12 m
15 m
18 m
21 m
24 m
27 m
30 m
33 m
36 m
39 m
42 m
45 m
48 m
51 m
54 m
57 m
60 m
63 m
66 m
depth (m)
AMSWTF and RMWTF Intake Depth
<4 ug/L reported as 2 ug/L
07/12/04
07/19/04
07/27/04
08/02/04

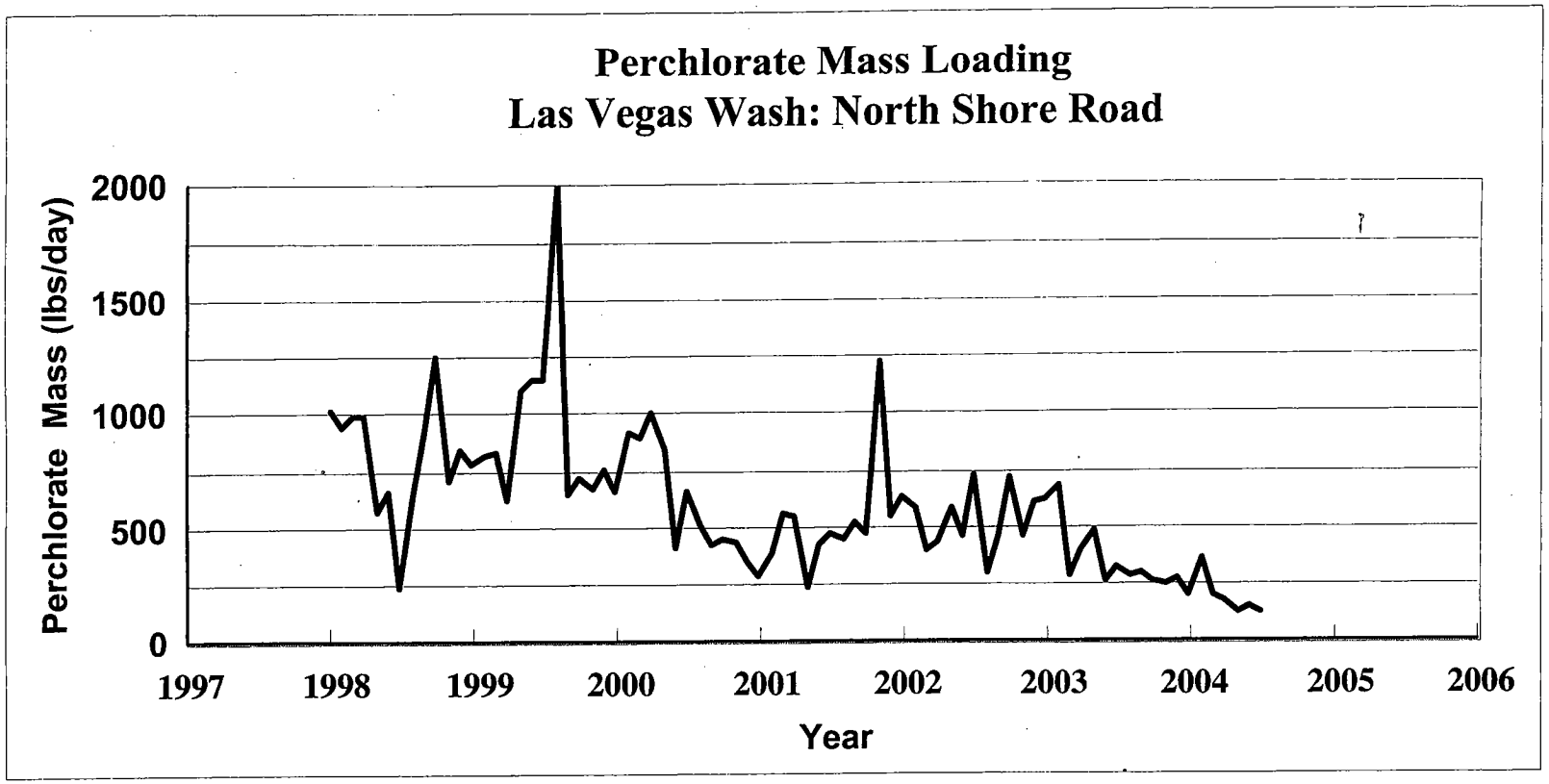


Completed 1999-2004

In Planning or Design

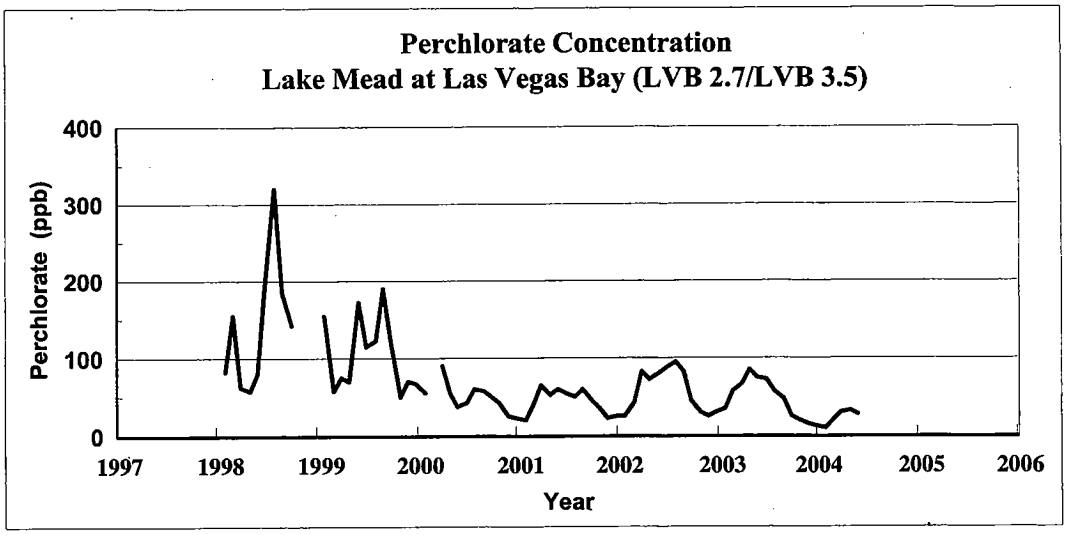
- Landfill Weir – Contract approved – in construction mid – September Complete end of December – Dewatering permit responsibility of contractor – North Bank concentration – 3,000 ppb (1-2 cfs) South Bank = Wash concentrations
- Powerline Weir – Design complete – awaiting right of way from LA W&P – in Construction mid November – complete approximately 11 months – Dewatering permit responsibility of contractor – concentration = Wash concentration, volume unknown
- Demonstration Weir Replacement – Construct February or March 2005 – complete 10 to 11 months – Dewatering permit responsibility of contractor
- Upper Diversion Weir – Construction June 2005 – approximately 11 months to complete – Dewatering permit responsibility of contractor

North Shore Road Mass Loading Graph



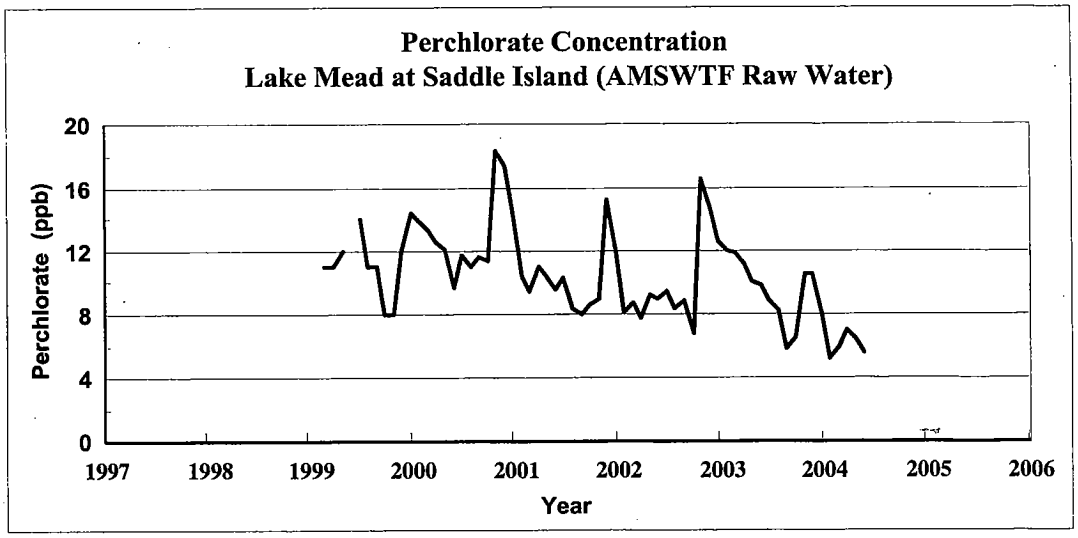
- Measures total perchlorate load in Las Vegas Wash entering Lake Mead
- Mass loading declined in 2000 after seep capture began in November 1999, and declined further in 2003 after Athens Road Wells began operation.
- Further declines expected in 2004 as a result of Athens Road Wells (beginning in October 2002) and improved capture in the seep area (beginning in March 2003)

10. Lake Mead at Las Vegas Bay (LVB 2.7/LVB 3.5)



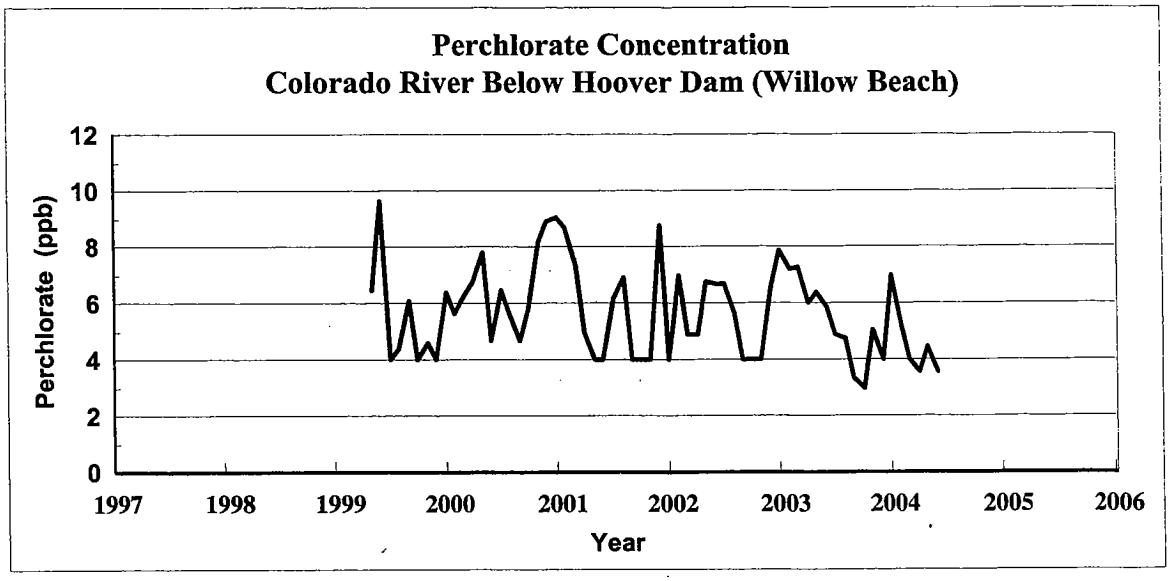
- Measures perchlorate concentrations in Las Vegas Bay; sampling location moved to LVB 3.5 in December 2003 due to declining water levels in Lake Mead.
- Concentrations began to decline in 2000 after seep capture began in November 1999.
- Declining Lake Mead surface elevations (years 2000 to **2004**) may result in increasing perchlorate concentrations.

11. Lake Mead at Saddle Island (AMSWTF Raw Water)



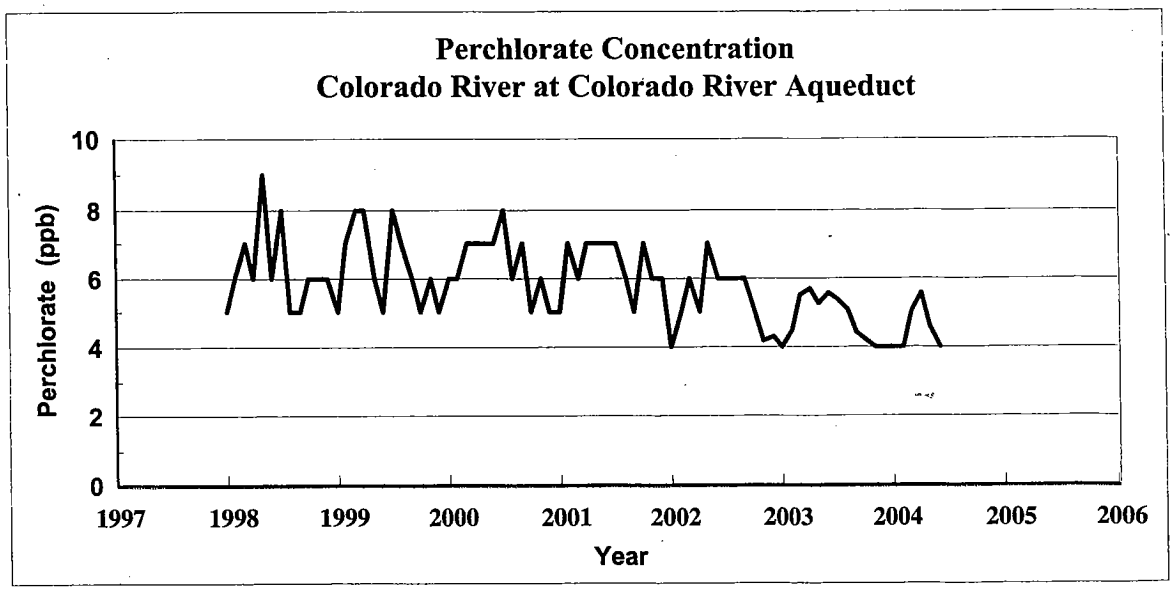
- Measures perchlorate concentrations in Las Vegas Valley drinking water supply.
- Concentrations began to decline in 2000 after seep capture began in November 1999.
- Destratification of water in Lake Mead in November/December each year causes seasonal peaks in perchlorate concentrations; 2003 seasonal peak was about 35% lower than in previous three years.
- Declining Lake Mead surface elevations (years 2000 to **2004**) may result in increasing perchlorate concentrations
- Method Detection Limit = 4 ppb.

12. Colorado River Below Hoover Dam (Willow Beach)



- Measures perchlorate concentrations in water entering Lower Colorado River
- Peak concentrations have shown gradual decline since seep capture began in November 1999.
- Concentrations declined to less than 4 ppb in September and October 2003.
- Method Detection Limit = 2 ppb beginning in December 2002 (MDL = 4 ppb previously)

13. Colorado River at the Colorado River Aqueduct at Lake Havasu



- Measures perchlorate concentrations at Southern California drinking water supply.
- Peak concentrations have shown gradual decline since seep capture began in November 1999.
- Recent concentrations have ranged from 4 to 6 ppb (4.8 ppb annual average in 2003).
- Method Detection Limit = 4 ppb.

Brian Rakvica

From: Brian Rakvica
Sent: Saturday, August 28, 2004 5:37 PM
To: Crowley, Susan
Subject: RE: Characterization of GW-11 Pond Contents

Susan,

I need a specifc date. Please contact the laboratory to find out when these results can be expected and then re-send me the attached letter with a date that you can acheive.

Thanks,

Brian

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Fri 8/27/2004 4:16 PM
To: Brian Rakvica
Cc: Gerry, Dave; Bilodeau, Sally; Reed, Thomas; ekrish@cox.net; Waters, Richard
Subject: Characterization of GW-11 Pond Contents

Brian,
During our last conversation re the Kerr-McGee Environmental Conditions Assessment - we discussed the possibility that analytical associated with samples from GW-11 pond would not be forthcoming from the contracted lab in time for submittal of the current characterization results to be forwarded to you on or before August 30th. We now are at the 11th hour and the information, as suspected, is not yet available. I have forwarded a note to this effect, via overnight delivery, which you should receive Monday, but am attaching it here as well as a heads up. Due to the lengthy period associated with the analytical, analytical will not be available until some time in September. This will be forwarded to you as available. Please e-mail or call if you have any questions. Thanks.

<<Digital_1.pdf>>

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

Brian Rakvica

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Friday, August 27, 2004 4:16 PM
To: Brian Rakvica
Cc: Gerry, Dave; Bilodeau, Sally; Reed, Thomas; ekrish@cox.net; Waters, Richard
Subject: Characterization of GW-11 Pond Contents

Brian,
During our last conversation re the Kerr-McGee Environmental Conditions Assessment - we discussed the possibility that analytical associated with samples from GW-11 pond would not be forthcoming from the contracted lab in time for submittal of the current characterization results to be forwarded to you on or before August 30th. We now are at the 11th hour and the information, as suspected, is not yet available. I have forwarded a note to this effect, via overnight delivery, which you should receive Monday, but am attaching it here as well as a heads up. Due to the lengthy period associated with the analytical, analytical will not be available until some time in September. This will be forwarded to you as available. Please e-mail or call if you have any questions. Thanks.

<<Digital_1.pdf>>

Susan Crowley
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Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

August 27, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Characterization of GW-11 Pond Contents

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) at the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the "Deliverable Schedule", supplied with the second quarter 2004 progress report, Kerr-McGee is characterizing the contents of GW-11 pond. Analytical results which will form the basis of this characterization require several weeks to complete and as such have not yet been delivered to Kerr-McGee. In turn, delivery of this information to your office in not likely possible by August 30, 2004 because of the lengthy analytical period. We expect that the analytical will be received from the consulting laboratory in September and it will be forwarded to you as available.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc: Tom Reed
Richard Waters
Rick Simon, ENSR
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Stater
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

09/07/04 Read

ALLEN BIAGGI, *Administrator*

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulation and
Reclamation
Facsimile 684-5259

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Federal Facilities

Corrective Actions
Facsimile 687-8335

NDEP.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
333 W. Nye Lane, Room 138
Carson City, Nevada 89706

August 26, 2004

Susan Crowley
Kerr McGee Chemical LLC
PO Box 55
Henderson, NV 89009

RE: Permit #NV0023060 – Perchlorate Exceedances

Dear Ms. Crowley:

The review of Kerr-McGee Chemical, LLC's (Kerr McGee) 2nd quarter 2004 Discharge Monitoring Report (DMR) has caused the Nevada Division of Environmental Protection (NDEP) concern regarding effective perchlorate treatment. NDEP has committed to work with Kerr McGee to achieve effective treatment through the start-up process involved with a biological system. To that end, Permit NV0023060, Part I.A.16.c provides a 9 month period from the date of permit issuance, or May 7, 2004, to achieve compliance with the 18 ppb limitation for perchlorate.

The 2004 2nd quarter DMR, covering the period from April to June, demonstrates exceedances more than an order of magnitude above the permitted perchlorate limit in both May and June. Also, the BOD reported in April was approximately 5 times greater than the allowable limit. No explanation was provided for any of these exeedances. Kerr McGee must ensure that treatment efficiency is maintained and all exceptions are addressed in the respective DMR.

Please address all exceedances reported in the 2004 2nd quarter DMR. Also, submit a summary of perchlorate compliance data relative to the effluent from both the bioreactor as well as the ion exchange system from July and, if available, August of this quarter. Provide all corrective actions taken to ensure future compliance. **This submittal shall be provided to NDEP no later than September 3, 2004.**

NDEP is greatly concerned by the reported exceedances and will be forced to take more formal measures if Kerr McGee does not resolve the perchlorate treatment efficiency issues. Thank you

for your cooperation in this matter.

On a separate issue, the Emergency Response Plan addendum submitted our office in response to NDEP's request for specific additional information failed to supply the list of downstream agencies/stakeholders that will be notified when an upset occurs that has the potential for negative impacts. This information shall also be submitted no later than September 3, 2004. If you have any questions regarding this letter, please contact me at your earliest convenience at (775) 687-9427.

Sincerely,

Valerie G. King
Enforcement Branch Supervisor
Bureau of Water Pollution Control

cc: Jon Palm, P.E, Bureau Chief
Darrell Rasner, P.E., Technical Services
Al Tinney, P.E., Permits
Diana Silsby, Enforcement
Larry Rountree, Enforcement
Todd Croft, BCA
Keith Bailey, Kerr McGee

ALLEN BIAGGI, *Administrator*

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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138

Carson City, Nevada 89706

August 26, 2004

Susan Crowley
Kerr McGee Chemical LLC
PO Box 55
Henderson, NV 89009

RE: Permit #NV0023060 – Perchlorate Compliance Date for Bioreactor

Dear Ms. Crowley:

The correspondence sent to you by NDEP dated August 26, 2004 addressed various issues, including the compliance date for perchlorate in the bioreactor effluent to meet the 18 ppb permit limitation. The permit allows for a nine month start-up period following the date of issuance prior to enforcing the 18 ppb limit. The correct compliance date this limit shall be enforced is December 5, 2004. Therefore, the reported perchlorate values for the 30 day average of 243.4 ppb (May) and 108.5 ppb (June) are not violations of the permit. These levels, however, must be addressed to ensure compliance by December 2004.

NDEP asks that Kerr McGee specify, in the interim, an explanation for all bioreactor effluent samples that exceed the 18 ppb. The explanation should include why the perchlorate concentration is elevated and what actions are being taken to ensure the limit is met by the required date. Also, please ensure that all other exceedances are explained in the DMR submittal.

Please address the issue in the August 26, 2004 correspondence regarding the Emergency Response Plan as originally requested. If you have any questions regarding this letter, please contact me at your earliest convenience at (775) 687-9427.

Sincerely,

Valerie G. King
Enforcement Branch Supervisor
Bureau of Water Pollution Control

cc: Jon Palm, P.E, Bureau Chief
Darrell Rasner, P.E., Technical Services
Al Tinney, P.E., Permits
Diana Silsby, Enforcement
Larry Rountree, Enforcement
Todd Croft, BCA
Keith Bailey, Kerr McGee

08/19/04
Resb

Todd Croft

From: Bowerman.Larry@epamail.epa.gov
Sent: Thursday, August 19, 2004 12:42 PM
To: Kaplan.Mitch@epamail.epa.gov; Todd Croft
Cc: Mayer.Kevin@epamail.epa.gov; Bowerman.Larry@epamail.epa.gov
Subject: FW: Perchlorate QA/QC Information from MWD


EPA314_QC summary.doc


PerchlorateQA6280 4-rev1.doc

Todd and Mitch,

I believe that both of you have expressed interest in receiving perchlorate QA/QC information. So, following is an email message from Leslie Palencia of MWD regarding their laboratory/analytical QA/QC procedures for perchlorate. I originally made the request for this information regarding their Colorado River Aqueduct samples, but I assume that these procedures also apply to the analytical work that they do on the weekly North Shore Road samples. Let me know if you have any questions.

Larry

----- Forwarded by Larry Bowerman/R9/USEPA/US on 08/19/2004 12:30 PM -----

"Palencia,Leslie Soo" <lpal@mwdh2o.com>
08/17/2004 12:25 PM

To: Larry Bowerman/R9/USEPA/US@EPA
cc:
Subject: FW: Perchlorate QC

Hi Larry,

Please find attached the information you requested about 2 months ago regarding QC. Sorry this took so long.

Thanks,
Leslie

> -----Original Message-----
> From: Wang,Hsiao-Chiu
> Sent: Tuesday, August 17, 2004 8:46 AM
> To: Palencia,Leslie Soo
> Cc: Baldonado,Socorro R; Kuo,Ching; Alvarez,Robert C; Suhady,Lely;
> Chen,Xiaoshan
> Subject: Perchlorate QC
>
> Leslie,
> Following are the perchlorate QC requirements (EPA Method 314.0) at

the
> Water Quality Lab. Let me know if you have questions.
> <<EPA314_QC summary.doc>> <<PerchlorateQA62804-rev1.doc>>
>
> Hsiao-Chiu Wang
> Metropolitan Water District of Southern California
> 700 Moreno Ave.
> La Verne, CA 91750
> Phone : 909-392-5089
> Fax: 909-392-5246
>
(See attached file: EPA314_QC summary.doc)(See attached file:
PerchlorateQA62804-rev1.doc)

EPA 314.0 - QUALITY CONTROL REQUIREMENTS SUMMARY

Requirement	Specification and Frequency	Acceptance Criteria
Initial Calibration	At least 4 calibration standards (4, 10, 25, and 50 ppb) for each analytical run	The lowest calibration standard must be equal to or lower than the MRL; MRL = 4ppb
Instrument Performance Check (IPC)	A 25µg/L perchlorate in a solution of mixed anions containing 1000mg/L chloride, sulfate, & carbonate each is used for IPC. Matrix Conductivity Threshold (MCT) verified at the beginning of each analysis batch. MCT (WQ Lab) = 7720µS/cm	The conductance of the IPC solution needs to be verified to within ± 10% of that of the originally prepared solution. Percent Difference of Area/height compared with that of the LFB must be < 25%. Perchlorate recovery between 80 -120% of fortified level.
Initial Calibration Check (ICCS)	With each analysis batch, initially verify calibration at the MRL by analyzing an initial low-level continuing calibration check standard (ICCS).	Recovery must be within 80-120%
Continuing Calibration (CCCS) and End Calibration Checks (ECCS)	Analyze CCCS/ECCS (25ppb) after every 10 samples and after the last MS/MSD in an analysis batch.	Recoveries must be within 80 - 120%
Laboratory Reagent Blank (LRB)	LRB before the field sample analyses and at the end of the run before the end MRL with every analysis batch (up to 20 samples).	Perchlorate must be less than ½ MRL
Laboratory Fortified Blank (LFB)	Analyze one LFB (25ppb) per analysis batch following the ICCS.	Recovery for LFB must be within 80 – 120% prior to analyzing samples. Sample results from batches that fail LFB are invalid.
Laboratory Fortified Matrix -Also known as matrix spike (MS)	Analyze a set of matrix spike (MS) and matrix spike duplicate (MSD) for every **10** samples; samples are spiked at alternating low (4ppb) and mid-level(25ppb) concentrations.	Recovery must be within 80 - 120% If fortified sample fails the recovery criteria, label both as suspect/matrix.
Matrix Spike Duplicate (MSD)	See above notes for MS and MSD. Calculate the relative percent difference (RPD).	RPD must be ± 10%.

SAMPLE ANALYSIS BATCH WITH QUALITY CONTROL REQUIREMENTS

Sample Description	Acceptance Criteria
Laboratory Reagent Blank (LRB)	≤ ½ MRL
Calibration Standard (4ppb)	
Calibration Standard (10ppb)	
Calibration Standard (25ppb)	
Calibration Standard (50ppb)	Correlation coefficient must be >0.995 for linearity
Instrument Performance Check Standard at MCT	PDA/H for IPC < 25%
Laboratory Reagent Blank (LRB)	≤ ½ MRL
ICCS at the MRL (4.0 µg/L)	Recovery of 80 - 120%
Laboratory Fortified Blank (LFB)	Recovery of 80 - 120%
Quality control sample (QCS) from second source	Within acceptance limits of the certified values
Sample 1 to Sample 10	normal analysis
Laboratory Fortified Matrix (LFM) (same as MS) spiked at mid-level (25ppb)	Recovery of 80 - 120%
Laboratory Fortified Matrix (LFM) Duplicates (same as MSD) spiked at mid-level (25ppb)	Recovery of 80 - 120%; RPD must be within ±10%
CCCS (25.0 µg/L)	Recovery of 80 - 120%
Sample 11 to 20	normal analysis
Laboratory Fortified Matrix (LFM) (same as MS) spiked at low-level (4ppb)	Recovery of 80 - 120%
Laboratory Fortified Matrix (LFM) Duplicates (same as MSD) spiked at low level (4ppb)	Recovery of 80 - 120%; RPD must be within ±10%.
ECCS (25 µg/L)	Recovery of 80 - 120%
Laboratory Reagent Blank (LRB)	≤ ½ MRL
MRL (4.0 µg/L)	Recovery of 80 - 120%
End of run	

Perchlorate Analyses at the Metropolitan Water District of Southern California's

Water Quality Laboratory

Analytical Method: USEPA Method 314.0

Instrumentation

Dionex Model DX500 Ion Chromatography (IC)
Columns: AS16 analytical column, AG16 guard column
Anion Micro Membrane Suppresser (AMMS III), chemical suppression mode
Conductivity detector (CD20)
805 µL sample loop

Minimum Reporting Level: 4 ppb

Matrix Conductivity Threshold (MCT)
MCT is determined in accordance with USEPA Method 314.0, section 9.2.8. The MCT at Metropolitan's Water Quality Laboratory is 7,720 µS/cm.

Matrix Conductance Verification
The electrical conductivity (EC) of the samples must be analyzed before analyses. If EC is greater than MCT, sample dilution is required. Minimum dilution factor is obtained by dividing measured EC by the MCT, and round it up to a whole number.

Standard Solutions

Stock Standard (1000 mg/L) – commercially prepared

Intermediate Standard (10 mg/L) - prepared by pipetting 1 mL of the stock standard into a 100 mL volumetric flask and dilute to volume with reagent water. It is prepared once every 28 days or sooner if necessary.

Quality Control Requirements

Calibration Curve
A calibration curve is established for each analytical run. The calibration standards are 4, 10, 25 and 50 ppb concentrations prepared from the intermediate standard once every 28 days or sooner if necessary.

Instrument Performance Check (IPC)

The IPC is analyzed at the beginning of the analytical run after the calibration curve is established to verify the performance of the IC system in high ionic matrix. The IPC is a 25 ppb perchlorate solution prepared in a mixture of chloride, sulfate, and carbonate (at 1,000 mg/L each). Results of the IPC analysis must meet the following criteria:

1. Perchlorate result must be within ±20% of the spiked value (i.e., 20 to 30 ppb).
2. Calculate the ratio of area to height of the perchlorate peak for the IPC sample and compare with that of the laboratory fortified blank from the initial demonstration of capability. The difference must be less than 25% before proceeding with the analyses.
3. If the retention time of the perchlorate peak shifts by more than 20% compared to when the column was new, the column needs to be replaced.

Laboratory Reagent Blank (LRB)

One LRB is analyzed after the IPC and before the end calibration check standard for each batch of analysis. Perchlorate in LRB must be less than ½ of the Method Reporting Level (MRL).

Method Reporting Level (MRL) Standard

An MRL standard (4 µg/L) is analyzed after the initial reagent blank and at the end of the analytical run. The recovery of the MRL must be within ±20 %. This also serves as initial calibration check standard (ICCS).

Laboratory Fortified Blank (LFB)

One LFB (25 ug/L concentration) is analyzed after the initial MRL before sample analyses. The recovery of the LFB must be between 80 to 120 %.

Quality Control Standard (QCS)

Obtained commercially-prepared (as second source); results must be within the acceptance limits of the certified values.

Matrix Spike and Matrix Spike Duplicate (MS/MSD) -- same as Laboratory Fortified Matrix (LFM)

Matrix spike and matrix spike duplicate are run every 10 samples. Samples are spiked at alternating low (4 ppb) and mid-level (25 ppb) concentrations. The control range for low -level and mid-level concentration recovery is 80% to 120%; relative percent difference (RPD) must be with ±10%.

Continuing Calibration Check Standard and End Calibration Check Standard (CCCS/ECCS)

A mid standard at 25 ppb is analyzed after every 10-samples and at the end of the analytical run to check for instrument drift. The recovery of the CCCS/ECCS must be between 80 to 120 %.

Analytical Sequence

Presample (a 25 ppb standard)
LRB
Calibration standard 1 (4 µg/L)
Calibration standard 2 (10 µg/L)
Calibration standard 3 (25 µg/L)
Calibration standard 4 (50 µg/L)
IPC (25 ppb)
LRB
ICCS (4 ppb)
LFB (25 ppb)
QCS
Sample 1
Sample 2

Sample 10
MS (25 ppb)
MSD (25 ppb)
CCCS (25 ppb)
Sample 11
Sample 12

Sample 20
MS (4 µg/L)
MSD (4 µg/L)
ECCS (25 µg/L)
LRB
MRL (4 µg/L)
End of run

Documentation

The standard and reagent solutions preparations are recorded in a notebook each time a new solution is made. Record the chemical supplier's name, lot number, purity of chemical, how the solutions were made, date of preparation and date of expiration. Write the chemical receiving date on bottle, and the date it was opened. Out of control incidences and corrective actions are documented in a separate notebook.

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: August 18, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Conference Call on August 18, 2004 at 1:30 PM

1. Attendance:
   a. NDEP: Todd Croft, Tamara Pelham, Brian Rakvica
   b. KM: Keith Bailey
2. Reviewed system operations.
   a. System is operating at ~930 gpm and ~50% of the chemical load. KM proposes to maintain at this level for two more weeks.
   b. Flow includes all of the Seep water, all of the ARW water and 30 gpm from the on-site GWTS. No pond water is being used.
3. Discussed system modifications.
   a. KM proposes to expand the sulfide killing operation. This injects hydrogen peroxide at the outlet of the secondary reactors before the aeration tanks.
   b. KM is proposing to add a static mixer to assist in the injection of ferric chloride.
   c. KM is also adding additional equalization tank capacity. Two 150,000 gallon tanks will be added. These tanks will be used for equalization of water from the GWTS and the pond.
   d. KM hopes to complete these modifications by the end of the month.
4. Discussed discharge location.
   a. KM anticipates some difficulty in getting right-of-way access from BLM. It is expected that this will take one to two months. KM will install the tie-in for this relocation during the installation of the static mixer. During this installation the FBR will be shut down for approximately 4 hours and the FBR feed will be directed to the pond.
5. Reviewed NDEP observations.
   a. Overall the discharge looks pretty good.
   b. Some white precipitate was noted in the seep area and before the culvert.
   c. White filamanetous bacteria noted in the Seep area and downstream.
   d. No scum was noted in the backwater area.
6. Other discussions.
   a. Arizona CAP/ SNWA tour on 8/26 – KM to provide some performance data. Plan on NDEP arrival at KM at 9:00 AM
   b. MWD tour on 8/26 – Plan on NDEP arrival at KM at 1:00 PM.

c. FBR tour on 9/9 – Plan on NDEP arrival at 8:00 AM.

7. Next call: Wednesday, September 1, 2004 at 1:30 PM. Call in number to be provided.

15560 8/13

Meeting Minutes

Project:	Kerr-McGee
Location:	Kerr-McGee
Time and Date:	1:00 PM, Wednesday, August 4, 2004
Meeting Number:	---
In Attendance:	NDEP-BCA – Las Vegas – Brian Rakvica, Jeff Johnson (via telephone) Kerr-McGee (KM) Susan Crowley, Rick Stater, Tom Reed (via video phone) ENSR- David Gerry, Ed Krish

CC: Jennifer Carr, Todd Croft

1. Meeting was held to review ECA progress.
2. Discussed GW-11 characterization.
    a. KM provided an analytical list of what is being analyzed. Includes the following classes: VOCs, TPH, Metals (including hexavalent chromium, cyanide, mercury), SVOCs, PAHs, OP Pests, OC Pests, PCBs, Dioxins/Furans, Herbicides, Radionuclides, water quality parameters, perchlorate, octachlorostyrene.
    b. Document is due August 30, 2004, KM noted that the radionuclide analysis may not be complete by then. Brian noted that it would be okay to delay for a couple of weeks if necessary. Brian requested that Susan notify him by email.
    c. KM noted that the sample was taken from the area known as the existing penetration through the berm. This is approximately ½ way north and south on the eastern berm and about 2/3 of the was down the water column.
    d. Analyses are being completed by MWH with a subcontracted radionuclide laboratory.
3. Discussed GW Monitoring Assessment due 8/15/04.
    a. KM provided an example format. NDEP noted that the format meets the needs of the project.
4. Discussed Performance Reports.
    a. Brian noted that he had not had time to complete his review of the chromium or perchlorate reports. Brian had skimmed through the chromium report and would have some comments, however, the plume map was very helpful.
    b. Susan noted that she will forward a copy of the chromium report to Leslie Palencia at MWD.
5. Discussed SRC list.
    a. It was requested that Brian fax his comments to Susan and Dave (ENSR).
    b. Brian noted that he is hoping to have his comments out in one week or so.
    c. Brian reviewed some of his specific comments on the report.

d. Brian noted that there are still many QA/QC problems with the report which make the report very time consuming to review. NDEP also noted that this is not desirable and is not efficient.
e. KM noted that they will be dealing with the issue of elevated detection limits in the DQOS and in future sampling plans.

6. Discussed CSM.
    a. ENSR asked if the format of the TIMET CSM was what NDEP expected. NDEP explained that the TIMET CSM was "draft, preliminary and conceptual" and was focused at a very specific task as requested by NDEP. NDEP noted that this may not be obvious to most readers unless they review the correspondence on "accelerated work" (as referenced in the CSM).
    b. NDEP's main issue with the document is that there are heavy inferences in the report that are not clear to the reviewer. For example, derivation of contours, paleochannels, etc. are heavily qualified and these qualifications need to be pointed out in the CSM.
    c. Another issue with the CSM is that there are references to a number of "other site features" which are not clearly relevant to the site.
    d. Brian noted that he hopes to have comments out in the next two weeks or so. It looks like comments will be in the 10-20 page range, however, all comments are not critical. Some comments are suggestions for the next iteration and/or explanations of expectations.
7. Discussed DQOs.
    a. KM asked if NDEP had an example of a format that was acceptable. NDEP noted that the BRC format is generally acceptable. NDEP cautioned that the BRC document is very draft and is not complete. Also, the content may not be acceptable.
    b. Brian will email the draft BRC DQOs to Susan and David.
8. Discussed regional issues.
    a. Brief discussion on background. Susan will be discussing with other BMI Companies.
9. Next Meeting: Tuesday, September 14, 2004, 1:00 PM at K; call-in number to be provided

KERR-MCGEE MEETING WITH NDEP
August 4, 2004

PROPOSED AGENDA

WELCOME

(tie-in remote participants)

OBJECTIVE

- Discuss Status of ECA-related activities and deliverables
- Address emerging issues, questions

ECA ISSUES - KM Henderson Facility

1. GW-11 Impoundment Characterization
    - SAP
    - Schedule
2. Groundwater Monitoring Report (Due to NDEP 8/15)
3. Comments on Performance Reports (submitted 7/28/04)
    - Chromium Remediation Performance Report
    - Perchlorate Remediation Performance Report
4. Comments on Site-related Chemical Report/List
5. Conceptual Site Model
    - Discuss format and scope
    - Comments on the Timet CSM Example
6. Data Quality Objectives
    - Discuss format and Scope
7. Other issues....

REGIONAL ISSUES (if any to discuss)

SCHEDULE

- Next deliverables
- Next Meeting

OTHER ISSUES,

Table 1
Sample Containers, Preservatives and Holding Times

Constituent	Test Method	Container	Preservatives	Holding time to extraction
VOCs	8260B or 624	Three 40 ml VOA vials	HCl and ice	14 days
TPH and VOCs	8015M	Three 40 ml VOA vials	ice	7 days
Metals	6000/7000 series as needed	One 500 milliliter plastic bottle	HNO_3	6 months
Metals	200.7, 200.8	One 500 milliliter plastic bottle	HNO_3	6 months
Hexevalent Cr	7196A or 218.6	One 125 milliliter plastic bottle	Buffer/ice	24 hours (proposed by EPA as 28 days)
Mercury	7470/7471A or 245.1	One 500 milliliter plastic bottle (with metals)	HNO_3	28 days
SVOCs	8270C or 625	Two 1 liter amber glass bottle	ice	7 days
PAHs	8270C or 8310 or 625	Two 1 liter amber glass bottle	ice	7 days
Cyanide	9010 or 335.3	One 500 milliliter plastic bottle	NaOH and ice	14 days
OPP Pesticides	8141A or 614	Two 1 liter amber glass bottle	ice	14 days
Organochlorine Pesticides	8081A or 608	Two 1 liter amber glass bottle	ice	7 days
PCBs	8082 or 608	Two 1 liter amber glass bottle	ice	7 days
Dioxins/furans	1613	Two 1 liter amber glass bottle	ice	1 year
Herbicides	8151A or 615	Two 1 liter amber glass bottle	Ice	7 days
R226	903.1M	One 1 liter poly (must be full)	HNO_3	6 months
R228	904.2M	Two 1 liter poly (must be full)	HNO_3	6 months
gross alpha	900	Two bottles: one 125 ml poly with no perservative and one 1 liter with HNO_3	HNO_3	6 months
Thorium	EML HASL 300	Ten 1 liter amber glass	none	6 months
Uranium (total)	200.8	same as metals	HNO_3	6 months
Oil and Grease	1664	Three 1 liter amber glass bottle	HCl and ice	28 days
TDS *	160.1	One 1 liter plastic bottles	ice	7 days
TSS *	160.2	* Same Bottles	ice	7 days
pH *	150.1	* Same Bottles	ice	24 hours
Chloride *	300	* Same Bottles	ice	28 days
Nitrate as N *	300	* Same Bottles	ice	48 hours
Sulfate *	300	* Same Bottles	ice	28 days
Perchlorate	314	One 125 milliliter plastic bottle	none	28 days
Octachlorostyrene	8270	One 1 liter amber glass bottle	ice	14 days?

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL # of pages ▶ 3

To Todd Croft	From Larry Bowerman, EPA
Dept./Agency NDEP	Phone # (415) 972-3339
Fax # (702) 486-2863	Fax # (415) 947-3533

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

August 11, 2004

Keith Takata
Director, Superfund Program
U.S. EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

Dear Keith:

Kerr-McGee in Henderson, Nevada is the source of what is arguably the largest plume of water-borne contamination, ever, in the United States. Perchlorate, from releases at Kerr-McGee, is found in the Colorado River from Lake Mead into Mexico; in the Central Arizona Project from Lake Havasu to Tucson; in Metropolitan Water District aqueducts extending to Los Angeles, Orange and San Diego Counties; and in Imperial Irrigation District canals. Despite the enormity of the plume, U.S. EPA has done nothing to address perchlorate contamination beyond the Nevada border.

The U.S. EPA has entrusted the clean-up of the three-state plume to the State of Nevada; however, Nevada water and waste programs have no authority for cleanup beyond its borders. We acknowledge the progress Nevada has made in its oversight of the cleanup and the reduction of perchlorate loading to the Colorado River: since 1997, when the issue was brought to light, perchlorate discharge has dropped from 900 pounds per day to approximately 200 pounds per day[1]. However, perchlorate in the Colorado River is still in excess of concentrations the U.S. EPA considers to be safe. According the Nevada, over the past two years, the Colorado River contained perchlorate at up to 7 ppb, well above U.S. EPA's provisional reference dose of 4 ppb and the proposed reference dose of 1 ppb. Even with further reductions in perchlorate contamination at Kerr-McGee, contamination would take decades to clean up because of recharge of contaminated Colorado River water to aquifers in Arizona, Nevada, California, and Mexicali, Mexico where groundwater is fed by canal seepage.

We urge you to consider what we think is the best regulatory instrument to address a problem that impacts three states, numerous Indian reservations, and a foreign country: the Superfund program. Unlike RCRA, where authority in this case is limited to the State of Nevada, Superfund is suited to address massive and complex plumes. Therefore, with this letter, we ask U.S. EPA to score the Kerr-McGee site for inclusion on the National Priorities List. Because of widespread contamination of drinking water, we believe that Kerr-McGee would score well in excess of the requisite threshold for inclusion. With a listing, U.S. EPA could require an assessment of the extent of the contamination, calculate health risks for up to 20 million people who drink the water and countless more who ingest food products dependent on Colorado River water, and take whatever emergency response actions may be necessary to further stem the flow of perchlorate contamination.

We understand there has been deliberation within U.S. EPA about the authority of the Superfund program to regulate perchlorate. A recent GAO report made this finding:

EPA's regulations define hazardous wastes to include those that are specifically listed in

Post-it® Fax Note 7671	Date 8/20/04 # of pages ▶ 3
To Jim Najima	From Todd Croft
Co./Dept. NDEP - CC	Co. NDEP - LV
Phone #	Phone #
Fax # (775) 687-8335	Fax #

the regulations as well as those that are "characteristic wastes." Characteristic hazardous wastes are defined as wastes that are ignitable, corrosive, reactive, or toxic. A federal district court in California recently ruled, in part, that perchlorate is a hazardous waste under RCRA because it is ignitable. (*Castaic Lake Water Agency v. Whittaker Corp*, 272 F. Supp. 2d 1053, C.D. Cal. 2003). The conclusion that perchlorate is a hazardous waste was the first step in the court's analysis of whether perchlorate is a hazardous substance under CERCLA. (The definition of hazardous substances under CERCLA includes hazardous waste under RCRA.) (See http://www.gao.gov/new.items/d04601.pdf.)

We believe this interpretation is valid and that Superfund program is appropriate in specifically addressing perchlorate as a contaminant, *i.e.*, it can be considered in scoring for inclusion on the National Priorities List.

The authority delegated by U.S. EPA to the State of Nevada for cleanup of Kerr-McGee is inadequate to address a plume that extends far beyond its boundaries into California and Arizona, impacts numerous Indian reservations, and ultimately flows into Mexico. We urge you to score Kerr-McGee for inclusion on the National Priorities List and to use Superfund authority to address potential health risks for the millions of people who depend on the Colorado River as a source of drinking water or who eat foods produced with Colorado River water.

Sincerely,

Lenny Siegel
Center for Public Environmental Oversight

Matt Hagemann
Former U.S. EPA Region 9 Senior Science Policy Advisor

Jonathan Parfrey
Physicians for Social Responsibility

Sujatha Jahagirdar
Environment California

Kara Gillon
Defenders of Wildlife

Chris Sproul
Environmental Advocates

ALLEN BIAGGI, Administrator

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

August 11, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Kerr-McGee Groundwater Monitoring Summary dated August 10, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and has the following comments:

1. It is requested that the horizontal grid lines be included in a future revision of this document for ease of review.
2. There are a number of cells where the text is truncated. It is requested that this be corrected in the next submittal.
3. It is requested that each of the abbreviations be define at the end of the table. For example, AMS, EC(WRF).
4. Please explain what "Eat Well at Seep" refers to.
5. The NDEP believes that it would be reasonable to submit an updated/revised chart with the next quarterly progress report due on **October 15, 2004**. Please advise if this is a date that is mutually acceptable to KM.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: August 11, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Conference Call on August 11, 2004 at 1:30 PM

1. Attendance:
   a. NDEP: Todd Croft, Tamara Pelham, Brian Rakvica
   b. KM: Keith Bailey
2. Reviewed system operations.
   a. System is operating at ~930 gpm and ~50% of the chemical load.
   b. Flow includes all of the Seep water, all of the ARW water and 30 gpm from the on-site GWTS. No pond water is being used.
   c. From 5:30 AM on 8/7/04 to approximately 11:00 AM on 8/11/04 the FBR discharge was routed to pond GW-11. This was due to increases in perchlorate concentration and opacity. It was discovered that this was due to a faulty nutrition pump. The preventative maintenance for this piece of equipment has been modified. During this time, stabilized lake water was discharged to the Seep.
   d. Discharge opacity is being adjusted after this incident and KM is working to bring the opacity back down to the 15-20 ntu range.
3. Discussed system modifications.
   a. On 8/10/04 KM tested a sulfide killing operation. This injects hydrogen peroxide at the outlet of the secondary reactors before the aeration tanks.
   b. The ferric chloride injection point is being moved from the aeration tank to the discharge pipe after the aeration tank and before a static mixer prior to the DAFs.
   c. KM is also adding additional equalization tank capacity. It was found that the cycling of the on-site pumps affects the influent concentrations noticeably.
   d. KM noted that revised P&ID will be submitted to Nadir Sous with NDEP -BWPC.
4. Discussed discharge location.
   a. KM plans to relocate at the downstream side of the existing culvert as close to the confluence of the Wash as possible (without being in the floodplain). NDEP noted that the discharge area needs to be properly rip-rapped and must allow for the collection of a sample.
   b. KM noted that the flow meter at the Wash area is believed to be inaccurate due to it's location in the piping. KM noted that the meter will be

recalibrated and properly installed when the discharge location is modified.

c. KM is still trying to determine the owners of the properties and get right of way agreements in place. Once this is complete a design will be finalized and submitted to Nadir Sous.

5. Other discussions.
   a. Discussed sale of part of US Filter. KM noted that this is the equipment supplies division and does not affect the operations at KM.
   b. KM noted that the quarterly report shows a noticeable decline in the 25 ppm contour between the ARW and the Seep.
6. Next call: Wednesday, August 18, 2004 at 1:30 PM. Call in number to be provided.

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

August 19, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee Groundwater Monitoring Summary

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) at the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the "Deliverable Schedule", supplied with the second quarter 2004 progress report, please find attached a summary of groundwater monitoring associated with Kerr-McGee activities in Henderson, NV.

Please note this summary includes groundwater monitoring which is directed by several vehicles, including a Consent Order and a UIC permit (issued by NDEP). In addition, Kerr-McGee also has summarized groundwater monitoring which is being conducted in support of the perchlorate remedial project. This later summary is modified as needed to provide the hydrogeologists the information needed for an evaluation of the remedial system performance.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc:
Tom Reed
Richard Waters
Rick Simon, ENSR
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Stater
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

Attachment 1

-

Groundwater Monitoring Summary

GROUNDWATER TREATMENT PLANT (G)			CONSENT ORDER - APPENDI	ROUNDWATER MONITORING (1987)			CONSENT ORDER - APPENDIX J GROUNDWATER MONITORING (1987)		UIC Permit 98203 (modified 12-: V UNEV #94218 Underground Injection Co...ol Permit		Perchlorate Remediation Groundwater Mon g Plan February 5, 2003		Additional KM Monitoring - Input to Remediation Evaluation Reports	
revision: August 4, 2004			Monitoring upgradient and downgradient to track water quality changes				Monitoring a north-south line of wells to track water quality across facilty		Monitoring to evaluate groundwater quality and elevation a the facility					
Count	Well	Location	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters
1	M-10				Monthly	Water Level	Quarterly	Chromium, water elevation trac	Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4	Quarterly	NV0023060 analytes
2	M-11	Upgradient - near source -N of Unit 5			Monthly	Water Level	Quarterly	Chromium, water elevation trac	Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4		
3	M-12a	Upgradient -N of Unit 4							Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4		
4	M-13												Quarterly	pH, SpCd, total Cr
5	M-14	Upgradient	Quarterly	SpCd, pH, Chromium							Quarterly	ClO_4		
6	M-15	Upgradient	Quarterly	SpCd, pH, Chromium										
7	M-17A	Upgradient of AP-2											Quarterly	pH, SpCd, total Cr
8	M-18	Downgradient	Quarterly	SpCd, pH, Chromium	Monthly	Water Level								
9	M-19				Monthly	Water Level							Quarterly	pH, SpCd, total Cr
10	M-22A	Upgradient	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
11	M-23				Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
12	M-25	Upgradient, Downgradient of AP1,2,3 and 4, crossgradient AP 5 & 6	Quarterly	SpCd, pH, Chromium	Monthly	Water Level	Quarterly	Water elevation tracking	Quarterly	Water elevation tracking	Quarterly	ClO_4		
13	M-27	Downgradient - N of recharge							Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4		
14	M-31A	Upgradient					Quarterly	Water elevation tracking						
15	M-32												Quarterly	pH, SpCd, total Cr
16	M-35												Quarterly	pH, SpCd, total Cr
17	M-36	Upgradient - south of interceptor	Quarterly	SpCd, pH, Chromium	Monthly	Water Level	Quarterly	Chromium, water elevation trac	Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4		
18	M-37	Upgradient - south of new D-1	Quarterly	SpCd, pH, Chromium	Monthly	Water Level			Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4		
19	M-38	Upgradient	Quarterly	SpCd, pH, Chromium	Monthly	Water Level			Quarterly	Water elevation tracking	Quarterly	ClO_4		
20	M-39	Upgradient			Monthly	Water Level	Quarterly	Water elevation tracking			Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
21	M-44	Downgradient - N of NV Pickapart			Monthly	Water Level			Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4		
22	M-48				Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
23	M-50				Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
24	M-52										Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
25	M-53	Vicinity of interception system	Quarterly	Water Elevation Tracking										
26	M-55	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
27	M-56	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
28	M-58	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
29	M-60	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
30	M-61	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
31	M-64	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
32	M-65	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
33	M-66	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
34	M-67	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
35	M-68	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
36	M-69	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
37	M-70	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
38	M-71	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
39	M-72	Vicinity of interception system - between interceptor and recharge	Quarterly	Water Elevation Tracking	Monthly	Water Level	Quarterly	Chromium			Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
40	M-73	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
41	M-74	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
42	M-76										Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
43	M-78	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level								
44	M-79	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
45	M-80	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level	Quarterly	Water Elevation Tracking	Quarterly	Water elevation tracking				
46	M-81A	Treating Vicinity	Quarterly	Water Elevation Tracking			Quarterly	Water Elevation Tracking			Quarterly	ClO_4		
47	M-83	On-site, Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level					Monthly	ClO4, EC	Quarterly	pH, SpCd, total Cr
48	M-84	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level	Quarterly	Water Elevation Tracking	Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4		
49	M-85	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
50	M-86	Downgradient - N of recharge	Quarterly	SpCd, pH, Chromium, water ele	Monthly	Water Level	Quarterly	Chromium, water elevation trac	Quarterly	Water elevation tracking	Quarterly	ClO_4		
51	M-87	On-site, Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level					Monthly	ClO4, EC	Quarterly	pH, SpCd, total Cr
52	M-88	Vicinity of interception system	Quarterly	Water Elevation Tracking	Monthly	Water Level	Quarterly	Chromium, water elevation tracking			Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
53	M-89	Downgradient AP-1, 2, 3 & 4, and crossgradient AP5, Upgradient AP6			Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
54	M-94	Downgradient - N of NV Pickapart			Monthly	Water Level			Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4		
55	M-96	Downgradient - N of NV Pickapart			Monthly	Water Level			Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
56	M-98				Monthly	Water Level			Quarterly	Water elevation tracking	Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
57	M-99				Monthly	Water Level			Quarterly	Water elevation tracking	Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
58	M-100	Downgradient - N of berm			Monthly	Water Level			Quarterly	pH, SpCd, Total Cr, Cr+6, ClO4 (Na + NH4), TDS	Quarterly	ClO_4		
59	M-101				Monthly	Water Level					Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
60	M-102	Downgradient			Monthly	Water Level			Quarterly	Water elevation tracking	Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
61	I-AR	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
62	I-B	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
63	I-C	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
64	I-D	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
65	I-E	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
66	I-F	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
67	I-G	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
68	I-H	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		

GROUNDWATER TREATMENT PLANT (C ?)			CONSENT ORDER - APPEND GROUNDWATER MONITORING (1987)				CONSENT ORDER - APPENDIX J GROUNDWATER MONITORING (1987)		UIC Permit 98203 (modified 12)/ UNEV #94218 Underground Injection Control Permit		Perchlorate Remediation Groundwater Mo ng Plan February 5, 2003		Additional KM Monitoring - Input to Remediation Evaluation Reports	
revision: August 4, 2004			Monitoring upgradient and downgradient to track water quality changes				Monitoring a north-south line of wells to track water quality across facilty		Monitoring to evaluate groundwater quality and elevation a the facility					
Count	Well	Location	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters
69	I-I	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
70	I-K	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
71	I-L	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
72	I-M	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
73	I-N	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
74	I-O	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
75	I-P	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
76	I-Q	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
77	I-R	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
78	I-S	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
79	I-T	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
80	I-U	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
81	I-V	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
82	I-W	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
83	I-X	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
84	I-Z	Intercepter Well	Quarterly	SpCd, pH, Chromium	Monthly	Water Level					Quarterly	ClO_4		
85	PC-10	Athens Road									Monthly	ClO4, EC, water level		
86	PC-12	Athens Road									Monthly + continuous level via mini-troll	ClO4, EC, water level		
87	PC-17	Athens Road									Monthly + continuous level via AMS	ClO4, EC, water level		
88	PC-18	Athens Road									Monthly + continuous level via AMS	ClO4, EC, water level		
89	PC-19	Athens Road									Well Destroyed			
90	PC-101R	Athens Road									Monthly	ClO4, EC, water level		
91	PC-37										Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
92	PC-53	Athens Road									Monthly	ClO4, EC (WRF), water level		
93	PC-54										Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
94	PC-55	Athens Road									Monthly + continuous level via AMS	ClO_4, pH, EC, water level		
95	PC-71										Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
96	PC-72										Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
97	PC-73										Quarterly	ClO_4	Quarterly	pH, SpCd, total Cr
98	PC 86	Seep Area									Monthly	Water Level, ClO4, EC		
99	PC-88	Seep Area									Continuous	Water Level - AMS		
100	PC 89	Seep Area									Monthly	Water Level, ClO4, EC		
101	PC 91	Seep Area									Monthly	Water Level, ClO4, EC		
102	PC-95	Seep Area									Continuous level, monthly analysis	Water Level - Mini Troll, ClO4, EC		
103	PC-97	Seep Area									Continuous level, monthly analysis	Water Level - Mini Troll, ClO4, EC		
104	PC-98R	Athens Road									Monthly + continuous water level (troll), pH EC(WRF)	ClO4, EC (WRF)		
105	PC-99 R2 / PC-93R3	Seep Area									Monthly on Level, Weekly & Monthly on Analysis	Water Level, ClO4, EC	Daily Flow - Center Well at Seep, Capture Weekly	
106	PC-103	Seep Area									Monthly	ClO4, EC (WRF), water level		
107	PC-116R	Seep Area									Monthly on Level, Weekly on Analysis	Water Level, ClO4, EC	Daily Flow - Eat Well at Seep, Capture Weekly	
108	PC-115R	Seep Area									Monthly on Level, Weekly on Analysis	Water Level, ClO4, EC	Daily Flow - Eat Well at Seep, Capture Weekly	
109	PC-117	Seep Area									Monthly on Level, Weekly on Analysis	Water Level, ClO4, EC	Daily Flow - Eat Well at Seep, Capture Weekly	
110	PC-118	Seep Area									Monthly on Level, Weekly on Analysis	Water Level, ClO4, EC	Daily Flow - Eat Well at Seep, Capture Weekly	
111	PC-119	Seep Area									Monthly on Level, Weekly on Analysis	Water Level, ClO4, EC	Daily Flow - Eat Well at Seep, Capture Weekly	
112	PC-120	Seep Area									Monthly on Level, Weekly on Analysis	Water Level, ClO4, EC	Daily Flow - Eat Well at Seep, Capture Weekly	
113	PC-121	Seep Area									Monthly on Level, Weekly on Analysis	Water Level, ClO4, EC	Daily Flow - Eat Well at Seep, Capture Weekly	
114	PC-122	Athens Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
115	PC-123	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
116	PC-124	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
117	PC-125	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
118	PC-126	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
119	PC-127	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
120	PC-128	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
121	PC-129	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
122	PC-130	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
123	PC-131	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
124	PC-132	Sunset Road									Quarterly	Water Level, ClO4, EC	Quarterly	pH, SpCd, total Cr
125	ARP-1	Athens Road									Monthly	ClO4, EC, water level		
126	ARP-2	Athens Road									Monthly	ClO4, EC, water level		
127	ARP-3	Athens Road									Monthly	ClO4, EC, water level		
128	ARP-4	Athens Road									Monthly	ClO4, EC, water level		
129	ARP-5	Athens Road									Monthly	ClO4, EC, water level		
130	ARP-6	Athens Road									Monthly	ClO4, EC, water level		

GROUNDWATER TREATMENT PLANT (GV			CONSENT ORDER - APPENDIX	TOUNDWATER MONITORING (1987)			CONSENT ORDER - APPENDIX J GROUNDWATER MONITORING (1987)		UIC Permit 98203 (modified 12-2	UNEV Permit	Perchlorate Remediation Groundwater Monit Plan February 5, 2003		Additional KM Monitoring - Input to Remediation Evaluation Reports	
revision: August 4, 2004			Monitoring upgradient and downgradient to track water quality changes				Monitoring a north-south line of wells to track water quality across facilty		#94218 Underground Injection Co. Monitoring to evaluate groundwater quality and elevation a the facility					
Count	Well	Location	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters	Frequency	Parameters
131	ARP-7	Athens Road									Monthly	ClO4, EC, water level		
132	ART-1	Athens Road									Weekly analysis and water level / semi-annual elevation	ClO4, EC, water level		
133	ART-2	Athens Road									Weekly analysis and water level / semi-annual elevation	ClO4, EC, water level		
134	ART-3	Athens Road									Weekly analysis and water level / semi-annual elevation	ClO4, EC, water level		
135	ART-4	Athens Road									Weekly analysis and water level / semi-annual elevation	ClO4, EC, water level		
136	ART-5	Athens Road									Weekly analysis and water level / semi-annual elevation	ClO4, EC, water level		
137	ART-6	Athens Road									Weekly analysis and water level / semi-annual elevation	ClO4, EC, water level		
138	ART-7	Athens Road									Weekly analysis and water level / semi-annual elevation	ClO4, EC, water level		
139	ART-8	Athens Road									Weekly analysis and water level / semi-annual elevation	ClO4, EC, water level		
140	COH-SS-1	Athens Road									Semi-annual	elevation for subsidence		
141	COH-SS-2	Athens Road									Semi-annual	elevation for subsidence		
142	COH-SS-3	Athens Road									Semi-annual	elevation for subsidence		
143	COH-SS-4	Athens Road									Semi-annual	elevation for subsidence		
144	COH-SS-5	Athens Road									Semi-annual	elevation for subsidence		
145	SNWA-1	Athens Road									Semi-annual	elevation for subsidence		
146	SNWA-2	Athens Road									Semi-annual	elevation for subsidence		
147	L-635	Athens Road									Monthly	ClO4, EC, water level		
148	L-637	Athens Road									Monthly	ClO4, EC, water level		
149	MW-K2	Athens Road									Monthly	ClO4, EC, water level		
150	MW-K4	Athens Road									Monthly	ClO4, EC, water level		
151	MW-K5	Athens Road									Monthly	ClO4, EC (WRF), water level		

Kerr-McGee (Perchlorate)

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

August 10, 2004

Pageantry Communities, Inc.
Attn: Mr. William Hoover, Division President
1333 N. Buffalo Drive, Suite 220
Las Vegas, NV 89128

Subject: **Third Party Status Regarding Perchlorate Contaminated Soil and Groundwater**

Reference: 42.96-Acre Parcel
Near Wigwam Parkway & Arroyo Grande Boulevard
(Northeast Corner of Arroyo Grande Boulevard & I-215)
Henderson, NV
(APN 178-16-710-003)

Regarding: Former PEPCON Facility
8201 Gibson Road
Henderson, NV
Facility ID # H-000534

Dear Mr. Hoover:

The Nevada Division of Environmental Protection (NDEP) has received a request from Snell & Wilmer L.L.P. for a third party liability letter for the referenced property. We understand that Pageantry Communities, Inc., through an affiliate ("Pageantry"), desires to purchase the referenced 42.96-acre parcel from Cornerstone Partners I, LLC. The referenced property is in close proximity to and positioned to the southwest of the former PEPCON facility. Snell & Wilmer L.L.P. provided a Phase I Environmental Site Assessment prepared by Brown & Caldwell (dated June 23, 2004) related to the referenced property as part of the third party status request.

Perchlorate impacted groundwater has been identified beneath and down gradient of the former PEPCON facility. Perchlorate impacted groundwater also has been identified beneath and down gradient of the Kerr-McGee Chemical LLC (Kerr-McGee) facility approximately one and one half to two miles east of the former PEPCON Facility. Both Kerr-McGee and American Pacific Corporation [(AMPAC) the parent company for PEPCON] are conducting assessments focused at how to remediate the perchlorate-impacted groundwater in their respective areas. The NDEP, Bureau of Corrective Actions and the U.S. Environmental Protection Agency (U.S. EPA) are providing the regulatory oversight for this work.

Kerr McGee installed a temporary remediation system down gradient of their facility in 1999. Additional remediation well fields and equipment were brought on-line in October 2002 and continue to remediate perchlorate-impacted groundwater beneath and down gradient of the Kerr-McGee facility. A permanent, long-term, state of the art remediation system is currently undergoing start-up and should replace the temporary remediation system by treating perchlorate-impacted water by the end of 2004.

AMPAC has conducted a pilot test and successfully demonstrated the ability to biologically degrade perchlorate in-situ. AMPAC is moving forward with a schedule that should allow for remediation of two areas of perchlorate-impacted groundwater by early to middle 2005. The first AMPAC remediation system will be positioned in the vicinity of Boulder Highway & Athens Road and should initiate start-up by the end of January 2005. The second AMPAC remediation system will be positioned in the vicinity of Gibson Road & American Pacific Drive and should initiate start-up by May or June 2005.

Data developed and provided by AMPAC, Kerr-McGee, and their respective consultants suggest that perchlorate-impacted groundwater present beneath the referenced 42.96-acre parcel is likely a result of historic practices at the PEPCON facility. The groundwater flow direction within this portion of the Las Vegas Valley generally is to the northeast.

The purpose of this letter is to provide assurances to the current property owner, subsequent property owners, and lenders involved with property transactions or development of the referenced property that NDEP will not hold you or them responsible for remediation of contaminants associated with the existing perchlorate present in soil and groundwater on and/or beneath the referenced property (APN # 178-16-710-003) which are present as a result of one or more releases from perchlorate manufacturing facilities that formerly operated in the near vicinity. The NDEP can provide these assurances for the following reasons:

- The perchlorate-impacted soils and groundwater present on and/or beneath portions of the referenced property are from an off-site source(s). Perchlorate concentrations in ten on-site soil samples collected by Brown & Caldwell were reported by the laboratory to range between less than 0.020 milligrams per kilogram (mg/kg) and 0.650 mg/kg. These measured concentrations are well below the EPA Region 9 Residential Preliminary Remedial Goal (PRG) of 7.8 mg/kg. The NDEP uses the EPA Region 9 PRGs in evaluating potential risks to human health and the environment. The EPA Region 9 Residential PRG is considered protective of human health and the environment;

- The NDEP will require, and the responsible party (AMPAC) is taking, all actions necessary to protect public health and the environment; and

- Long-term remediation of the perchlorate-impacted groundwater in this portion of the Las Vegas Valley is planned to begin within approximately the next 10 – 12 months. Complete remediation of perchlorate-impacted groundwater will take many years, however, this groundwater is not used for consumptive or other uses. Exposed surface water in the immediate vicinity of the referenced property is to be evaluated for perchlorate content in the near future and potential future uses of that surface water will consider the measured concentrations.

The NDEP does reserve the right to hold the impacted third party responsible for the contamination located on the referenced property if they unreasonably obstruct the responsible party (RP), the RP's consultant, NDEP or NDEP's representatives from conducting necessary actions. This would include such circumstances as denying access to the referenced property (APN # 178-16-710-003), or portions thereof, for purposes including assessment, remediation, monitoring, and well abandonment related to the perchlorate remediation projects.

Also, please bear in mind that any waste materials (i.e. perchlorate-impacted soil and/or groundwater at concentrations exceeding current action levels) that are encountered during development of the subject site will require appropriate characterization, management, and destruction/disposal. You may wish to consult a CEM to assist in these matters. You may also wish to contact AMPAC for assistance in the event that soil and/or groundwater is encountered during construction with perchlorate concentrations exceeding the action levels and these materials need to be managed.

Additionally, please note, water discharges, withdrawals and re-injections, and air emissions will require different state and local government permits. Coordination should be initiated immediately to determine which permits and/or approvals are required. This information is best obtained from each agency of government, including state and local fire, health, public works, sanitation, transportation, building/construction, NDEP, and Nevada division of Water Resources.

We trust this information meets your needs at this time. Please feel free to contact the undersigned in our Las Vegas office at (702) 486-2871 to discuss these projects or the contents of this letter.

Sincerely,

Todd J. Croft, Supervisor
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

TJC: tjc

Enc: Snell & Wilmer L.L.P. Letter (dated July 15, 2004)

cc: Mr. William Frey, Deputy Attorney General, Nevada Attorney General's Office, 100 N. Carson St., Carson City, NV 89701
Mr. Jim Najima, Chief, Bureau of Corrective Actions, NDEP, Carson City, NV
Mr. Tim Murphy, Acting Chief of Las Vegas Operations, NDEP, Las Vegas, NV
Mr. Bradley R. Cahoon, Snell & Wilmer, L.L.P. Law Offices, 15 West South Temple, Suite 1200, Gateway Tower West, Salt Lake City, UT 84101
Mr. Jeff Gibson, American Pacific Corporation, 3770 Howard Hughes Parkway, Suite 300, Las Vegas, NV 89109
Ms. Linda Ferguson, American Pacific Corporation, 3770 Howard Hughes Parkway, Suite 300, Las Vegas, NV 89109
Ms. Susan Crowley, Kerr-McGee Chemical LLC, P.O. Box 55, Henderson, NV 89009
Mr. Keith Bailey, Kerr-McGee Corporation, Kerr-McGee Center, P.O. Box 25861, Oklahoma City, OK 73125

Todd Croft

From: Krish, Ed [ekrish@cox.net]
Sent: Monday, August 09, 2004 4:29 AM
To: Todd Croft
Cc: 'Crowley Susan'
Subject: RE: Annual Regional Perchlorate Map Set

OK.

I'm driving to Minnesota today and will return to OKC on Sept 8th. I'll finish the maps then and send 8 sets to you as soon as I can.

Thanks, Ed

-----Original Message-----
From: Todd Croft [mailto:tcroft@ndep.nv.gov]
Sent: Sunday, August 08, 2004 1:25 PM
To: Krish, Ed
Cc: Crowley Susan
Subject: RE: Annual Regional Perchlorate Map Set

Ed:

Thank you for the information. I have discussed this with Jeff Gibson and followed up w/ an e-mail request for him to provide Kerr-McGee (Susan / Ed) w/ the AMPAC data as soon as practical. I do not know why he has not followed through yet.

Please keep me posted as to when you receive the AMPAC data and then when you will provide the Kerr-McGee maps. As in prior years, please provide approximately 8 map sets.

THX BYE

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

-----Original Message-----
From: Krish, Ed [mailto:ekrish@cox.net]
Sent: Thursday, August 05, 2004 11:45 AM
To: Todd Croft
Cc: Crowley Susan
Subject: Annual Regional Perchlorate Map Set

Todd,

I have been ready for the last two weeks to send my draft maps to drafting to be finalized.

The problem is that although we sent Jeff Gibson our data in early July he has not yet reciprocated.....even thought Susan has already sent him 3 or 4 reminders.

So, we have two options

1. Wait until Jeff decides to send the data
2. Get the maps as-is drafted and send them to you.

If you choose to have us wait it won't be until early September until I can get back to them.

If you want us to wait a friendly reminder to Jeff from you would be much appreciated.

Please let me know which way we should proceed.

Thanks,

Ed

Administrator – acting
Jolaine Johnson and Leo Drozdoff

(775) 687-4670

Administration
Facsimile 687-5856

Water Quality Planning
Water Pollution Control
Facsimile 687-4684

Mining Regulations and Reclamation
Facsimile 684-5259

STATE OF NEVADA
KENNY C. GUINN
Governor

ALLEN BIAGGI, *Director*

Air Pollution Control
Air Quality Planning
Facsimile 687-6396

Waste Management
Facsimile 687-6396

Federal Facilities
Facsimile 687-6396

Corrective Actions
Facsimile 687-8335

ndep.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

Las Vegas Office

1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

August 5, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC (KM)
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Revised Site-Related Chemical List(Report) dated July 22, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides the following comments:

1. For ease of review and cross-checking it is requested that an alphabetical list of site-related chemicals (SRC) be provided to supplement the SRC list as submitted.
2. As indicated in the NDEP's June 21, 2004 letter, laboratory (instrument) detection limits are not listed for a number of chemicals. Please provide the remainder of these detection limits in a revised submittal. The response provided by KM in item #3 discusses the difference between instrument detection limits and method detection limits. This does not answer the NDEP's question.
3. Per comment #4 in the NDEP's June 21, 2004 letter, please include heavy metal sulfides and various lab wastes on the SRC list or provide a text justification for not including these mixtures.
4. In comment #4 KM states that "chemicals such as graphite and diatomaceous earth are not known to pose significant environmental or health concerns". This statement is irrelevant to the development of a list of all chemicals potentially associated with the site. Also, the NDEP would like to note that it may be appropriate to eliminate SRC from further site characterization and risk

assessment due to no toxicity (chemicals with low toxicity will need to be retained for further evaluation), rapid breakdown in the environment, insignificant volume of breakdown product, or other factors that eliminate health risk, however, these chemicals/compounds should be retained on the SRC list for tracking purposes.

5. In comment #5 KM states that "magnesium is a naturally occurring metal present in the soils, groundwater and drinking water; it is not typically a threat to human health or the environment". Please see comment #4 above.
6. In comment #6 KM states that "Kerr-McGee has limited knowledge of the exact chemical composition of many of the examples cited". Further investigation and justification is needed on this topic. If KM believes that the proposed analyses for unknowns (as presented in KM comment #7) is sufficient to address these mixtures then KM should state this. If KM does not believe that the analyses proposed for unknowns is sufficient to address these mixtures then KM should either 1) expand the analyses for unknowns or 2) perform additional research to determine the chemical makeup of the mixtures.
7. In comment #6 KM states that "identifying specific degradation by-products for each of the chemicals listed on the site-specific chemical list is unnecessary...most chemicals within a specific chemical family is expected to degrade in a reasonably predictable way". The NDEP believes that this justification is inadequate. The NDEP requests that KM review each of the SRC and determine if the degradation by-products are being addressed by the proposed analyses. The NDEP has contracted with independent chemists, radio-chemists, and toxicologists to review the SRC list for the entire BMI facility and identify the degradation by-products as applicable. If KM chooses to not complete the review of it's degradation by-products at this time, re-analysis or re-sampling may be required in the future for analytes that were not addressed. The NDEP is not requiring KM to perform this review, however, it is highly recommended for the sake of historic documentation and to reduce costs due to re-analysis/re-sampling.
8. In the NDEP's June 21, 2004 letter to KM, comment #6b, a list of mixtures was provided. KM did not provide a response to "solvents". It is expected that this could be addressed within KM response #7, Table 2.
9. In response to comment #7b, please explain why manganese, tungsten and platinum were excluded from the list of metals. Manganese and platinum are both associated with KM operations and tungsten is a metal that is believed to be related to the former BMI operations. Also, please explain why cyanide and radionuclides have been excluded from this list.
10. In response to comment #7, Table 1, the NDEP has the following comments:
    a. Please note that methods 8081, 8081A address only organochlorine pesticides. Please change the "chemical, compound, category or element" heading to organochlorine pesticides.
    b. For herbicides it appears that the method is incorrectly listed as "EPA 8051". The correct method appears to be method 8151A for chlorinated herbicides. Please review this issue and respond.
11. In response to comment #7, Table 2, the NDEP has the following comments:

a. It appears to the NDEP that the broad class of chemicals listed as "acids" and "bases" would also require cation, anion, and metals analyses.
b. Based on the National Environmental Methods Index it appears that method 8015(C) will address ethylene glycol but not propylene glycol. Also the CAS number listed is the CAS number for ethylene glycol. If KM has institutional knowledge that suggests that only ethylene glycol was used at the site please explain. Otherwise it is necessary to include and document a method for propylene glycol as well as ethylene glycol.
c. For chlorinated herbicides it appears that the method is incorrectly listed as "EPA 8051". The correct method appears to be method 8151A. Please review this issue and respond.

12. In response to comment #8c, the response does not answer the NDEP's question. Please explain how KM will address a scenario where the instrument detection limit exceeds the screening level or explain when (and in what document) KM will address issue.
13. In response to comment # 13b, the NDEP would like to note that Method 8310 may have lower detection limits for some PAHs. This may be an issue that KM may want to address in the future.
14. In response to comment #15, the NDEP would like to note that a number of the radionuclides in the Thorium 232 and Uranium 238 decay series have been omitted. Including (but not limited to): Actinium 228, Lead 210, Lead 212, Bismuth 212, and Thorium 234. Please re-evaluate the radionuclides include on the SRC list and explain. Also, the isotope number has not been provided for Polonium. Please explain what isotopes of Polonium will be analyzed.
15. In response to comment #15a, the NDEP would like to note that regardless of half-lives, elevated levels of radon 222 have been found in groundwater immediately adjacent the KM site. The NDEP suggests that radon 222 be added to the SRC list.
16. To clarify comment 15b, it should be noted that adjusted gross alpha does not subtract Radon 222 and Uranium. This adjustment subtracts the effects of these compounds. Radon 222 is lost during the preparation of the sample for EPA Method 900.0 and it is important to not remove the effects of radon 222 twice.
17. In comment #16a KM states that "those site-related chemicals that are non-hazardous or those site-related chemicals that do not pose a threat to human health or the environment should not be critical elements of the list". As discussed in our meeting, the NDEP disagrees. The NDEP believes that it is useful to do a thorough analysis of the universe of site-related chemicals and to document the reasoning for excluding chemicals from further analysis (where applicable).
18. In response to comment #16g, the NDEP disagrees with KM's statement. Please explain how EPA method 8015M will address other components of petroleum hydrocarbons (including but not limited to): lead, naphthalene, fluorene, BTEX compounds and MTBE (if applicable at the site).
19. In response to comment #16i, the NDEP requested an explanation for what was meant for the category labeled "non-halogenated" as it appeared to be a truncated version of "non-halogenated organics". KM stated "non-halogenated organics has been deleted, as requested" with no further explanation. This does not respond to

the original question. If this category was erroneously included KM should have stated as such and deleted the category. The NDEP can only assume that this is the case since no explanation was provided.

20. On the SRC List Table the NDEP has the following comments:
    a. This table still has a number of QA/QC issues. As the NDEP explained to KM, each submittal should represent the "best effort" of KM. The NDEP can not expend it's limited resources reviewing documents that have numerous errors. Due to the number of errors the NDEP did not verify the validity of all of the analytical methods present. Once KM has reviewed the QA/QC issues with this document and re-submitted the NDEP will perform a more thorough review.
    b. It appears that some of the proposed analytical methods can be consolidated in to other methods (e.g.: 8260, 8270) that are proposed for other compounds and KM can realize an analytical cost savings (see specific comments below for examples). The NDEP requests that KM evaluate this and respond.
    c. For a number of chemicals/compounds (for example, anti-foam agent, argon, chelant, coagulants, coal, coke, sodium alpha olefin sulfonate) the analytical method listed is "None". It is necessary to provide an explanation for each of these situations. If no analytical method exists then a discussion on the feasibility of method development is necessary. If a method exists but KM is not proposing to analyze for this chemical/compound then adequate justification is required. For clarity, it is suggested that chemicals that KM proposes to not analyze be placed at the end of this list under a distinct header or be placed on a second table.
    d. For sodium alpha olefin sulfonate it appears that analysis for sodium would be sufficient to address this compound.
    e. Please provide a text justification for the use of EPA Method 8015B for "flammables'.
    f. Also, for boric acid, the NDEP believes that it would also be appropriate to include the analysis for pH in the list. This comment is typical for all acids and bases. KM should review the entire list and address this issue.
    g. For boron tribromide the analysis for bromide is not included and for boron trichloride the analysis for chloride is not listed. It may also be appropriate to include the alkalinity analysis for the carbide portion of boron carbide. This comment is typical for a number of examples in the list and should be addressed.
    h. Calcium chloride is proposed to be addressed by calcium and sulfate analysis. This appears to be a typographic error. This and all other typographic errors should be addressed.
    i. Chlorine is listed as being an air contaminant only, however, an analysis is listed. Please explain if KM plans to analyze for chlorine in the air or if this is a typographic error. If the chemical is not proposed for analysis the notes should state this.
    j. Paints included analysis "8015 as VOC". It appears that this should be method 8260 for VOCs.

k. Several compounds included methods 6010/6020 analysis for silicon dioxide. It appears that it would be more appropriate to state that this analysis is for silica.
l. Sodium dichromate lists methods 6010/6020 for chromium. Please verify if any hexavalent chromium could be present in this compound and include the analysis for hexavalent chromium (if necessary).
m. Please include the words "as sodium" after the words "EPA 6010, 6020" for sodium hyposulfide
n. Unless KM can provide additional details, the NDEP suggests that "tank mud" also include analyses for cations, anions, pH, and hexavalent chromium.
o. Titanium tetrachloride includes a line that states "as tetrachloride". The NDEP believes that the analysis is intended to be for chloride. Please verify and correct this issue.
p. KM includes analysis for ammonia by methods 350.1 (various compounds) and 350.2 (urea). Please explain the rationale for utilizing two methods.
q. The method for sulfate is listed as 300.1. Is this supposed to be method 300.0?
r. Nothing is filled in for the phosphorous row. Please explain.
s. Under VOCs it appears that ethylbenzene, methanol, MIBK, chlorinated organics and chlorinated paraffins can be addressed by method 8260B. Please explain.
t. Under total petroleum hydrocarbons it would be helpful to list which petroleum hydrocarbons (diesel, gasoline, grease, oil, paraffin wax, etc.) will be addressed by each analysis.

By **September 27, 2004** KM shall address the issues outlined herein. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

Meeting Minutes

Project:	Kerr-McGee
Location:	Kerr-McGee
Time and Date:	1:00 PM, Wednesday, August 4, 2004
Meeting Number:	---
In Attendance:	NDEP-BCA – Las Vegas – Brian Rakvica, Jeff Johnson (via telephone) Kerr-McGee (KM) Susan Crowley, Rick Stater, Tom Reed (via video phone) ENSR- David Gerry, Ed Krish

CC: Jennifer Carr, Todd Croft

1. Meeting was held to review ECA progress.
2. Discussed GW-11 characterization.
    a. KM provided an analytical list of what is being analyzed. Includes the following classes: VOCs, TPH, Metals (including hexavalent chromium, cyanide, mercury), SVOCs, PAHs, OP Pests, OC Pests, PCBs, Dioxins/Furans, Herbicides, Radionuclides, water quality parameters, perchlorate, octachlorostyrene.
    b. Document is due August 30, 2004, KM noted that the radionuclide analysis may not be complete by then. Brian noted that it would be okay to delay for a couple of weeks if necessary. Brian requested that Susan notify him by email.
    c. KM noted that the sample was taken from the area known as the existing penetration through the berm. This is approximately ½ way north and south on the eastern berm and about 2/3 of the was down the water column.
    d. Analyses are being completed by MWH with a subcontracted radionuclide laboratory.
3. Discussed GW Monitoring Assessment due 8/15/04.
    a. KM provided an example format. NDEP noted that the format meets the needs of the project.
4. Discussed Performance Reports.
    a. Brian noted that he had not had time to complete his review of the chromium or perchlorate reports. Brian had skimmed through the chromium report and would have some comments, however, the plume map was very helpful.
    b. Susan noted that she will forward a copy of the chromium report to Leslie Palencia at MWD.
5. Discussed SRC list.
    a. It was requested that Brian fax his comments to Susan and Dave (ENSR).
    b. Brian noted that he is hoping to have his comments out in one week or so.
    c. Brian reviewed some of his specific comments on the report.

d. Brian noted that there are still many QA/QC problems with the report which make the report very time consuming to review. NDEP also noted that this is not desirable and is not efficient.
e. KM noted that they will be dealing with the issue of elevated detection limits in the DQOS and in future sampling plans.

6. Discussed CSM.
   a. ENSR asked if the format of the TIMET CSM was what NDEP expected. NDEP explained that the TIMET CSM was "draft, preliminary and conceptual" and was focused at a very specific task as requested by NDEP. NDEP noted that this may not be obvious to most readers unless they review the correspondence on "accelerated work" (as referenced in the CSM).
   b. NDEP's main issue with the document is that there are heavy inferences in the report that are not clear to the reviewer. For example, derivation of contours, paleochannels, etc. are heavily qualified and these qualifications need to be pointed out in the CSM.
   c. Another issue with the CSM is that there are references to a number of "other site features" which are not clearly relevant to the site.
   d. Brian noted that he hopes to have comments out in the next two weeks or so. It looks like comments will be in the 10-20 page range, however, all comments are not critical. Some comments are suggestions for the next iteration and/or explanations of expectations.
7. Discussed DQOs.
   a. KM asked if NDEP had an example of a format that was acceptable. NDEP noted that the BRC format is generally acceptable. NDEP cautioned that the BRC document is very draft and is not complete. Also, the content may not be acceptable.
   b. Brian will email the draft BRC DQOs to Susan and David.
8. Discussed regional issues.
   a. Brief discussion on background. Susan will be discussing with other BMI Companies.
9. Next Meeting: Tuesday, September 14, 2004, 1:00 PM at K; call-in number to be provided

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: August 4, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Conference Call on August 3, 2004 at 3:30 PM

1. Attendance:
   a. NDEP: Todd Croft, Tamara Pelham, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Reviewed system operations.
   a. System is operating at ~950 gpm and between 67-75% of the chemical load.
   b. KM noted that they would like to operate the system as is for a couple of weeks or so to make sure that the system continues to operate correctly prior to increasing chemical loading. If the system is still working well KM will increase the chemical loading.
   c. KM noted that the discharge was slightly cloudy on Sunday and Monday due to an issue with the filtrate from the filter press. KM discontinued the addition of this filtrate and is working on the problem. Discharge is currently ~ 15 NTU.
3. Discussed discharge location.
   a. KM reviewed with Tamara. BWPC requires the change to be submitted to Nadir Sous. Tamara will include a memo to file to correct the fact sheet.
   b. KM still needs to discuss with the County and others.
4. Next call: Tuesday, August 11, 2004 at 1:30 PM. Call in number to be provided.

Todd Croft

From: Bailey, Keith [KBAILEY@KMG.com]
Sent: Thursday, July 29, 2004 8:02 AM
To: Brian Rakvica; Crowley, Susan; Tamara Pelham; Todd Croft
Subject: RE: follow up from yesterday's call

Thanks.

Keith

-----Original Message-----
From: Brian Rakvica [mailto:brakvica@ndep.nv.gov]
Sent: Thursday, July 29, 2004 9:38 AM
To: Bailey, Keith; Crowley, Susan; Tamara Pelham; Todd Croft
Subject: follow up from yesterday's call

Keith and Susan,

I spoke with Gerry Hester at SNWA. He thought it would be fine if you wanted to re-locate the end of pipe to the approximate location of the the culvert. He noted that you would not want to go past this area as you would be effected by flood events. Gerry also noted that (like before) he would expect that you install rip rap for erosion control where ever the discharge area ends up being.

Gerry also noted that you would need to contact:

Clark County Parks and Recreation - Bruce Sillitoe (sp?) and Kimbly Horn (sp?) due to the construction of the scenic trail, etc.,

Please advise if there is anything further.

Thanks,

Brian

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: July 28, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Conference Call on July 28, 2004 at 1:30 PM

1. Attendance:
   a. NDEP: Todd Croft, Tamara Pelham, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Discussed NDEP observations.
   a. Discharge appears to be fairly clear. White, filamentous material and sulfide odor present in the vicinity of the culvert.
3. Reviewed system operations.
   a. System is operating at ~950 gpm and 2/3 of the chemical load.
   b. Noted that this flow includes 45 gpm of combined flow from GW-11 and the chromium treatment system. Same as last week.
   c. KM noted that they would like to operate the system as is for a week or so to make sure that the system continues to operate correctly prior to increasing chemical loading.
   d. DAFs have been optimized.
   e. DO is approximately 7.0 mg/L at the end of the pipe.
   f. Bulk of the solids are being removed. Discharge turbidity is in the teens which correlates well to the Wash levels.
4. Discussed white, filamentous bacteria.
   a. Bacteria have been verified to be Thiothrix or Beggiatoa. These aerobic bacteria convert sulfide to sulfur then to sulfate.
   b. KM noted that the sulfide levels are low in their discharge. It is theorized that an (indigenous?) anaerobic bacteria must be converting the available sulfate to sulfide in the slough or sulfide is entering the slough from the surrounding areas. The white filamentous bacteria are aerobic bacteria that then convert the sulfide to sulfur and then back to sulfate near the end of the slough where agitation likely increases the D.O. If the secondary scenario holds true the bacteria should decrease in time.
5. Discussed discharge location.
   a. NDEP asked if KM had considered re-engineering the entire slough area to resemble the outfalls from Henderson and TIMET. KM noted that access to this area would be very difficult.

b. KM would like to explore the idea of re-locating their discharge. KM would propose to extend the discharge pipe to the area near the location of the culvert.
    i. BWPC to review the permit requirements for such a change.
    ii. Noted that it may be best to discuss this at the quarterly meeting with USEPA.
    iii. NDEP to discuss with SNWA regarding set-back from the Wash.
    iv. BWPC requested a map showing existing and proposed discharge locations.

6. Discussed stoichiometry.
    a. BWPC asked if dilution of the ethanol would make for easier control of the system.
    b. KM noted that the problems they are having lie with the variation of influent concentrations. KM is investigating the installation of additional surge tank capacity to the equalization area.
7. Discussed 1,000 gpm notification requirement.
    a. BWPC to review if this is related to chemical loading and what is desired.
    b. KM noted that as Seep area concentrations continue to decline the FBR may be operated under 1,000 gpm in the future.
    c. BWPC noted that the schedule of compliance does not deal with the 1,000 gpm flow. The next issue on the schedule of compliance is for the 18 ppb discharge.
8. Next call: Tuesday, August 3, 2004 at 3:30 PM. Call in number: 405-270-2655

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

July 22, 2004

Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA – Revised Site-Related Chemical List (Report)

Dear Mr. Rakvica:

Kerr-McGee Chemical LLC (Kerr-McGee) has undertaken an Environmental Conditions Assessment (ECA) as directed by Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004, Kerr-McGee prepared a list of site-related chemicals that have an association with the geographic setting within which the Kerr-McGee plant exists. In addition, Kerr-McGee recognizes that this list will be modified as the investigation progresses and additional chemicals are identified.

You forwarded comments, dated June 21, 2004, relating to this chemical list and while the list has been modified to reflect your comments (and is attached), provided below are specific responses to the comments, numbered to correspond to the June 21st letter:

1. The document was labeled as 'Draft' simply to indicate that the NDEP had not reviewed and approved the list, as Kerr-McGee anticipated that your office may have comments. We apologize for any misunderstanding.
2. PRGs, MCLs and SSLs were included in the submittal as requested in your February 11 correspondence (see paragraph 12(c)(i)). We have deleted them from this submittal as requested in your June 21 correspondence.
3. The estimated instrumental detection limits shown are provided as a guide for an instrument limit as indicated in the method protocol. The actual method detection limits are sample dependent and may vary as the sample matrix varies.
4. Kerr-McGee has revised the list to include the chemicals identified in your June 21 correspondence. Please note that chemicals such as graphite and diatomaceous earth are not known to pose significant environmental or health concerns. In addition, the analytical methods identified for specific chemicals that were listed would, in some instances, detect other chemicals in the same chemical group that were not listed. For example, EPA 6010/6020 detects tin, magnesium and barium (found in barite), and Method 8270C will detect the full spectrum of semi-volatile organic, whether or not the specific compound has been identified on the site specific list, or was previously unknown.

With respect to listing and evaluating "unknowns", Kerr-McGee cannot assign an analytical method to an unknown chemical or compound. As discussed, Kerr-McGee will be conducting a full battery of analytical tests on a limited number of samples to identify what is and is not present on site.

5. The list has been revised to include the analytical methods appropriate for both cations and anions in the chemicals that have such ionic species present. To address the specific example cited in your June 21 correspondence, Kerr-McGee did not include the analytical method for magnesium present in magnesium perchlorate in the previous site specific chemical list for three reasons: 1) perchlorate is the ion that poses the threat to human health and the environment, 2) magnesium is a naturally occurring metal present in soils, groundwater and drinking water; it is not typically a threat to human health or the environment, and 3) Kerr-McGee routinely conducts EPA Method 6010/6020 which evaluates total metals, including magnesium. However, the method does not distinguish between magnesium present in magnesium perchlorate from magnesium present in the naturally occurring minerals such as magnesium sulfate or magnesium chloride. Therefore, the analysis for magnesium does not relate directly to the amount of magnesium perchlorate present.

6. a. With respect to the components of mixtures, Kerr-McGee has included the test method for the hazardous chemicals known to exist in the mixture. However, Kerr-McGee has limited knowledge of the exact chemical composition of many of the examples cited; in some cases this would be limited to the information available on the MSDS. The MSDS lists the hazardous ingredients, but pursuant 29 CFR 1910.1200, for reasons of trade secret protection, the chemical manufacturer is not required to list ingredients that are not hazardous. Many of the examples cited in your June 21 correspondence fall into this category, including chelants, flocculants, anti-foam agents, paraffin wax, and synthetic detergent. Kerr-McGee chose not to postulate about ingredients of decomposition by-products for products that have no identified hazardous ingredients for which Kerr-McGee has no knowledge of the composition.

With respect to the degradation byproducts, Kerr-McGee believes that identifying specific degradation byproducts for each of the chemicals listed on the site-specific chemical list is unnecessary. Without belaboring the issue, most chemicals within a specific chemical family is expected to degrade in a reasonably predictable way. The analytical methods identified are capable of detecting most such by-products, should the by-product exist in the sample.

For example, chlorinated hydrocarbons such as tetra-chloroethylene will degrade into other chlorinated hydrocarbons, or under very unusual environmental conditions into carbon dioxide and chloride ions. If the degradation by-product remains a chlorinated hydrocarbon, Method 8051 will detect the species, as it detects the full spectrum of possible by-products. In the other case, EPA 300.0 will detect the chloride ion. Both of these analyses are performed to detect chemicals listed on the site specific chemicals list.

For another example, petroleum hydrocarbons, most non-chlorinated solvents, and most organic molecules (flocculants, anti-foam agents, etc.) will degrade into small chain hydrocarbons which will be detected with Method 8015M, or carbon dioxide which likely would be released from the soil or water.

In summary, it is highly unlikely that a degradation by-product could be formed from one of the chemicals known to be present at the site that could not be detected by the analytical method prescribed for the site chemicals.

7. a. Agreed, no response.

b. Kerr-McGee will analyze samples according to the following analytical methods (presented in Table 1) to address the unknown chemical compounds that may be present onsite. The analyses are each sufficiently broad in scope that unknown compounds will be identified and quantified.

Table 1 – Characterization of Unknowns

Method	Chemical, Compound, Category or Element
EPA 6010/6020	Metals, including Aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, mercury, molybdenum, nickel, phosphorus, potassium, selenium, silica, silver, sodium, strontium, thallium, tin, titanium, vanadium, and zinc
EPA 300.0	Anions, including chloride, chlorate, nitrate, and phosphate
EPA 8270C	Semi volatile organics
EPA 8260B	Volatile organic compounds
EPA 8081, 8081A	Pesticides
EPA 8015M	Petroleum hydrocarbons
EPA 8082	Polychlorinated biphenyls
EPA 1613	Dioxins and furans
EPA 8051	Herbicides
EPA 8270	Polynuclear aromatic hydrocarbons (PAH)

c. The laboratories will be instructed to identify tentatively identified compounds (TICs). As the historical data are reviewed, TICs, if present, will be identified. The procedure for a TIC to become identified as a site related compound will be observed.

d. Kerr-McGee will address the analytical requirements for the broad classes of compounds as shown in the following Table 2, and in the site-related chemicals list.

Table 2 – Broad Class Characterizations

Category	Method
Acids	pH according to EPA Method 150.1
Caustics	pH according to EPA Method 150.1
Glycols	EPA Method 8015
Organochlorine pesticides	EPA 8081A
Chlorinated herbicides	EPA 8051

8. a. Corrections are incorporated into site-related chemicals list.

   b. Cyanide has been moved.

   c. Please see same response under #3. The estimated instrumental detection limits shown are provided as a guide for an instrument limit as indicated in the method protocol. The actual method detection limits are sample dependent and may vary as the sample matrix varies.

9. a. Method 8270C was proposed for the SVOC. The full 8270C list (including non-standard SVOCs identified) can be run on specific samples as appropriate.

   b. Method 8270C has been added to the list for nitrobenzene.

10. Method 8260B was proposed for the VOCs. The full 8260B list (including non-standard VOCs identified) can be run on specific samples as appropriate.

11. The method for organophosphorous pesticides is 8141A.

12. The method for chlorinated herbicides has been corrected to Method 8151A.

13. a. The list has been revised to include the complete list of PAHs quantifiable using method 8310.

    b. Method 8310 can be used for the PAHs listed in the site-related chemicals list. However, each of the compounds is also a compound detectable and quantifiable using Method 8270C. Both methods are reflected in the revised site-related chemicals list. Method 8270C may be used if quantification of a full range of SVOC is desired. If only PAHs are desired, Method 8310 may be used.

14. Water quality parameters of TDS, TSS and pH are listed.

15. a. Corrections are incorporated into site-related chemicals list to include the isotopes of uranium and thorium, as requested.

    Testing for the first daughter product of radium 226 is unnecessary, as the half-life radium is 1,622 years, and the half-life of the first daughter product, radon, is so short, less than 4 days. The next daughter product in the series is polonium. The analytical method run for other radionuclides on the site-related chemical list is EML HASL 300, which is also the method appropriate for polonium.

As the method will be used for other radionuclides, any polonium present will be detected as well. The following excerpt describes the decay series for radium 226.

When radium 226 decays, it loses a positively charged alpha particle from its nucleus. An alpha particle has two protons (positive electrical charges) and a mass of 4 atomic units. This means a reduction in both radium's atomic number and atomic mass. Loss of the alpha particle changes radium 226 (transmutes it) into another element, radon 222. While radium 226 is a radioactive solid under normal conditions, radon 222 is a radioactive gas. Loss of one or more protons changes the chemical element into a different chemical. Absorption or loss of a neutron gives an isotope of the same chemical since chemical properties are determined by the number of protons and electrons in an atom.

The time required for half of any amount of radium 226 to transmute to radon 222 by these disintegrations which emit alpha particles is 1,622 years. This is called the physical half-life of radium. Half of the radium literally disappears in that length of time, but radon gas is produced to replace it. Radon gas is radioactive and more mobile in air and water (it dissolves) than the solid radium. The half-life of radon is 3.82 days, after which half the gas will have disintegrated, again releasing alpha particles and transmuting into radioactive polonium 218, which is a solid.[1]

b. Footnote has been revised as requested. Methods have been verified as requested.

c. According to laboratory personnel, the method is appropriate for both chemical and radiological standpoints.

d. The method for thorium has been corrected to DOE EML HASL-300.

16. a. Kerr-McGee agrees that the list should be clear and concise. Kerr-McGee would like the Site Related Chemicals list to be focused on supporting the development of the Chemicals of Potential Concern (COPC) list. Site related chemicals that are non-hazardous or those site related chemicals that do not pose a threat to human health or the environment should not be critical elements of the list. In addition, Kerr-McGee recognizes that this list will be modified as the investigation progresses and additional chemicals are identified.

b. To the extent possible, the components of the mixtures have been listed on the site-related chemicals list. For those circumstances where mixture components or degradation by-products are not specifically listed, Kerr-McGee will identify those components or degradation by-products using the analytical methods for the broad spectrum of chemicals, as described in the response to comment 7b.

c. The information requested is included on the site related chemical list.

d. As noted in the response to issue 16a, site related chemicals that are non-hazardous or those site related chemicals that do not pose a threat to human health or the environment should not be critical elements of the list.

e. Synonyms have been included where appropriate.

f. Comment noted.

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[1] Bertell, Dr. Rosalie, *No Immediate Danger, Prognosis for a Radioactive Earth*, The Book Publishing Company, Summertown, Tennessee 38483, ISBN 0-913990-25-2, pages 15-63.

g. The types of petroleum hydrocarbons typically found in the range of hydrocarbons have been included on the list. Kerr-McGee disagrees with your assertion that additional analyses will be required to address degradation by-products of petroleum hydrocarbons. Degradation by-products of petroleum hydrocarbons are always lower molecular weight petroleum hydrocarbons. The method specified to identify and quantify the listed petroleum hydrocarbons is sufficient to identify and quantify any degradation by-products of petroleum hydrocarbons.

h. "General Chemistry Parameters" has been deleted, as requested.

i. "Non-Halogenated Organics" has been deleted, as requested.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Hand Carried

Cc: Tom Reed
Ed Krish, ENSR
Richard Waters
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

KMCC Henderson
Site Related Chemical List
July 2004

Parameters of Interest	Compound List	Synonyms	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes
						Soil (mg/kg)	Water (ug/l)	
Misc. Compounds, chemicals, and products	ammonia	Anhydrous ammonia, Aqua ammonia, Aqueous ammonia [Note: Often used in an aqueous solution.]	7664-41-7	--	EPA 350.1 as ammonia	1		Historically present in gas form; Phase I
	ammonium perchlorate	perchloric acid ammonium salt	7790-98-9	S, A	EPA 350.1 as ammonia		4.00	Phase I
					EPA 314 as perchlorate			
	anti-foam agent				None			
	argon				None			
	barium hydroxide	Barium dihydroxide	NA	S, A	EPA 6010, 6020 as barium			Phase I
	barium sulfide	barium sulphide	21109-95-5	S, A	EPA 6010, 6020 as barium			Phase I
					EPA 376.2 as sulfide			
	Barium Sulfate	barite	7727-43-7		EPA 6010/6020 as Ba, EPA 300.0 as sulfate			
	boric acid				EPA 6010, 6020 as boron			
	boron carbide	B4-C; Tetrabor	12069-32-8	S, A	EPA 6010, 6020 as boron, carbide not analyzed		3.80	Phase I
	boron tribromide	boron bromide	10294-33-4	S, A	EPA 6010, 6020 as boron		3.80	Phase I
	boron trichloride	trichloroborane, boron chloride	10294-34-5	S, A	EPA 6010, 6020 as boron		3.80	Phase I
	calcium carbonate	Calcium salt of carbonic acid	471-34-1	A	EPA 6010, 6020 as calcium		6.70	Phase I
					EPA 310.1 alkalinity as CaCO3			
	calcium chloride				EPA 6010, 6020 as calcium			
					EPA 300.0 as sulfate			
	calcium hypochlorite	losantin, calcium hypochloride, hypochlorous acid calcium salt, bleaching powder	777-54-3	S, A	EPA 6010, 6020 as calcium		6.70	Phase I
					EPA 300.0 as chlorite			
	Calcium Oxide (lime)	lime, caix, quicklime, calcium monoxide, burnt lime, airlock, calcia, caloxol cp2, calxyl, desical P, rhenosorb C	NA	S, A	EPA 6010, 6020 as calcium		6.70	
	calcium sulfate	Anhydrous calcium sulfate, Anhydrous gypsum, Anhydrous sulfate of lime, Calcium salt of sulfuric acid	7778-18-1	S, A	EPA 6010, 6020 as calcium		6.70	Phase I
					EPA 300.0 as sulfate			
	chlorine	Molecular chlorine	7782-50-5	S	EPA 330.5 as Total Residual Chlorine	10		Phase I, air contaminant only, not expected in soil or water
	chelant				None			

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Parameters of Interest	Compound List	Synonyms	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes
						Soil (mg/kg)	Water (ug/l)	
	coagulents				None			
	Coal				None			
	Coke				None			
	diatomaceous earth	Diatomaceous silica, Diatomite, Precipitated amorphous silica, Silica gel, Silicon dioxide (amorphous)	NA		None			Phase I
	filter aid				None			
	flammables				EPA 8015B			
	flocculents				None			
	glycols	1,2-Dihydroxyethane; 1,2-Ethanediol; Glycol; Glycol alcohol; Monoethylene glycol	107-21-1		EPA 8015	10		
	graphite				None			
	hydrogen chloride	Anhydrous hydrogen chloride; Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid)	7647-01-0	--	Not analyzed as gas. See hydrochloric acid.			Historically present in gas form, could enter soil or water if absorbed into water
	hydrogen peroxide	High-strength hydrogen peroxide, Hydrogen dioxide, Hydrogen peroxide (aqueous), Hydroperoxide, Peroxide	7722-84-1	--	None			Relatively unstable compound that requires stabllization to avoid deterioration over time; no known analysis method
	hydrogen sulfide	Hydrosulfuric acid, Sewer gas, Sulfuretted hydrogen	7783-06-4	--	EPA 376.2 as sulfide	1		Historically present in gas form; Phase I
	iron oxide	Ferric oxide, Iron(III) oxide	1332-37-2	S, A	EPA 6010, 6020 as iron		4.10	Phase I
	magnesium carbonate	Carbonate magnesium, Hydromagnesite, Magnesium(II) carbonate	7439-95-4	S, A	EPA 6010, 6020 as magnesium	10	20.00	Phase I
					EPA 310.1 alkalinity as CaCO3			
	magnesium chlorate		NA	S, A	EPA 6010, 6020 as magnesium		20.00	
					EPA 300.0 as chlorate			
	magnesium chloride	magnesium (II) chloride	7786-30-3	S, A	EPA 6010, 6020 as magnesium		20.00	Phase I
					EPA 300.0 as chloride			
	magnesium perchlorate	perchloric acid magnesium salt	10034-81-8	S, A	EPA 6010, 6020 as magnesium		20.00	Phase I
					EPA 314 as perchlorate			
	manganese dioxide	Manganese (IV) Oxide	1313-13-9	S, A	EPA 6010, 6020 as manganese		0.93	Phase I

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Parameters of Interest	Compound List	Synonyms	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes
						Soil (mg/kg)	Water (ug/l)	
Misc. Compounds, chemicals, and products (cont'd)	manganese oxide	Manganomanganic oxide, Trimanganese tetraoxide, Trimanganese tetroxide	1344-43-0	S, A	EPA 6010, 6020 as manganese		0.93	Phase I
	manganese sulfate	manganese (II) sulphate, manganous sulphate, manganese (II) sulfate, manganese (2+) sulfate monohydrate, sulfuric acid manganese salt	7285-87-7	S, A	EPA 6010, 6020 as manganese		0.93	Phase I
					EPA 300.0 as sulfate		2000.00	
	methyl mercury	Mercury metal: Colloidal mercury, Metallic mercury, Quicksilver	7439-97-6	S, A	EPA 7470A/7471A as mercury	0.05		
	paints		NA		EPA 6010, 6020 for metals		varies	Phase I
					EPA 8015 as VOC			
	parafin wax				None			
	potassium chlorate	chloric acid potassium salt, Berthollet salt, chlorate of potash	3811-04-9	S, A	EPA 6010, 6020 as potassium		varies	Phase I
					EPA 300.0 as chlorate		300.00	
	potassium chloride	potassium monochloride, potassium muriate, monopotassium chloride, kalitabs, rekawan, slow K, super K, pfiklor, enseal, kaochlor, kaon-cl, potavescent	7447-40-7	S, A	EPA 6010, 6020 as potassium		varies	Phase I
					EPA 300.0 as chloride			
	potassium perchlorate	perchloric acid potassium salt	7440-09-7	S, A	EPA 6010, 6020 as potassium			Phase I
					EPA 314 as perchlorate			
	potassium phosphate	potassium phosphate tribasic, potassium orthophosphate, tripotassium phosphate	7758-11-4		EPA 6010, 6020 as potassium		varies	Phase I
					EPA 300 as phosphate			
	silica	Diatomaceous earth, Diatomaceous silica, Diatomite, Precipitated amorphous silica, Silica gel, Silicon dioxide (amorphous)	7631-86-9	S, A	EPA 6010, 6020 as silicon dioxide		17.00	as silicon; Phase I
	silicon tetrabromide	silicon (IV) bromide, silicon bromide, tetrabromosilane	7789-66-4	S, A	EPA 6010, 6020 as silicon dioxide		17.00	Phase I
					EPA 300.0 as bromide			
	silicon tetrachloride	silicon chloride, tetrachlorosilane, silicon (IV) chloride	10026-04-7	S, A	EPA 6010, 6020 as silicon dioxide		17.00	Phase I

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Parameters of Interest	Compound List	Synonyms	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits Soil (mg/kg)	Laboratory Limits Water (ug/l)	Notes
	sodium arsenite	sodium (meta)arsenite, arsenous acid sodium salt, sodium metaarsenite, Atlas A, chem pels C, chem-sen 56, Kill-all, penite, prodalumnol, sodanit, various trade names	NA	S, A	EPA 6010, 6020 as sodium		19.00	LOU Response
					EPA 6010, 6020 as arsenic			
	sodium alpha olefin sulfonate	sodium tetradecene sulfonate, Sodium C14-16 Olefin Sulfonate;C14-16-alkane hydroxy and C14-16 alkene	68439-57-6	--	None		19.00	Phase I
	sodium borate	Anhydrous borax, Borax dehydrated, Disodium salt of boric acid, Disodium tetrabromate, Fused borax, Sodium borate (anhydrous), Sodium tetraborate	1330-43-4	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
	sodium carbonate	soda ash, disodium carbonate, carbonic acid disodium salt	497-19-8	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
					EPA 310.1 alkalinity as CaCO3			
	sodium chlorate	agrosan, asex, atlacide, atratol, b-herbatox, desolet, drexel defol, evau-super, grain sorghum harvest-aid, granex O, Harvest-aid, hibar C, kusatol, leafex 2, ortho C-1 defoliant & weed killer, oxycil, rasikal, shed-a-leaf, soda chlorate, sodakem, travex, tumbleaf, val-drop	7775-09-9	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
					EPA 300.0 as chlorate		300.00	
	sodium chloride	extra fine 200 salt, extra fine 325 salt, H.G. blending, salt, sea salt, table salt, common salt, dendritis, rock salt, top flake, white crystal, saline, halite, purex, USP sodium chloride	7647-14-5	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
					EPA 300.0 as chloride			
	sodium dichromate	sodium bichromate	7789-12-0	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
					EPA 6010, 6020 as chromium		4.70	

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Parameters of Interest	Compound List	Synonyms	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits Soil (mg/kg)	Laboratory Limits Water (ug/l)	Notes
Misc. Compounds, chemicals, and products (cont'd)	sodium hexametaphosphate	metaphosphoric acid hexasodium salt, glassy sodium metaphosphate, SHMP	10124-56-8	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
					EPA 300 as phosphate			
	sodium hydrosulfide	sodium hydrogen sulphide, sodium hydrogen sulfide, sodium sulfhydrate, sodium bisulphide, sodium hydrosulphide, sodium bisulfide	16721-80-5	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
					EPA 376.2 as sulfide			
	sodium hydroxide	Caustic soda, Lye, Soda lye, Sodium hydrate	1310-73-2	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
					EPA 150.1 pH			
	sodium hyposulfide		NA	S, A	EPA 6010, 6020		19.00	
					EPA 376.2 as sulfide			
	sodium oxide	disodium monoxide, sodium monoxide, disodium oxide	NA	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
	sodium perchlorate	perchloric acid sodium salt	7601-89-0	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
					EPA 314 as perchlorate			
	sodium sulfite	anhydrous sodium sulfite, sodium sulphite, S-WAT, sulftech, sulfurous acid sodium salt, disodium sulfite, exsiccated sodium sulfite	7757-83-7	S, A	EPA 6010, 6020 as sodium		19.00	Phase I
					EPA 377.1 as sulfite			
	strontium carbonate	carbonic acid strontium salt	1633-05-2	S, A	EPA 6010, 6020 as strontium	1	0.28	Phase I
					EPA 310.1 alkalinity as CaCO3			
	sulfur dioxide	Sulfurous acid anhydride, Sulfurous oxide, Sulfur oxide	7446-09-5	S, A	None			Historically present in gas form
	synthetic detergent				None			
	tank mud				EPA 6010, 6020 for total metals			

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Parameters of Interest	Compound List	Synonyms	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes
						Soil (mg/kg)	Water (ug/l)	
	tricalcium phosphate	Calcium Phosphate Tribasic; Tricalcium diphosphate;Bone phosphate; Calcium orthophosphate; Calcium Phosphate; Calcium phosphate (3:2); Calcium tertiary phosphate; Phosphoric acid, calcium salt (2:3);	7758-87-4	S, A	EPA 6010, 6020 as calcium		6.70	Phase I
					EPA 300.0 orthophosphate as P			
	titanium tetrachloride				EPA 6010, 6020 as titanium			
					As tetrachloride			
	unknown				unknown			
	urea	B-I-K, carbamide, carbamide resin, isourea, pseudourea, carbonyldiamine	57-13-6		EPA 350.2 as ammonia			Phase I
Ions	chlorate				EPA 300 as chlorate		300.00	
	chloride			S, A	EPA 300.0 as chloride			
	cyanide		57-12-5	S, A	EPA 335.1 as ammenable and 335.3 as total cyanide	2.5	10.00	Phase I
	nitrates		NA	S, A	EPA 300.0 as nitrate	2	100.00	
	perchlorate		7601-90-3	S, A	EPA 314 as perchlorate		4.00	Phase I
	phosphate		NA	S, A	EPA 300.0 orthophosphate as P			Phase I
	sulfate				EPA 300.1			
	sulfides			S, A	EPA 376.2 as sulfide			
Asbestos	asbestos		1332-21-4	S	ISO 10312 TEC		0.2 MFL*	Phase I
Metals	aluminum		7429-90-5	S, A	EPA 6010, 6020 as aluminum	50	25.00	
	antimony		7440-36-0	S, A	EPA 6010, 6020 as anitmony	0.5	1.00	
	arsenic		7440-38-2	S, A	EPA 6010, 6020 as arsenic	0.1	1.00	
	barium		7440-39-3	S, A	EPA 6010, 6020 as barium	1	2.00	Phase I
	beryllium		7440-41-7	S, A	EPA 6010, 6020 as beryllium	0.5	1.00	
	boron		7440-42-8	S, A	EPA 6010, 6020 as boron	10	50.00	Phase I
	cadmium		7440-43-9	S, A	EPA 6010, 6020 as cadmium	1	0.50	LOU Response
	calcium		7440-70-2	S, A	EPA 6010, 6020 as calcium	10	100.00	Phase I
	chromium (hexavalent)		18540-29-9	S, A	7196A, 7199 as chromium VI	4	5.00	Phase I
	chromium (total)		7440-47-3		EPA 6010, 6020 as total chromium	2	1.00	Phase I
	cobalt		7440-48-4	S, A	EPA 6010, 6020 as cobalt	2	80000.00	Phase I
	copper		7440-50-8	S, A	EPA 6010, 6020 as copper	2	2.00	Phase I
	iron		7439-89-6	S, A	EPA 6010, 6020 as iron	20	10.00	Phase I
	lead		7439-92-1	S, A	EPA 6010, 6020 as lead	5	500.00	Phase I
	magnesium			S,A	EPA 6010, 6020 as magnesium		20.00	
	manganese		7439-96-4	S, A	EPA 6010, 6020 as manganese	1	2.00	Phase I
	mercury		7439-97-6		EPA 7470A/7471A as mercury		0.20	
	molybdenum		7439-98-7	S, A	EPA 6010, 6020 as molybdenum	10	2.00	LOU Response
	nickel		7440-02-0	S, A	EPA 6010, 6020 as nickel	5	5.00	Phase I

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Parameters of Interest	Compound List	Synonyms	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes
						Soil (mg/kg)	Water (ug/l)	
Metals (cont'd)	platinum		7440-06-4	S, A	EPA 6010, 6020 as platinum			Phase I
	phosphorous							
	potassium		7440-09-7	S, A	EPA 6010, 6020 as potassium	500	1000.00	Phase I
	selenium		7782-49-2	S, A	EPA 7740 or 0270.2 (furnace) 6010, 6020 as selenium	1	5.00	
	silver		744-22-4	S, A	EPA 6010, 6020 as silver	1	0.50	LOU Response
	sodium		744-23-5	S, A	EPA 6010, 6020 as sodium	50	1000.00	Phase I
	thallium		7440-28-0	S, A	EPA 6010, 6020 as thallium	0.05	1.00	
	tin			S, A	EPA 6010, 6020 as tin			
	titanium		744031-5	S, A	EPA 6010, 6020 as titanium	1	5.00	
	tungsten		7440-33-7	S, A	EPA 6010, 6020 as tungsten			
	vanadium		7440-62-2	S, A	EPA 6010, 6020 as vanadium	1	5.00	
	zinc		744-66-6	S, A	EPA 6010, 6020 as zinc	2	5.00	Phase I
Semi Volatile Organic Compounds (SVOCs)	nitrobenzene		98-95-3	S, A	EPA 8270C	0.33	5.00	Phase I
	pyridine		110-86-1	S, A	EPA 8270C			Phase I
Volatile Organic Compounds (VOCs)	1,1,1-TCA	Chlorothene; 1,1,1-Trichloroethane; 1,1,1-Trichloroethane (stabilized), Methyl Chloroform	71-55-6	S, A	EPA 8260B	5	0.50	Phase I
	2-butanone	Ethyl methyl ketone, MEK, Methyl acetone, Methyl ethyl ketone	78-93-3	S, A	EPA 8260B	20	10.00	LOU Response
	2-hexanone			S, A	EPA 8260B			
	acetone	Dimethyl ketone, Ketone propane, 2-Propanone	67-64-1	S, A	EPA 8260B	20	10.00	Phase II ECI
	benzene	Benzol, Phenyl hydride	71-43-2	S, A	EPA 8260B	5	0.50	Phase II ECI
	chlorobenzol	Benzene chloride, Chlorobenzol, MCB, Monochlorobenzene, Phenyl chloride	108-90-7	S, A	EPA 8260B		1.00	
	chloroform	Methane trichloride, Trichloromethane	67-66-3	S, A	EPA 8260B	5	0.50	Phase II ECI
	chlorinated organics			S, A	EPA 8015B			
	chlorinated parafins			S, A	EPA 8015B			
	ethylbenzene				EPA 8021B			
	methanol	Carbinol, Columbian spirits, Methyl Alcohol, Pyroligneous spirit, Wood alcohol, Wood naphtha, Wood spirit	67-56-1	S, A	EPA 8015B			Phase I
	methyl isobutyl ketone	Isobutyl methyl ketone, Hexone, 4-Methyl 2-pentanone, MIBK	108-10-1		EPA 8260B	20		Phase I
	methyl isobutyl ketone	Isobutyl methyl ketone, Hexone, 4-Methyl 2-pentanone, MIBK	108-10-1		EPA 8015			Phase I
	monochlorobenzene	Benzene chloride, Chlorobenzol, MCB, Chlorobenzene, Phenyl chloride	108-90-7	S, A	EPA 8260B	5		as 1,2-, 1,3- and 1,4- isomers; Phase I

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Parameters of Interest	Compound List	Synonyms	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes
						Soil (mg/kg)	Water (ug/l)	
	orthodichlorobenzene	1,2 dichlorobenzene	95-50-1	S, A	EPA 8260B	5		as 1,2-, 1,3- and 1,4- isomers; Phase I
	paradichlorobenzene	1,4-dichlorobenzene, PDB, Paracide	106-46-7	S, A	EPA 8260B	5		as 1,2-, 1,3- and 1,4- isomers; Phase I
	tetrachloroethylene	percchloroethylene		S, A	EPA 8260B			
	toluene	Methyl benzene, Methyl benzol, Phenyl methane, Toluol	108-88-3	S, A	EPA 8260B	5	0.50	Phase I
	trichloroethylene			S, A	EPA 8260B			
	xylene	Dimethylbenzene; Xylol	1330-20-7	S, A	EPA 8260B as total xylenes	15	1.50	As total xylenes;LOU Response
Inorganic Acids	hydrochloric acid		7647-01-0	S, A	EPA 150.1 as pH			Phase I
	sulfuric acid		7664-93-9	S, A	EPA 150.1 as pH			Phase I
Chlorinated Herbicides	tumbleaf defoliant		NA		EPA 8051			Phase I
Organophosphorous Pesticides	all		varies	S, A	Method 8141A	varies	varies	
Organochlorine Pesticides	DDT		50-29-3		EPA 8081A as 4,4-DDT	0.0017	0.6 -0.8	Phase I
	DDE				EPA 8081A			
	insecticides		NA		EPA 8081A		0.6 -0.8	Phase I
	pesticides		NA		EPA 8081A	0.0017	0.6 -0.8	Phase I
Organic Acids	citric acid		77-92-9		EPA 150.1 as pH			
Petroleum Hydrocarbons	TPH				EPA 8015M			Phase I
	C4-C12				EPA 8015M	30	0.05	Phase I
	C13-C22				EPA 8015M	30	0.50	Phase I
	C23+				EPA 8015M	30		Phase I
Polychlorinated Biphenyls (PCBs)	PCBs		NA	S, A	EPA 8082			Phase I
	Aroclor 1016		1267-41-12		EPA 8082	0.1	0.50	Phase I
	Aroclor 1221		1110-42-82		EPA 8082	0.2	0.50	Phase I
	Aroclor 1232		1114-11-65		EPA 8082	0.1	0.50	Phase I
	Aroclor 1242		5346-92-19		EPA 8082	0.1	0.50	Phase I
	Aroclor 1248		1267-22-96		EPA 8082	0.1	0.50	Phase I
	Aroclor 1254		1109-76-91		EPA 8082	0.1	0.50	Phase I
	Aroclor 1260		1109-68-25		EPA 8082	0.1	0.50	Phase I
Polychlorinated Dibenzodioxins/ Dibenzofurans	dioxins/furans		NA		EPA 1613			
Polynuclear Aromatic Hydrocarbons (PAHs)	PAHs				EPA 8270			Phase I
	Acenaphthene		83-32-9		EPA 8270C/8310	0.01	5.00	Phase I
	Acenaphthylene				EPA 8270C/8310	0.01	5.00	
	Anthracene		120-12-7		EPA 8270C/8310	0.01	5.00	Phase I
	Benz(a)anthracene		56-55-3		EPA 8270C/8310	0.01	5.00	Phase I
	Benzo(a)pyrene		50-32-8		EPA 8270C/8310	0.01	5.00	Phase I
	Benzo(b)fluoranthene		205-99-2		EPA 8270C/8310	0.01	5.00	Phase I
	Benzo(k)fluoranthene		207-08-9		EPA 8270C/8310	0.01	5.00	Phase I
	Benzo(ghi)perylene				EPA 8270C/8310	0.01	5.00	
	Chrysene		218-01-9		EPA 8270C/8310	0.01	5.00	Phase I

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Parameters of Interest	Compound List	Synonyms	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes
						Soil (mg/kg)	Water (ug/l)	
PAHs (cont'd)	Dibenz(a,h)anthracene		53-70-3		EPA 8270C/8310	0.01	10.00	Phase I
	Fluoranthene		206-44-0		EPA 8270C/8310	0.01	5.00	Phase I
	Fluorene		89-73-7		EPA 8270C/8310	0.01	5.00	Phase I
	Indeno(1,2,3-cd)pyrene		193-39-5		EPA 8270C/8310	0.01	10.00	Phase I
	Napthalene		97-20-3		EPA 8270C/8310	0.01	0.50	Phase I
	Octachlorostyrene		29082-74-4		EPA 8080, 8081	0.01	5.00	Phase I
	Phenanthrene		85-01-8		EPA 8270C/8310	0.01	5.00	
	Pyrene		129-00-0		EPA 8270C/8310	0.01	5.00	Phase I
Radionuclides Note: units are picocuries per liter (pCi/L)	gross alpha (adjusted) [3]				EPA 900.0 / SW9310 (water), SW9310/EML HASL 300 (soil)			NDEP request 2/11/04 letter
	polonium				EML HASL 300			
	radium 226		7440-14-4	A, S	EPA 903.1M 903.0 (water), EML HASL 300 (soil)			NDEP request 2/11/04 letter
	radium 228		7440-14-4		EPA 904.2M 904.0 (water), EML HASL 300 (soil)			NDEP request 2/11/04 letter
	thorium (isotopic)	includes Th-228, Th-229, Th-230, Th-232		A, S	DOE EML HASL-300 DOE A-01-R Mod/HASL 300			NDEP request 2/11/04 letter
	uranium (isotopic)	includes U-232, U-233/234, U-235/236, U-238		A, S	EML HASL 300			
	uranulm (total)		7440-61-1		EPA ASTM D5174			NDEP request 2/11/04 letter
Water Quality Parameters	TDS			A	EPA 160.1 as total dissolved solids		10000.00	Phase I
	TSS			A	EPA 160.2 as total suspended solids		10000.00	
	pH			A	EPA 150.1 as pH			

Notes:

[1] Abbreviations used: S = soil sample; A = aqueous sample

[2] Analytical Method may test for ions or indicators not necessarily the compound listed

[3] Adjusted gross alpha is calculated by subtracting total uranium and radon 222 from gross alpha

-- = Chemical is on the EPA list but there is no Goal or Level Established for the referenced category.

mg/l = milligrams per liter

ug/l = micrograms per liter

NA - not available

LOU = Letter of Understanding between Kerr McGee Chemical Corporation (KMCC) and NDEP, August 15, 1994

Phase I = Kleinfelder, Inc. Environmental Conditions Assessment, KMCC, Henderson Nevada, April 1993

Phase II = ENSR Environmental Conditions Assessment at KMCC Henderson Nevada, August 7, 1997

MFL* = Asbestos, Million fibers per Liter

** = Action Level (mg/L), for Copper and Lead

PRG = Preliminary Remediation Goals

SSL = Soil Screening Levels

DAF1 = Dilution Attenuation Factor of 1

MCL = Maximum Contaminant Level from 2004 EPA Edition of the Drinking Water Standards and Health Advisories

PAH's and PCB's are itemized, not all may be present on site.

PRG and SSL DAF1 data from EPA Region 9 PRG's October 1, 2002 Table, with Revisions posted through June 2, 2004 on the internet.

If cell is blank, the compound was not on the referenced regulatory list.

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: July 21, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Conference Call on July 21, 2004 at 1:30 PM

1. Attendance:
   a. NDEP: Todd Croft, Tamara Pelham, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. System Operations.
   a. Plant is still running near hydraulic capacity. This includes approximately 45 gpm from the chromium system/ pond GW-11. The remainder of the chromium system flow is diverted to GW-11.
   b. Noted that the plant had some operational issues last week.
      i. Last Thursday (7.15.04) the quality of the effluent started to decline and sulfide was being generated in the secondary reactors. Ferric chloride was added to try and control the sulfide issue. Excess ferric chloride addition resulted in the formation of a (black) iron sulfide precipitate in the pond area near the Wash.
      ii. KM diverted the FBR discharge to GW-11 and started up the Wash IX system to handle some of the flow during the problem. IX system was run through Tuesday (7.20.04) morning (350 gpm).
      iii. KM began discharging again from the FBR to the Wash at ~7:00 PM Tuesday night. Discharge was ~ 25 ntu.
   c. KM has brought in additional Veolia representatives to address the optimization of the plant.
   d. Noted that when KM discusses excess ethanol addition they are referring to ~ 1 quart/day. KM adds ethanol through metering pump to each of the four primary reactors. KM noted that they use ~500 gallon/day of ethanol and ~10 gallon/day of ferric chloride.
   e. KM noted that they are looking to add a control to divert the flow of FBR discharge to GW-11 when the turbidity is high. KM is still discussing what this limit may be.
   f. It was noted that the FBR is controlled based on the perchlorate concentration coming out of the primary reactors.
3. Discussed disc filter pilot test.
   a. Disc filter works well when there is a negligible amount of sulfide present. When the sulfide concentration increases the disc filter is not able to

remove the fine particles (<10μ) as these are smaller than the (<10μ) filter size.

b. KM noted that they are discussing options for use of the disc filter system in the future.

4. Discussed DO issues
   a. KM noted that the DO is ~ 3.0 mg/L at the end of the pipe.
5. Other issues.
   a. Discussed Sierra Club visit. Noted the next tour is planned for late August.
   b. Confirmed quarterly meeting for 8/25/04 at 9:30 AM. Noted that USEPA representative John Tinger may attend.
   c. Confirmed tour on 8/26/04 at 9:00 AM for SNWA and Arizona and in the afternoon for MWD.
   d. Todd discussed his visit presentation to the Perchlorate Task Force meeting at MWD in Los Angeles, California. It is expected that a DTSC member will be following up on the model created by the NDEP consultant. It was noted that approximately 30 water purveyors have filed suit against MWD for perchlorate issues.
   e. Noted that the next EPA quarterly report is due shortly. Noted that the EPA may switch to a semi-annual format.
   f. Noted that the DOD is preparing a report for Senator Feinstein's office. The data in this report is expected to be largely from the EPA reports.
   g. Noted that SNWA will be completing the Powerline and Landfill weirs next. Discussed expected perchlorate concentrations in these areas.
6. Next call: Wednesday, July 28, 2004 at 1:30 PM. Call in number to be provided.

Post-it® Fax Note 7671	Date 7/21/04	# of pages ▶ 6
To Jim Najima	From Bill Frey	
Co./Dept.	Co.	
Phone #	Phone #	
Fax # 687 5856	Fax #	

Snell & Wilmer
L.L.P.
LAW OFFICES
15 West South Temple, Suite 1200
Gateway Tower West
Salt Lake City, Utah 84101
(801) 257-1900
Fax: (801) 257-1800
www.swlaw.com

SALT LAKE CITY, UTAH
PHOENIX, ARIZONA
TUCSON, ARIZONA
IRVINE, CALIFORNIA
DENVER, COLORADO
LAS VEGAS, NEVADA

Bradley R. Cahoon (801) 257-1948
bcahoon@swlaw.com

July 15, 2004

VIA EMAIL and U.S. MAIL

Mr. William R. Frey
wjfrey@ag.state.nv.us
Nevada Attorney General's Office
100 N. Carson St.
Carson City, NV 89701

Dear Bill:

I am writing on behalf of my client, Housing Capital Company ("**Housing Capital**"). Pageantry Communities, Inc., through an affiliate ("**Pageantry**"), is the prospective purchaser of certain real property located near the intersection of Wigwam Parkway and Arroyo Grande Boulevard in Henderson, Nevada comprising approximately 42.96 acres (the "**Property**"). Housing Capital may provide Pageantry with financing to complete the purchase of the Property. The Property is currently owned by Cornerstone Partners I, LLC and is identified by the Clark County Assessor's Office as Parcel # 178-16-710-003. As indicated by the attached map, the Property is located in the vicinity of the old Pacific Engineering & Production Co. of Nevada ("**PEPCON**") plant in Henderson.

Pageantry recently had Brown & Caldwell complete a *Phase I Environmental Site Assessment, Pageantry Community Developers 42.96 Acre Vacant Parcel near Wigwam Parkway and Arroyo Grande Boulevard, Henderson, Nevada, June 23, 2004, Project No. 26142*. The Phase I confirms that some soils on the Property are contaminated with low levels of ammonium perchlorate from the PEPCON plant. Further, the Nevada Division of Environmental Protection ("**NDEP**") has found that the groundwater below the PEPCON plant has been contaminated with ammonium perchlorate. The Phase I also reported that NDEP has evidence suggesting that contamination from the PEPCON plant may have migrated into the aquifer located below the Property.

The recent Brownfield amendments to the Nevada Revised Statutes state that a person who

> [o]wns real property that: (1) [i]s contiguous to or otherwise similarly situated with respect to; and (2) [i]s or may be contaminated by a release or threatened release of a hazardous substance from, other real property that the person does not own, is

Snell & Wilmer
L.L.P.

> not liable for any response action or cleanup that may be required with respect to the release or threatened release, provided that the person meets the requirements set forth in section 107(q)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. § 9607 (q)(1)."

NEV. REV. STAT. § 459.930 (2003).

Further, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("**CERCLA**"), 42 U.S.C. § 9607(q)(3) authorizes an agency "assurance that no enforcement action" will be initiated against a contiguous property owner, as that term is defined in CERCLA, and an agency grant of protection against a cost recovery or Section 113 contribution action.

Pageantry will qualify for liability protection whether it is considered a contiguous property owner or a bona fide prospective purchaser because Pageantry satisfies, or will satisfy, each of the following requirements:

1. A Phase I environmental site assessment has been conducted, and Pageantry has satisfied the "all appropriate inquiry" requirements;

2. Pageantry does not have any past or present affiliation, either corporate, familial, contractual, financial, or otherwise, with the entity responsible to pay the response costs at the Property;

3. Pageantry intends to comply with any land use restrictions and will not impede any institutional controls applicable to the Property, to the extent that any such restrictions or controls exist;

4. Pageantry will take reasonable steps to stop continuing releases, prevent threatened future releases and prevent or limit human, environmental or natural resources exposure to earlier hazardous substance releases on the Property. However, EPA has recognized that satisfaction of these reasonable steps does not include removal of contaminated soil or extraction and treatment of contaminated ground water. *See* EPA Common Elements Guidance Memorandum (March 6, 2003);

5. Pageantry will provide full cooperation, assistance, and access to persons that are authorized to conduct response actions or natural resource restoration at the Property affected by a release or threatened release;

Snell & Wilmer
L.L.P.

6. Pageantry will comply with any request for information or administrative subpoena issued under CERCLA or the Nevada Brownfield amendments;

7. Pageantry will provide notices, if required by law, of the discovery or release of any hazardous substances, if any, at the Property.

I am writing to request that you issue to Pageantry a letter, similar to the enclosed letter, assuring Pageantry of protection against an enforcement action and a cost recovery or contribution action. Time is of the essence because Pageantry is about to close its purchase of the Property. Thank you in advance for your prompt attention to this matter.

Should you have any questions or need additional information to complete the letter, please feel free to call me any time.

Very truly yours,

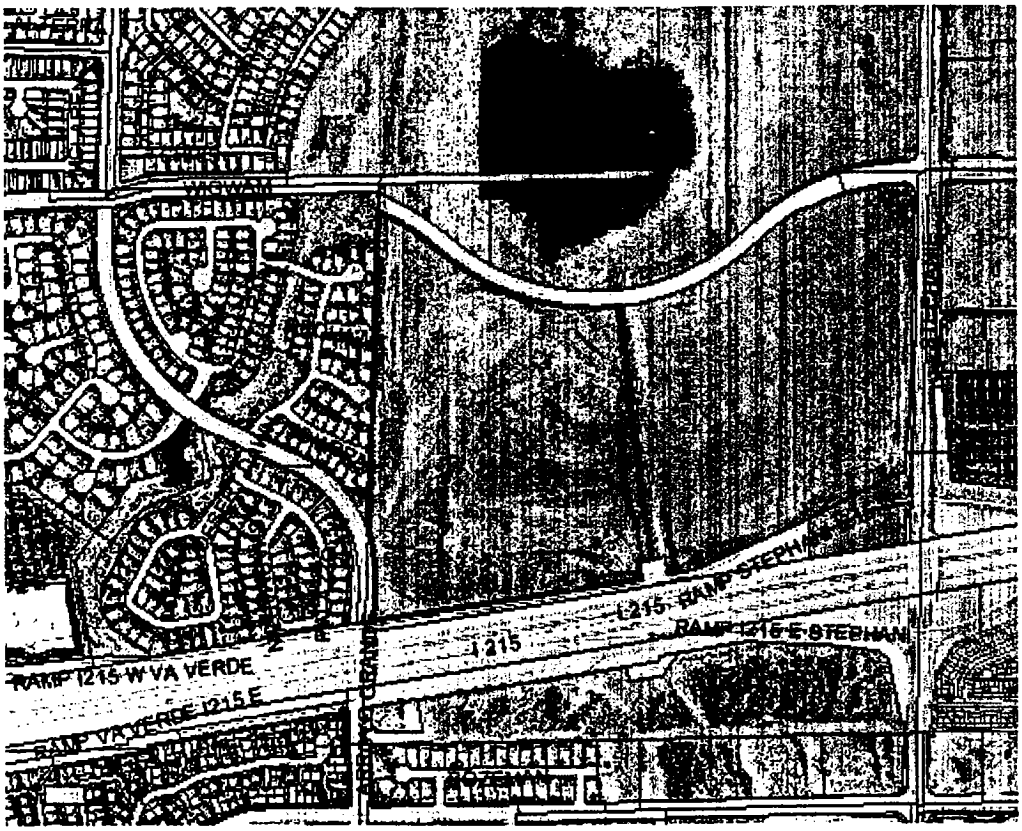
SNELL & WILMER L.L.P.

Bradley R. Cahoon

cc: Mandy S. Shavinsky, Esq.
Housing Capital
Pageantry Communities, Inc.

306833.1

Map Click: (•) Select Property ( ) Zoom In ( ) Zoom Out ( ) Pan ( ) Measure



To display a Clark County Assessor's Parcel **Page** Map for the selected parcel:
17816710003 **Click Here**

To **mail a link** of selected parcel# **17816710003**, **Click Here** or, Copy / Paste the following hyperlink:
http://gisgate.co.clark.nv.us/openweb/asp/openweb.asp?getParcel=17816710003

15560 7/19/04

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: July 13, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Conference Call on July 13, 2004 at 9:00 AM

1. Attendance:
   a. NDEP: Todd Croft, Tamara Pelham, Alan Tinney, Brian Rakvica, Valerie King
   b. KM: Keith Bailey, Susan Crowley
2. System Operations.
   a. Plant is still running near capacity.
   b. Continue to use ferric chloride and cationic polymer.
   c. Discharge is in the 15-30 ntu range and well within the TSS limit.
   d. Disc filter pilot test continues at 30-50 gpm. Located on feed to DAF.
      i. Noted that if KM were going to install this at full scale they would need to have BWPC Technical Services complete a review.
   e. KM has tried adjusting the weir levels in the DAFs to better address the smaller particles.
   f. Noted that KM is using a de-foamer.
   g. Noted that discharge concentrations have been ~ ND (18 ppb) for the last week or so. KM will be submitting a compliance sample today to verify.
   h. Noted that the 30 day test is pending based on the analytical results returned by MWH.
3. KM noted that they have initiated the lowering of the culvert. This should be completed by Thursday. This will likely drain much of the slough areas and will result in a more desirable appearance.
4. NDEP observations.
   a. WQ was very good on the evening of July 4, 2004.
   b. KM noted that they had an interruption of the use of the cationic polymer on July 3, 2004, however, it was back in use on the 4th.
5. Discussed DO issues
   a. Last week the DO (as measured by SNWA) was 0.6 mg/L at the end of the pipe and 1.38 mg/L in the slough.
   b. KM noted that the DO is 3.5-4.0 mg/L on the plant site before the discharge line and has measured ~0.7 mg/L at the end of the pipe.
   c. KM is looking to increase the blower speed to try and drive the DO to ~7 mg/L before the DAFs. KM will also check the diffusers for proper operation.

d. Noted that it is possible that there is continued microbial activity in the pipeline which may be lowering the DO. Discussed other possible scenarios.
e. Discussed possibly using chemical addition or addition of another blower to drive the DO up.
f. KM noted that the aeration tank is located where it is to help with sulfide control.
g. Discussed possibly using an aerator in the slough area. KM has concerns that this will create foam or scum.

6. Discussed compliance issues.
   a. KM had reported a phosphorus exceedenace to Val last week.
   b. Val will be issuing some questions on the Emergency Response Plan.
7. Other issues.
   a. Sierra Club tour planned for Saturday. Todd will attend.
8. Next call: Wednesday, July 21, 2004 at 1:30 PM. Call in number: 405-270-2655.

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

July 15, 2004

Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119

Dear Mr. Rakvica:

Subject: Kerr-McGee ECA Quarterly Status Report – 2nd Quarter, 2004

Pursuant to Section XIII of the Consent Agreement, signed September 5, 1996, between Nevada Division of Environmental Protection (NDEP) and Kerr-McGee Chemical LLC (Kerr-McGee), formerly Kerr-McGee Chemical Corporation (KMCC), Kerr-McGee submits the following quarterly status report for the Henderson facility's Environmental Conditions Assessment (ECA).

Activities Conducted 4-1-04 to 6-30-04

- April 1 – Kerr-McGee met with NDEP (Brian Rakvica, Todd Croft) to discuss the ongoing ECA process. The meeting objective was to clarify NDEP's February 11, 2004 comments relating to the April 25, 2001, "*Supplemental Phase II Report*", and to review NDEP expectations relating to future ECA activities.
- April 8 – Kerr-McGee submits a "*Schedule of Deliverables*" to NDEP.
- April 13 – NDEP comments on Kerr-McGee's proposed schedule for deliverables.
- May 14 – Kerr-McGee submits the "*ECA Organizational Chart and Resumes*" to NDEP.
- June 1 – Kerr-McGee submits "*Responses to NDEP Comments of February 11, 2004*" to NDEP. Note the NDEP comments of February 11, 2004 regarded the Kerr-McGee April 25, 2001 "*Supplemental Phase II Report*".
- June 11 – NDEP comments on Kerr McGee "*ECA Organizational Chart and Resumes*".
- June 11 – NDEP comments on Kerr-McGee's "*Responses to NDEP Comments of February 11, 2004*".
- June 15 – Kerr-McGee submits "*Site-Related Chemical List*" to NDEP.
- June 18 – Kerr-McGee met with NDEP (Brian Rakvica) to discuss the "*Site-Related Chemical List*".
- June 21 – NDEP comments on Kerr-McGee's "*Site-Related Chemical List*".
- June 28 – Kerr-McGee submits a revised "*Deliverable Schedule*" to NDEP.
- June 29 – NDEP comments on Kerr-McGee's revised "*Deliverable Schedule*".

Please note that attached is Kerr-McGee's ECA "*Deliverable Schedule*" which tracks recent activities as well as lists expectations for future activities. Feel free to call me at (702) 651-2234, if you have any questions. Thank you.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

Attachment

Hand Carried

Cc:
Tom Reed
Ed Krish, ENSR
Richard Waters
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

\Quarterly (2nd Q 04) Progress Report to Rakvica.doc

ENVIRONMENTAL CONDITIONS ASSESSMENT
DELIVERABLE SCHEDULE

KERR-McGEE CHEMICAL LLC
Henderson, Nevada
July 14, 2004

Deliverable	Date
Project Organizational Chart / Resumes * Revision 1: Response to NDEP Comments of June11, 2004	May 15, 2004 – Submitted July 6, 2004 – Revision 1 – Submitted
KM Response to NDEP Comments (2-11-04 Letter) * Revision 1: Response to NDEP Comments of	June 1, 2004 – Submitted July 12, 2004 – Revision 1 – Submitted
KM Response to NDEP Deliverable Schedule Comments of 6-29-04	July 14, 2004 – Submitted
Site-Related Chemical List (Report) * Revision 1: Response to NDEP Comments	June 15, 2004 – Submitted July 22, 2004 – Revision 1
Summary of Groundwater Monitoring	August 15, 2004
Characterization of GW-11 Pond Contents	August 30, 2004
Conceptual Site Model	October 30, 2004
Data Quality Objectives	December 31, 2004
Data Usability Evaluation (including review of *Supplemental Phase II Report*)	January 30, 2005
BACKGROUND STUDY	
Background Study Work Plan	February 28, 2005
Background Study Field Sampling	120 days following NDEP approval of Work Plan
Background Study Report	120 days following field sampling completion
PERIODIC MONITORING AND REPORTING	
ECA Phase II Status Report (Quarterly)	July 15, 2004; October 15, 2004; January 15, 2005
Perchlorate Remediation Performance Report (Quarterly)	July 28, 2004; October 28, 2004; January 28, 2005
Chromium Remediation Performance Report (Semi-Annually)	July 28, 2004; January 28, 2005

Todd Croft

From: Elizabeth.Bickmore@snwa.com
Sent: Thursday, July 15, 2004 10:13 AM
To: Todd Croft
Cc: Kimberly.Zikmund@snwa.com
Subject: RE: Kerr McGee activities at their outfall near the Las Vegas Wash

Hi Todd,
Thank you for your help. Things like this happen, but it is tough time of year to have an irrigation system down with the revegetation program. Susan Crowley has contacted me and has someone working on the problem.

thanks again for your assistance,
Liz

Elizabeth Bickmore
Environmental Biologist
Las Vegas Wash Project Coordination Team
Southern Nevada Water Authority
1900 East Flamingo Ste. 255
Las Vegas Nevada 89119
702-822-3385 voice
702-822-3304 fax

"Todd Croft" <tcroft@ndep.nv.gov>
07/15/2004 08:47 AM

To: <Elizabeth.Bickmore@snwa.com>
cc: <Kimberly.Zikmund@snwa.com>, <kbailey@kmg.com>, <scrowley@kmg.com>
Subject: RE: Kerr McGee activities at their outfall near the Las Vegas Wash

Elizabeth:

Thank you for this information. I was made aware of the accidental breach to your system and a planned remedy. Keith Hasbrook (sp?) informed me of this yesterday at about noon.

I was unaware of the potential additional cost / change in watering that

this may create to SNWA.

I'll speak w/ Keith Bailey, Susan Crowley, & Kerr-McGee today to resolve this ASAP.

Thank you for the information.

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

-----Original Message-----
From: Elizabeth.Bickmore@snwa.com [mailto:Elizabeth.Bickmore@snwa.com]
Sent: Wednesday, July 14, 2004 4:16 PM
To: Todd Croft
Cc: Kimberly.Zikmund@snwa.com
Subject: Kerr McGee activities at their outfall near the Las Vegas Wash

Hi Todd,

Kim Zikmund, wanted me to share this information with you. As you probably already know, Kerr McGee is adjusting their outfall pipe near Pabco Weir to address some hydrology issues. I just wanted to make you aware that while the adjustments were being made yesterday, pipes to our irrigation system were cut and the wires to the solar panel that operate the irrigation pump were severed. The irrigation system is used daily in the summer months for watering the plants at the Pabco mitigation site as part of the Las Vegas Wash Coordination Committee stabilization and enhancement effort on the Wash. Keith from Kerr McGee is working on getting an electrician to fix the problem. However, we may need to start hand watering the plants with an additional cost if the irrigation system is not fixed by tomorrow.

Let me know if you have any questions,
Liz

Elizabeth Bickmore
Environmental Biologist
Las Vegas Wash Project Coordination Team
Southern Nevada Water Authority
1900 East Flamingo Ste. 255
Las Vegas Nevada 89119
702-822-3385 voice
702-822-3304 fax

Todd Croft

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Thursday, July 15, 2004 10:32 AM
To: Elizabeth.Bickmore@snwa.com
Cc: Bailey, Keith; Kimberly.Zikmund@snwa.com; Todd Croft
Subject: RE: Kerr McGee activities at their outfall near the Las Vegas Wash

Elizabeth,
I talked with Keith a moment ago and he still wasn't aware of the piping, so .... he is heading to the field, as I write, to find Giles and make sure we get you made whole by the end of the day. Again - sorry ... we didn't intend to cause difficulty for others along the way of correcting a problem we had.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Elizabeth.Bickmore@snwa.com [mailto:Elizabeth.Bickmore@snwa.com]
Sent: Thursday, July 15, 2004 10:14 AM
To: Crowley, Susan
Cc: Bailey, Keith; Kimberly.Zikmund@snwa.com; Todd Croft
Subject: RE: Kerr McGee activities at their outfall near the Las Vegas Wash

Hi Susan,

Thank you for your quick response. The main line for the irrigation system that transfers water from the pump to the irrigation system was cut as well as the solar panel wires that run the system. Giles Anthony, our subcontractor for the revegetation project is working with Keith on the matter. He should be able to explain to Keith the details of the line
break. However, feel free to call me if you have any questions or need more clarification.

thanks,
Liz

Elizabeth Bickmore
Environmental Biologist
Las Vegas Wash Project Coordination Team
Southern Nevada Water Authority
1900 East Flamingo Ste. 255
Las Vegas Nevada 89119
702-822-3385 voice
702-822-3304 fax

|---------+---------------------------->
	"Crowley, Susan"
	<SCROWLEY@KMG.com
	>
	07/15/2004 08:57
	AM
---------+---------------------------->

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|
  | To: "Todd Croft" <tcroft@ndep.nv.gov>,
<Elizabeth.Bickmore@snwa.com>
|
  | cc: <Kimberly.Zikmund@snwa.com>, "Bailey, Keith"
<KBAILEY@KMG.com>   \ |
  | Subject: RE: Kerr McGee activities at their outfall near the
Las Vegas Wash |

>--
--|

Todd / Elizabeth,
We are truly apologetic for digging up the electrical line - it is undergoing repair as I write this e-mail. It should be back in operation by the close of today. We're not aware of any piping that was uncovered - so I need some assistance on this. Can you contact us to explain? Keith Hasbrouck will be in the vicinity for the better part of the day - so he is approachable in the field. I'll also be available - best by cell phone 592-7727. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Todd Croft [mailto:tcroft@ndep.nv.gov]
Sent: Thursday, July 15, 2004 8:48 AM
To: Elizabeth.Bickmore@snwa.com
Cc: Kimberly.Zikmund@snwa.com; Bailey, Keith; Crowley, Susan
Subject: RE: Kerr McGee activities at their outfall near the Las Vegas Wash

Elizabeth:

Thank you for this information. I was made aware of the accidental breach to your system and a planned remedy. Keith Hasbrook (sp?) informed me of this yesterday at about noon.

I was unaware of the potential additional cost / change in watering that this may create to SNWA.

I'll speak w/ Keith Bailey, Susan Crowley, & Kerr-McGee today to resolve this ASAP.

Thank you for the information.

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office tcroft@ndep.nv.gov
(Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

-----Original Message-----
From: Elizabeth.Bickmore@snwa.com [mailto:Elizabeth.Bickmore@snwa.com]
Sent: Wednesday, July 14, 2004 4:16 PM
To: Todd Croft
Cc: Kimberly.Zikmund@snwa.com
Subject: Kerr McGee activities at their outfall near the Las Vegas Wash

Hi Todd,

Kim Zikmund, wanted me to share this information with you. As you probably already know, Kerr McGee is adjusting their outfall pipe near Pabco Weir to address some hydrology issues. I just wanted to make you aware that while the adjustments were being made yesterday, pipes to our irrigation system were cut and the wires to the solar panel that operate the irrigation pump were severed. The irrigation system is used daily in the summer months for watering the plants at the Pabco mitigation site as part of the Las Vegas Wash Coordination Committee stabilization and enhancement effort on the Wash. Keith from Kerr McGee is working on getting an electrician to fix the problem. However, we may need to start hand watering the plants with an additional cost if the irrigation system is not fixed by tomorrow.

Let me know if you have any questions,
Liz

Elizabeth Bickmore
Environmental Biologist
Las Vegas Wash Project Coordination Team
Southern Nevada Water Authority
1900 East Flamingo Ste. 255
Las Vegas Nevada 89119
702-822-3385 voice
702-822-3304 fax

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

July 14, 2004

Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA – Revised Deliverable Schedule

Kerr-McGee Chemical LLC (Kerr-McGee) has undertaken an Environmental Conditions Assessment (ECA) as directed by Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004, Kerr-McGee prepared a delivery schedule for documents which responded to items raised in the February 11 letter. As we progress through this ECA process, Kerr-McGee expects that this deliverable schedule will need refreshing from time to time, generally to add deliverables or update the deliverables' status and intends to include this deliverable schedule in the quarterly status report.

You forwarded comments, dated June 29, 2004, relating to this deliverable schedule and while the schedule has been modified to reflect your comments (and is attached), provided below are specific responses to several of the comments:

Comment 1.	Characterization of GW-11 pond content is underway and results will be forwarded to you by August 30, 2004. Note that some analytical results may be very long delivery and if these are not available by August 30, 2004, we'll notify you.
Comment 2.	The *"Evaluation of Detection Limits in the Supplemental Phase II Report"* deliverable name has been modified to describe the purpose of the evaluation, that of data usability. Kerr-McGee intends to evaluate the usability of data associated with future ECA activities. This evaluation will include historical data in addition to that provided in the report mentioned.
Comment 3.	Kerr-McGee expects that screening levels will be evaluated as the *"Data Quality Objectives"* are developed, as well as during the *"Data Usability Evaluation"*.
Comments 4 to 9.	Note schedule modifications which address NDEP comments.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Hand Carried

Cc: Tom Reed
Ed Krish, ENSR
Richard Waters
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

ENVIRONMENTAL CONDITIONS ASSESSMENT
DELIVERABLE SCHEDULE

KERR-McGEE CHEMICAL LLC
Henderson, Nevada

Deliverable	Date
Project Organizational Chart / Resumes * Revision 1: Response to NDEP Comments of June11, 2004	May 15, 2004 – Submitted July 6, 2004 – Revision 1
KM Response to NDEP Comments (2-11-04 Letter) * Revision 1: Response to NDEP Comments of	June 1, 2004 – Submitted July 12, 2004 – Revision 1
KM Response to NDEP Deliverable Schedule Comments of 6-29-04	July 14, 2004
Site-Related Chemical List (Report) * Revision 1: Response to NDEP Comments	June 15, 2004 – Submitted July 22, 2004 – Revision 1
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Characterization of GW-11 Pond Contents	August 30, 2004
Conceptual Site Model	October 30, 2004
Data Quality Objectives	December 31, 2004
Data Usability Evaluation (including review of *Supplemental Phase II Report*)	January 30, 2005
BACKGROUND STUDY	
Background Study Work Plan	February 28, 2005
Background Study Field Sampling	120 days following NDEP approval of Work Plan
Background Study Report	120 days following field sampling completion
PERIODIC MONITORING AND REPORTING	
ECA Phase II Status Report (Quarterly)	July 15, 2004; October 15, 2004; January 15, 2005
Perchlorate Remediation Performance Report (Quarterly)	July 28, 2004; October 28, 2004; January 28, 2005
Chromium Remediation Performance Report (Semi-Annually)	July 28, 2004; January 28, 2005

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

July 15, 2004

Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119

Dear Mr. Rakvica:

Subject: Kerr-McGee ECA Quarterly Status Report – 2nd Quarter, 2004

Pursuant to Section XIII of the Consent Agreement, signed September 5, 1996, between Nevada Division of Environmental Protection (NDEP) and Kerr-McGee Chemical LLC (Kerr-McGee), formerly Kerr-McGee Chemical Corporation (KMCC), Kerr-McGee submits the following quarterly status report for the Henderson facility's Environmental Conditions Assessment (ECA).

Activities Conducted 4-1-04 to 6-30-04

- April 1 – Kerr-McGee met with NDEP (Brian Rakvica, Todd Croft) to discuss the ongoing ECA process. The meeting objective was to clarify NDEP's February 11, 2004 comments relating to the April 25, 2001, "*Supplemental Phase II Report*", and to review NDEP expectations relating to future ECA activities.
- April 8 – Kerr-McGee submits a "*Schedule of Deliverables*" to NDEP.
- April 13 – NDEP comments on Kerr-McGee's proposed schedule for deliverables.
- May 14 – Kerr-McGee submits the "*ECA Organizational Chart and Resumes*" to NDEP.
- June 1 – Kerr-McGee submits "*Responses to NDEP Comments of February 11, 2004*" to NDEP. Note the NDEP comments of February 11, 2004 regarded the Kerr-McGee April 25, 2001 "*Supplemental Phase II Report*".
- June 11 – NDEP comments on Kerr McGee "*ECA Organizational Chart and Resumes*".
- June 11 – NDEP comments on Kerr-McGee's "*Responses to NDEP Comments of February 11, 2004*".
- June 15 – Kerr-McGee submits "*Site-Related Chemical List*" to NDEP.
- June 18 – Kerr-McGee met with NDEP (Brian Rakvica) to discuss the "*Site-Related Chemical List*".
- June 21 – NDEP comments on Kerr-McGee's "*Site-Related Chemical List*".
- June 28 – Kerr-McGee submits a revised "*Deliverable Schedule*" to NDEP.
- June 29 – NDEP comments on Kerr-McGee's revised "*Deliverable Schedule*".

Please note that attached is Kerr-McGee's ECA "*Deliverable Schedule*" which tracks recent activities as well as lists expectations for future activities. Feel free to call me at (702) 651-2234, if you have any questions. Thank you.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

Attachment

Hand Carried

Cc:
Tom Reed
Ed Krish, ENSR
Richard Waters
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

\Quarterly (2nd Q 04) Progress Report to Rakvica.doc

ENVIRONMENTAL CONDITIONS ASSESSMENT
DELIVERABLE SCHEDULE

KERR-McGEE CHEMICAL LLC
Henderson, Nevada
July 14, 2004

Deliverable	Date
Project Organizational Chart / Resumes * Revision 1: Response to NDEP Comments of June11, 2004	May 15, 2004 – Submitted July 6, 2004 – Revision 1 – Submitted
KM Response to NDEP Comments (2-11-04 Letter) * Revision 1: Response to NDEP Comments of	June 1, 2004 – Submitted July 12, 2004 – Revision 1 – Submitted
KM Response to NDEP Deliverable Schedule Comments of 6-29-04	July 14, 2004 – Submitted
Site-Related Chemical List (Report) * Revision 1: Response to NDEP Comments	June 15, 2004 – Submitted July 22, 2004 – Revision 1
Summary of Groundwater Monitoring	August 15, 2004
Characterization of GW-11 Pond Contents	August 30, 2004
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Perchlorate Remediation Performance Report (Quarterly)	July 28, 2004; October 28, 2004; January 28, 2005
Chromium Remediation Performance Report (Semi-Annually)	July 28, 2004; January 28, 2005

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

July 14, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Kerr-McGee ECA – Revised Deliverable Schedule

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and finds that the responses included are acceptable to the NDEP.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

July 14, 2004

Brian Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA – Revised Deliverable Schedule

Kerr-McGee Chemical LLC (Kerr-McGee) has undertaken an Environmental Conditions Assessment (ECA) as directed by Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004, Kerr-McGee prepared a delivery schedule for documents which responded to items raised in the February 11 letter. As we progress through this ECA process, Kerr-McGee expects that this deliverable schedule will need refreshing from time to time, generally to add deliverables or update the deliverables' status and intends to include this deliverable schedule in the quarterly status report.

You forwarded comments, dated June 29, 2004, relating to this deliverable schedule and while the schedule has been modified to reflect your comments (and is attached), provided below are specific responses to several of the comments:

Comment 1. Characterization of GW-11 pond content is underway and results will be forwarded to you by August 30, 2004. Note that some analytical results may be very long delivery and if these are not available by August 30, 2004, we'll notify you.

Comment 2. The "*Evaluation of Detection Limits in the Supplemental Phase II Report*" deliverable name has been modified to describe the purpose of the evaluation, that of data usability. Kerr-McGee intends to evaluate the usability of data associated with future ECA activities. This evaluation will include historical data in addition to that provided in the report mentioned.

Comment 3. Kerr-McGee expects that screening levels will be evaluated as the "*Data Quality Objectives*" are developed, as well as during the "*Data Usability Evaluation*".

Comments 4 to 9. Note schedule modifications which address NDEP comments.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Hand Carried

Cc:

Tom Reed	Rick Simon, ENSR
Ed Krish, ENSR	Sally Bilodeau, ENSR
Richard Waters	Dave Gerry, ENSR
Rick Stater	Jim Najima, NDEP
Jon Palm, NDEP	Todd Croft, NDEP
Jennifer Carr, NDEP	Jeff Johnson, NDEP
Valerie King, NDEP	Tamara Pelham, NDEP
Barry Conaty	Brenda Pohlmann, COH
Mitch Kaplan, US EPA	Carrie Stowers, CCCP

ENVIRONMENTAL CONDITIONS ASSESSMENT
DELIVERABLE SCHEDULE

KERR-McGEE CHEMICAL LLC
Henderson, Nevada

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Chromium Remediation Performance Report (Semi-Annually)	July 28, 2004; January 28, 2005

07/19/04
Tcrob

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: July 13, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima, Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Conference Call on July 13, 2004 at 9:00 AM

1. Attendance:
   a. NDEP: Todd Croft, Tamara Pelham, Alan Tinney, Brian Rakvica, Valerie King
   b. KM: Keith Bailey, Susan Crowley
2. System Operations.
   a. Plant is still running near capacity.
   b. Continue to use ferric chloride and cationic polymer.
   c. Discharge is in the 15-30 ntu range and well within the TSS limit.
   d. Disc filter pilot test continues at 30-50 gpm. Located on feed to DAF.
      i. Noted that if KM were going to install this at full scale they would need to have BWPC Technical Services complete a review.
   e. KM has tried adjusting the weir levels in the DAFs to better address the smaller particles.
   f. Noted that KM is using a de-foamer.
   g. Noted that discharge concentrations have been ~ ND (18 ppb) for the last week or so. KM will be submitting a compliance sample today to verify.
   h. Noted that the 30 day test is pending based on the analytical results returned by MWH.
3. KM noted that they have initiated the lowering of the culvert. This should be completed by Thursday. This will likely drain much of the slough areas and will result in a more desirable appearance.
4. NDEP observations.
   a. WQ was very good on the evening of July 4, 2004.
   b. KM noted that they had an interruption of the use of the cationic polymer on July 3, 2004, however, it was back in use on the 4th.
5. Discussed DO issues
   a. Last week the DO (as measured by SNWA) was 0.6 mg/L at the end of the pipe and 1.38 mg/L in the slough.
   b. KM noted that the DO is 3.5-4.0 mg/L on the plant site before the discharge line and has measured ~0.7 mg/L at the end of the pipe.
   c. KM is looking to increase the blower speed to try and drive the DO to ~7 mg/L before the DAFs. KM will also check the diffusers for proper operation.

d. Noted that it is possible that there is continued microbial activity in the pipeline which may be lowering the DO. Discussed other possible scenarios.
e. Discussed possibly using chemical addition or addition of another blower to drive the DO up.
f. KM noted that the aeration tank is located where it is to help with sulfide control.
g. Discussed possibly using an aerator in the slough area. KM has concerns that this will create foam or scum.

6. Discussed compliance issues.
   a. KM had reported a phosphorus exceedenace to Val last week.
   b. Val will be issuing some questions on the Emergency Response Plan.
7. Other issues.
   a. Sierra Club tour planned for Saturday. Todd will attend.
8. Next call: Wednesday, July 21, 2004 at 1:30 PM. Call in number: 405-270-2655.

Todd Croft

From: Brian Rakvica

Sent: Monday, July 19, 2004 8:29 AM

To: Todd Croft; Jennifer Carr; Jeff Johnson; Jim Najima; Jon Palm; Tamara Pelham; Alan Tinney; Leo Drozdoff; Valerie King

Subject: Kerr-McGee conf. call notes - 7/13/04 - finalized

All,

attached are the finalized notes from our call on 7/13/04.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
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Waste Management
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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

July 13, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Kerr-McGee General Responses to NDEP Comments of February 11, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and finds that the responses included are acceptable to the NDEP.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

July 12, 2004

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee General Responses to NDEP Comments of February 11, 2004

Dear Mr. Rakvica:

Kerr McGee Chemical LLC (Kerr-McGee) has received your June 11, 2004 comments on the Kerr-McGee responses to items raised in your February 11, 2004 letter. While most of your comments were informative in nature, several requested responses from Kerr-McGee. These are provided below:

Comment 6. Kerr-McGee maintains documents (associated with the Environmental Conditions Assessment) in the public information repository, located at the James Gibson library in Henderson, NV. We will continue to do so, as we move through this investigative process.

Comment 7. Kerr-McGee has accelerated the date by which we will forward characterization work on the GW-11 pond contents. The revised deliverable schedule will submitted later this week, but to the point, the characterization work will be forwarded to your office by August 30, 2004.

Comment 8. As we discussed in our meeting on July 6, 2004, Kerr-McGee recognizes that for data to be of value its usability needs to be evaluated, and this includes determining how the analytical result's detection limit compares to the use the data is applied toward. In the revised deliverable schedule we have re-named this exercise a "Data Usability Evaluation".

Comment 9. Kerr-McGee agrees that Comment 11 in the NDEP February 11, 2004 letter touches on important issues. Screening levels will be evaluated as part of the work associated with both the Background Study and the Data Quality Objectives development. In addition, as we progress in the investigative process, if other evaluations are found needed, these will be added to the deliverable schedule.

If you have any questions or require additional information please do not hesitate to call me at (702) 651-2234. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Hand Carried

Cc: Tom Reed
Rick Stater
Dave Gerry, ENSR
Ed Krish, ENSR
Richard Waters
Rick Simon, ENSR

Sally Bilodeau, ENSR	Jeff Johnson, NDEP
Jim Najima, NDEP	Jon Palm, NDEP
Todd Croft, NDEP	Jennifer Carr, NDEP
Valerie King, NDEP	Tamara Pelham, NDEP
Barry Conaty	Brenda Pohlmann, COH
Mitch Kaplan, US EPA	Carrie Stowers, CCCP

Brian Rakvica

From: Brian Rakvica
Sent: Friday, July 09, 2004 10:04 AM
To: 'Crowley, Susan'
Subject: draft schedule

Susan,

I was not sure if you wanted me to comment on the draft schedule you provided at the meeting, in any case, here they are (informally):

1. is an evaluation of screening levels going to be added to the schedule?

2. as discussed in our meeting, is the data usability evaluation going to include all historic data? if not will you be adding another line item in which the historic data will be evaluated?

Everything else looks ok.

If you can address these two items the submittal on 7/22 should be ok.

Please let me know if you have any questions.

Thanks,

Brian

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Friday, July 09, 2004 7:40 AM
To: Brian Rakvica; Gerry, Dave
Cc: Bilodeau, Sally; Jeff Johnson
Subject: RE: ENSR Fed Ex Acct # for sending document

Brian,
Thanks for the information. Conferencing in Jeff is no problem. We'll just need a number to call him. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Brian Rakvica [mailto:brakvica@ndep.nv.gov]
Sent: Friday, July 09, 2004 8:38 AM
To: Gerry, Dave
Cc: Bilodeau, Sally; Crowley, Susan; Jeff Johnson
Subject: RE: ENSR Fed Ex Acct # for sending document

Dave,

The TIMET CSM will be sent out today.

I have been under the weather and on travel status and apologize if I was in less than optimal shape at our meeting.

From what I have reviewed and discussed with my peers I don't think that the USEPA guidance is prescriptive in the format of either of these documents. However, I believe that the complexity of each of these documents should correlate to the complexity of the site. This site is very complex due to the mixture of chemicals, unknowns due to it's historic use and it's proximity to a number of other chemical plumes which may be co-mingling (to name a few). It is therefore the belief of the NDEP that the CSM and the site-related chemical list should reflect this complexity.

This position is consistent with the ASTM guidance for developing CSM's (section 4.2). This ASTM guidance also shows tables, figures, cross-sections, etc as being part of the CSM (to be noted, the examples in the guidance are far simpler than the Kerr-McGee site). If you would like to discuss this further please contact me.

Also, for our meeting on August 4, 2004 at 1:00 PM I would like to conference call Jeff Johnson from our Carson City office in.

Thanks,

Brian

-----Original Message-----
From: Gerry, Dave [mailto:DGerry@ensr.com]
Sent: Thursday, July 08, 2004 3:37 PM
To: Brian Rakvica
Cc: Bilodeau, Sally; Susan Crowley (scrowley@KMG.com)
Subject: ENSR Fed Ex Acct # for sending document

Brian,

I appreciated the spirit and content of our meeting on Monday. I look forward to working with you as we move forward..

Thanks again for the offer to share a copy of the Conceptual Site Model document for one of the BMI tenants (Timet?). We will be sure to return the document to you within a week of our receiving it.

When you send the document, please use ENSR's Fed Ex Account number : **#0930-00501.** Our address is beneath my name below.

Thanks.

David L. Gerry
ENSR International, Inc.
1220 Avenida Acaso
Camarillo, CA 93012
phone: 805-388-3775
fax: 805-388-3577
e-mail: dgerry@ensr.com

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DRAFT

ENVIRONMENTAL CONDITIONS ASSESSMENT
DELIVERABLE SCHEDULE

KERR-McGEE CHEMICAL LLC
Henderson, Nevada

Deliverable	Date
Project Organizational Chart / Resumes	May 15, 2004 – Submitted ✓ July 6, 2004 – Revision 1 ✓
KM Response to NDEP Comments (2-11-04 Letter)	June 1, 2004 – Submitted ✓ July 12, 2004 – Revision 1
KM Response to NDEP Comments (6-29-04 Letter)	July 14, 2004 ✓
Site-Related Chemical List (Report)	June 15, 2004 – Submitted July 22, 2004 – Revision 1 ✓
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Data Usability Evaluation (*Supplemental Phase II Report*)	January 30, 2005 ✓
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Background Study Work Plan	February 28, 2005 ✓
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Background Study Report	120 days following field sampling
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Chromium Remediation Performance Report (Semi-Annually)	July 28, 2004; January 28, 2005
Supplemental Phase II Report – Revision 1 (Revised as appropriate to address NDEP 2-11-04 comments)	April 30, 2005

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City LAS VEGAS — State NV — ZIP ~~89123~~ 89119

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4b Express Freight Service — *Packages over 150 lbs.* Delivery commitment may be later in some areas

- ☐ FedEx 1Day Freight* — Next business day
- ☐ FedEx 2Day Freight — Second business day
- ☐ FedEx 3Day Freight — Third business day

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- ☐ Yes — Shipper's Declaration not required
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MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: July 9, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson, Jim Najima
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Conference Call on July 7, 2004 at 1:30 PM

1. Attendance:
   a. NDEP: Todd Croft, Tamara Pelham
   b. KM: Keith Bailey, Susan Crowley, Rick Stater
2. Discussed Remedial System Operations
   a. Plant is running at 95% of chemical load and >95% of the hydraulic load.
   b. Load to the plant includes a 60 gpm blend of water from the chromium treatment plant and pond GW-11. Approximately 12 gpm is being pumped from pond GW-11 to the chromium treatment plant. The remainder of the flow from the treatment plant is re-directed back to pond GW-11.
3. Discussed effluent appearance.
   a. Noted a marked improvement with the use of the cationic polymer floc. Noted that KM did not have enough of this floc to continue it's use through the holiday weekend.
   b. Noted that it takes approximately 1 week to clean the slough (i.e.: ponded seep stream).
   c. Discussed floating pieces and low D.O.; KM to address this issue.
   d. KM requested copies of the SNWA data.
   e. DMR from early May indicated ~8 mg/L average D.O.
4. Discussed pilot disc filter and solids management.
   a. Unit arrived at the site yesterday. Unit was set up and running today on the feed to the DAFs.
   b. The unit would likely be deployed after the DAFs in the future.
   c. This unit will take approximately two weeks to test and optimize.
   d. KM noted that the Actiflow system pilot is complete and the system has been sidelined waiting for the results of the disc filter pilot test.
   e. KM noted that they are still trying to optimize the polymer.
5. Discussed pond GW-11 drawing down and evaporating.
6. Discussed analytical.
   a. ND ranges from 4-20 ppb.
   b. KM noted that some effluent has been measured at 1 ppm while trying to balance the plant.

7. KM noted that they will initiate the 30-day performance test during the week of July 12, 2004. The test will be initiated once they achieve ND in their discharge.
8. Next meeting: telephone conference on 7/13/04 at 9:00 AM – Call in number to be provided.

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

TRANSMITTAL

To: David L. Gerry
ENSR International, Inc.
1220 Avenida Acaso
Camarillo, CA 93012

From: Brian A. Rakvica

Date: 7/9/04

Re: CSM

Enclosed we transmit the following:

One loaned copy of the TIMET CSM.

Please call if there are any questions.

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

July 9, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
ECA Project Organizational Chart and Resumes

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document. The NDEP finds that this document is generally acceptable and offers the following comments for future reference. NDEP does not expect that a response from KM is necessary.

1. The document is dated June 14, 2004 and was submitted on July 6, 2004. Please provide an accurate date on future submittals.
2. On the project organizational chart, please note that I am employed by the Nevada Division of Environmental Protection not the Nevada Division of Environmental Quality.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

Brian Rakvica

From: Gerry, Dave [DGerry@ensr.com]
Sent: Thursday, July 08, 2004 3:37 PM
To: Brian Rakvica
Cc: Bilodeau, Sally; Susan Crowley (scrowley@KMG.com)
Subject: ENSR Fed Ex Acct # for sending document

Brian,

I appreciated the spirit and content of our meeting on Monday. I look forward to working with you as we move forward..

Thanks again for the offer to share a copy of the Conceptual Site Model document for one of the BMI tenants (Timet?). We will be sure to return the document to you within a week of our receiving it.

When you send the document, please use ENSR's Fed Ex Account number : **#0930-00501.** Our address is beneath my name below.

Thanks.

David L. Gerry
ENSR International, Inc.
1220 Avenida Acaso
Camarillo, CA 93012
phone: 805-388-3775
fax: 805-388-3577
e-mail: dgerry@ensr.com

ISSUED 7/19/04

Meeting Minutes

Project:	Kerr-McGee
Location:	Kerr-McGee
Time and Date:	1:00 PM, Tuesday, July 6, 2004
Meeting Number:	---
In Attendance:	NDEP-BCA – Las Vegas – Brian Rakvica Kerr-McGee (KM) Susan Crowley ENSR- David Gerry, Sally Bilodeau

CC: Jennifer Carr, Todd Croft, Jeff Johnson

1. Meeting was held in order to clarify expectations of the NDEP and discuss the project.
2. Introductions.
3. Discussed ENSR corporate structure and project organizational chart. Revised organizational chart and resumes will be submitted to NDEP today. NDEP noted that preliminarily this looks ok.
4. Reviewed project history.
5. Discussed revised schedule. Susan provided Brian with a draft revised schedule. Brian to review.
6. Discussed submittal of documents and drafts.
    a. KM would like to submit drafts for NDEP review. Brian indicated that he would try to review these and that email would be the best way to submit these.
7. Discussed CSM.
    a. ENSR views this as a 12-15 page document that would be conceptual in nature and would not include a lot of cross-sections or detailed figures.
    b. NDEP noted that this may be possible if the document is going to reference other reports submitted previously which have provided this information. Any assertion made in the document must be based on information previously submitted or provided in the CSM.
    c. NDEP noted that Km has completed a vast amount of hydrogeological characterization to date, however, this work must be referenced and discussed in the CSM.
    d. Brian will loan ENSR a copy of the TIMET CSM. Brian noted that this document is still draft and has not been reviewed by NDEP yet. ENSR will provide a Fed Ex account number.
    e. NDEP acknowledged that KM intends to maintain the site as an industrial exposure scenario and that the NDEP is concerned with containment and management of the off-site migration of contaminants.
8. Discussed site-related chemicals (SRC).
    a. ENSR does not view this document as a report and does not see the basis for the need to provide such a detailed document. NDEP noted that the US EPA guidance (RAGS Chapter 5) is not prescriptive in what needs to

be included in this document. NDEP believes that this level of detail is needed for a project of this complexity.

b. Brian suggested that KM/ENSR discuss what parts of the NDEP letter were an issue. KM/ENSR did not have anything to discuss.
c. NDEP noted that unknowns are not an SRC, however, the document must have some sort of discussion as to how the unknowns will be addressed at the site.
d. NDEP noted that the SRC document must provide justification for the list. Simply presenting a list of chemicals will not be sufficient for this document. NDEP also acknowledged that there will always be unknowns at the site, however, we must try to get these unknowns down to a reasonable level.
e. KM believes that a vast majority of the SRC have been identified in previous reports. NDEP acknowledged that this may be true, however, the list of SRC has never been developed and none of the processes outlined in Chapter 5 of RAGS have been documented.

9. Discussed data usability evaluation. NDEP noted that this should included all of the project data collected to date.
10. Discussed the FSP/QAPP. This will likely be included as part of the background work plan.
11. Agreed that it is not necessary to re-submit the ECIA report as all of the other submittals will address the issues raised by NDEP.
12. Scheduled the next meeting for August 4, 2004 at 1:00 PM at the KM facility.

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: June 30, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff, Valerie King

RE: KM Conference Call on June 29, 2004 at 1:30 PM

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica, Tamara Pelham, Alan Tinney
   b. KM: Keith Bailey, Susan Crowley, Rick Stater
2. Discussed excavation near Athens Road Well Field (ARW). KM stated that they were aware of the work and the KMinfrastructure had been marked out, however, there was damaged to a communications line on Thursday night. The repair was completed on Friday. The system did not experience any shutdowns.
3. Discussed NDEP observations on 6/27/04.
   a. No significant differences from the last observation except the fact that no foam was visible.
   b. The amount of scum present in the Seep area seemed to be greater. KM noted that the increase in scum is a result of their trying to knock down the turbidity and that the lack of foam is a result of the refinement of the ethanol dose.
4. Discussed the presence of black materials in the discharge.
   a. KM noted that they did perform sampling after the last event (week of 6/21/04). The TSS was well within permit limitations.
   b. NDEP noted that SNWA reported a similar instance today. It is likely that SNWA is testing the Wash and vicinity currently. NDEP plans on making a site visit today. KM will likely make a visit to the Seep area as well.
5. KM asked who would be a good point of contact if they can not reach Valerie. Alan Tinney provide the names and number for Diana Silsby and Larry Rountree.
6. NDEP noted that when we last met that we had discussed that it was necessary for KM to put the best system in place to achieve good effluent quality. NDEP also noted that the issue of the opacity of the effluent has been an issue for approximately 6 weeks now.
   a. NDEP asked KM to explain what has been done to try and resolve this issue. KM responded with the following items:

i. Testing of the Acti-Flow system. This system has not produced favorable results and testing continues. It was also noted that this system requires large doses of ferric chloride.
ii. KM is now testing a cationic polymer flocculent. This test should start this morning.
iii. KM has brought in a disc filter system to test. The pilot test of this system should be completed by July 19, 2004. The tests will be 50-100 gpm and has filter sizes down to 10 micron. Once the system is pre-coated particles less than 10 micron should be filtered out as well. It was also noted that this system has a continuous backwash capability for continuous operation.
iv. KM has also brought in a membrane filter system to test.
v. KM noted that the discharge turbidity is now down around the low 30's.

b. NDEP asked if the Acti-Flow system could be operated at full capacity would KM be able to maintain their iron discharge limitation? KM noted that this is something that needs to be determined. KM also noted that the volume of solids that would be generated would exceed their capacity for the existing filter press.
c. NDEP noted that KM needs to explore these different options simultaneously. NDEP also noted that KM needs to be in a position by mid-July to have a plan to provide a much cleaner effluent. NDEP noted that this plan will likely require plan review by Nadir; permit revision by Tamara; equipment procurement, etc.
d. NDEP questioned what KM could do to provide a cleaner effluent while the above processes are taking place.
    i. KM plans on continuing to experiment with different coagulants and flocculants. KM noted that there are two issues: the breakthrough of larger particles through the system and the presence of the small particles which cause the haze in the discharge. KM stated that they believe they can address the issue of the large particles through refined operation of the DAF. KM also believes that they can probably deal with the issue of the scum production.
    ii. NDEP asked if KM had explored discharge to the sanitary sewer. KM indicated that the City of Henderson has not provided a positive response to this issue. NDEP asked if KM had the ability to discharge this volume of water from their plant site. KM indicated that this would require a revision of the existing BMI discharge limitation.
    iii. NDEP asked if KM had explored the idea of construction a lined settling/decanting pond. KM noted that they felt this would take quite a while to construct.
    iv. NDEP asked if KM had explored the idea of construction an unlined settling pond. KM had not considered that this would even be an option. NDEP was not sure if this would be an option either

and noted that it would likely require a groundwater discharge permit\. KM also noted that this settling pond would also be likely to have the same undesirable appearance as the Seep stream stagnant water.

v. It was also noted that the location of an unlined settling pond would have to be very carefully selected so as not to mobilize additional contaminants.

vi. KM discussed possibly modifying the area before the culvert in the Seep stream. KM's theory is that the stagnant water in the Seep stream is partially responsible for some of the visual problems with the discharge. NDEP noted that this would likely require discussion with State Lands and some permitting.

vii. KM discussed the possibility of discharging in a different location to relieve the issue of the stagnant water. A location that was mentioned was the area by the City of Henderson and the BMI Alpha Ditch discharges. NDEP noted that this may also require a permit change. NDEP to verify.

7. Next meeting: telephone conference on 7/7/04 at 1:30 PM – Call in number is 405-270-2660.

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

June 29, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC (KM)
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Revised Deliverable Schedule dated June 28, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides the following comments:

1. As noted in comment #7 of the NDEP's June 11, 2004 letter to KM regarding KM's response to the NDEP's February 11, 2004 letter, the NDEP does not believe that the delivery date for the characterization of pond GW-11 is appropriate and requests an accelerated delivery date.
2. As noted in comment #8 of the NDEP's June 11, 2004 letter to KM regarding KM's response to the NDEP's February 11, 2004 letter, the NDEP does not feel that the *"Evaluation of Detection Limits in the Supplemental Phase II Report"* will be sufficient to address the NDEP's comments. Please refer to the NDEP's June 11, 2004 letter for further details.
3. As noted in comment #9 of the NDEP's June 11, 2004 letter to KM regarding KM's response to the NDEP's February 11, 2004 letter, it appears that an evaluation of screening levels needs to be completed. Please explain where this will be addressed in the current schedule.

4. Responses to the NDEP's June 11, 2004 and June 21, 2004 letters are due on July 6, July 12, and July 22, 2004. These responses should be included in the schedule.
5. The NDEP believes that the Conceptual Site Model (CSM) and Data Quality Objectives (DQOs) reports should be completed prior to the *"Evaluation of Detection Limits in the Supplemental Phase II Report"*. Please revise the schedule accordingly.
6. Under the heading of *"Periodic Monitoring and Reporting"* KM needs to add the quarterly progress reporting required under the Phase II Consent Agreement.
7. Please revise the item titled *"Chemical List"* to *"Site-Related Chemical report"*.
8. It should be noted that this document is a request for a change in schedule.
9. It is suggested that KM provided an updated schedule quarterly with the submission of the quarterly progress reporting as required by the Phase II Consent Agreement.

By **July 14, 2004** KM shall address the issues outlined herein. If possible, it would be helpful if KM provided a revised schedule at our July 6, 2004 meeting. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

06/29/04
TUES
pg 1

KMCC Telecon

(1) Discussed observation of Sunday 06/27

(2) Discussed last weeks reference to black discharge

(3) Discussed need for better quality effluent
- Actiflow was tested ⇒ still being tested
  ⇒ requires massive doses of FeCl
  ⇒ Δ'ing to ionic polymer

- Brought in other equip → due next Tuesday AM → disc filter

- Turbidity is down in low 30's

- Viollia/Shaw/Environex considering what to do → considering membrane filtration
  ↑ Keith not too comfortable w/ this

Schedule:
Disc Filter Pilot due complete in two weeks ⇒ July 19 → gravity disc w/ 10 μ filtration

06/29/04
TUES
pg 2

ActiFlow → Trying to optimize
↳ Trailer is capable of 1,000 gpm
now Running a slip stream of
~200 gpm

↑ Fe excess likely to be removed
via sludge

* Full deployment will be several months

^coverage
~~scum~~ is likely due to increased FeCl

consider discharge to COH sewer
⇒ not anxious to discuss this
phone calls not returned

Baker Tank → similar to ActiFlow
⇒

Tauman → treated water might be able
to go to unlined pond

Rick → Perk Pond c̄ Tauman → yes!
perk a decant

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

June 28, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA – Revised Deliverable Schedule

Kerr-McGee Chemical LLC (Kerr-McGee) has undertaken an Environmental Conditions Assessment (ECA) as directed by Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004, Kerr-McGee prepared a delivery schedule for documents which responded to items raised in the February 11 letter. As we progress through this ECA process, Kerr-McGee expects that this deliverable schedule will need refreshing from time to time, generally to add deliverables or update the deliverables' status, but also occasionally to document deliverable date changes. Please see the attached revised deliverable schedule. Several delivery dates have been modified.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc:
Tom Reed
Ed Krish
Richard Waters
Rick Stater
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Simon, ENSR
Sally Bilodeau, ENSR
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

KERR-McGEE CHEMICAL LLC
Henderson, Nevada

ENVIRONMENTAL CONDITIONS ASSESSMENT
DELIVERABLE SCHEDULE
Revised: June 28, 2004

Deliverable	Date
Project Organizational Chart / Resumes	May 15, 2004 – Submitted
KM Response to NDEP Comments (2/11 Letter)	June 1, 2004 – Submitted
Chemical List	June 15, 2004 – Submitted
Response to NDEP Comments re: the *Semi-Annual Chromium Mitigation Performance Report*	July 28, 2004
Summary of Groundwater Monitoring	August 15, 2004
Evaluation of Detection Limits in *Supplemental Phase II Report*	September 15, 2004
Characterization of GW-11 Pond Contents	September 30, 2004
Conceptual Site Model	October 30, 2004
Data Quality Objectives	December 31, 2004
BACKGROUND STUDY	
Background Study Work Plan	January 30, 2005
Background Study Field Sampling	120 days following NDEP approval
Background Study Report	120 days following field sampling
PERIODIC MONITORING AND REPORTING	
Perchlorate Remediation Performance Report (Quarterly)	July 28, 2004; October 28, 2004; January 28, 2005
Chromium Remediation Performance Report (Semi-Annually)	July 28, 2004; January 28, 2005
Supplemental Phase II Report – Revision 1 (Revised as appropriate to address NDEP comments)	March 30, 2005

CERTIFIED MAIL

KERR-McGEE CHEMIC
POST OFFICE BOX 55 • HENDERSON, NEVADA 89009-7000

7000 1670 0002 1245 9381

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Brian A. Rakvica, P.E., Staff Engineer III
NV Division of Environmental Protection
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

89119+0837

ISSUE 6/24/04

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: June 21, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica, Tamara Pelham
   b. KM: Keith Bailey, Susan Crowley
2. First meeting was held at 10:30 AM.
3. Discussed flow measurement.
   a. Currently the flow is measured at the discharge by a flow meter.
   b. It was noted that flow could be calculated in other ways.
   c. All of the other means of determining flow appear to indicate that the flow meter is inaccurate (low).
   d. The correct flow appears to be approximately 1,000 – 1,030 gpm.
   e. NDEP noted that for permit compliance it is desired that KM not back calculate any of the historic flows. It was suggested that an explanation of the problem be provided and the flow meter be fixed or replaced. It was suggested that it might be helpful to have two flow meters so that while one is out for calibration the other could be put in service. It was suggested that the field log books note which meter is in service in case there is any difference in calibration.
   f. For April:
      i. Flow meter: 858 gpm
      ii. Addition of wells, pond and GW treatment system: 1,022 gpm
      iii. Addition of FBR and Wash IX: 1,029 gpm
   g. It was noted that the Wash IX has been shut down since June 11, 2004 with all current flows being diverted to the FBRs.
   h. Tamara reminded KM that the schedule of compliance requires them to notify NDEP once 1,000 gpm has been achieved.
4. Next meeting was held at 1:15 PM.
   a. Discussed NDEP observations from 6/20/04 at 5:30 PM.
   b. Discharge appears to be of better quality (dilute tea colored as opposed to milky white due to the use of ferric chloride as a coagulant in the DAF system).
   c. Seep area rocks remain stained.
   d. Water near culvert has a thin layer of scum remaining.

e. Discharge to Wash still has an opacity to it.

5. Discussed system operations.
   a. The hydraulic limitations of the discharge line appear to be remedied through the use of a booster pump.
   b. Other discussions per today's earlier call.
   c. KM noted that they plan on using the existing flow meter and then once they have a recalibrated or new meter and they can confirm 1,000 gpm flow they will notify NDEP per the permit requirements.
6. Discussed solids management.
   a. KM notified NDEP on Friday (Val King) due to some black materials (particulates) within the discharge.
   b. It was noted that KM is skimming 1-2 times per day at the Seep Area.
   c. KM has changed injection points for the coagulant and has asked Veolia to look in to alternatives to the Acti-Flow filtration system.
   d. KM has taken some turbidity samples and analyzed them at their process lab.
      i. Out of DAF = 30-40 ntu
      ii. LV Wash = 10-27 ntu depending on where the sample is taken.
      iii. NDEP clarified that it was desired to take a sample in the Seep stream immediately prior to the confluence with the Wash and upstream in the Wash.
      iv. It was noted that during the April 27th incident the turbidity was likely greater than 100 ntu.
   e. It was noted that KM remains below their iron discharge limitation (10 mg/L).
7. Discussed possible solutions to solids issues.
   a. KM noted that both DAFs are currently running to try and maximize residence time. KM continues to try and optimize DAF operation.
   b. NDEP asked if it would be possible to pipe in a container or tank to add residence time prior to discharge to the Wash in order to allow some of the solids to settle?
   c. NDEP asked if it would be possible to run the discharge through a sand filter?
   d. NDEP asked if it would be possible to have the discharge run to a holding pond to allow some of the solids to settle out?
   e. NDEP asked if KM had investigated using a pre-coat or diatomaceous earth filter? KM noted that they had and they may be looking in to this again. This may work for the larger particles.
   f. KM noted that the fines would not be addressed by a filter unless it was a 0.45 micron or smaller filter.
   g. KM will look in to the NDEP's suggestions.
   h. NDEP suggested a permanent solution for the reduction in solids is needed and the time to explore options is running out. A permanent solution is desired by the NDEP within the next few weeks.
8. Next meeting: telephone conference on 6/29/04 at 1:30 PM – call in number to be provided.

Brian Rakvica

From: Brian Rakvica
Sent: Thursday, June 24, 2004 12:14 PM
To: 'Crowley, Susan'
Subject: RE: project schedule

That sounds great.

Thanks,

Brian

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Thursday, June 24, 2004 12:10 PM
To: Brian Rakvica
Cc: dgerry@ensr.com; Bilodeau, Sally; Reed, Thomas; Krish, Ed; Todd Croft
Subject: RE: project schedule

Brian,
I'll submit a revised schedule before we miss a delivery date, before June 30th, and I am hopeful you'll have an opportunity to review and approve it before an originally proposed delivery date comes and goes. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Brian Rakvica [mailto:brakvica@ndep.nv.gov]
Sent: Thursday, June 24, 2004 12:47 PM
To: Crowley, Susan
Cc: dgerry@ensr.com; Bilodeau, Sally; Reed, Thomas; Krish, Ed; Todd Croft
Subject: RE: project schedule

Susan,

I interpret that to mean that nothing will be submitted until that revised schedule is submitted?

When do you anticipate the revised schedule being submitted? At our July 7, 2004 meeting would be good.

Please advise.

Thanks,

Brian

-----Original Messag- ----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Thursday, June 24, 2004 9:23 AM
To: Brian Rakvica
Cc: dgerry@ensr.com; Bilodeau, Sally; Reed, Thomas; Krish, Ed; Todd Croft
Subject: RE: project schedule

Brian,
Kerr-McGee intends to submit an amended deliverable schedule to you which will build in the time needed to complete these documents to the detailed level expected in an investigative process as discussed in our meeting. In addition, my expectation is that the time periods will be adjusted, as well, to build in time to perform an initial review so that the documents also satisfy NDEP's needs in the first submittal. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Brian Rakvica [mailto:brakvica@ndep.nv.gov]
Sent: Thursday, June 24, 2004 7:59 AM
To: Crowley, Susan
Subject: project schedule

Susan,

Per your schedule, you have documents due on June 30, July 6, July 12, July 15, July 28.

Were you planning on still submitting these documents on this schedule?

I know we are meeting on July 7, 2004, however, if you plan on submitting these documents under a revised schedule you will need to provide me something in writing (email is fine) requesting this delay. Also, it would help if you could include a proposed date for a revised schedule submission.

Please call or email with any questions.

Thanks,

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870

fax: 702-486-5863
email: brakvica@ndep.nv.gov

Important Notice!
If you are not the intended recipient of this e-mail message, any use, distribution or copying of the message is prohibited.
Please let me know immediately by return e-mail if you have received this message by mistake,
then delete the e-mail message.
Thank you.

RECORD OF COMMUNICATION	DISCUSSION FIELD TRIP CONFERENCE PHONE CALL **X** OTHER (SPECIFY)	
	(Record of item checked above)	
TO: Susan Crowley Kerr-McGee	FROM: Brian Rakvica	DATE:6/22/04 TIME:1:30 pm
SUBJECT: schedule		

SUMMARY OF COMMUNICATION:

1. Susan has reviewed the project schedule with the ENSR team and discussed the expectations of the NDEP. As anticipated, the schedule will need to be revised to accommodate the more robust response that KM intends to provide. Also, KM will build time in to the schedule to review a draft document with the NDEP prior to submission of the final document.
2. KM also intends to put the remainder of the project team in place and resubmit the personnel; document and organizational chart as per the discussions with NDEP.
3. NDEP and KM/ENSR to meet on July 7, 2004 at approximately 10:00 AM to discuss.

June 22, 2004 summary

Perchlorate

Currently the load of perchlorate at Northshore Road is in the range of 130 lbs. per day. It has dropped significantly from what it was a year ago, which was approximately 400 lbs. per day. NDEP contracted with a consultant to model a portion of the Las Vegas Wash about one year ago and that model shows results of lowering levels of perchlorate over time. NDEP continues to track perchlorate concentration and mass in the Wash and anticipates the load to drop to approximately 100 lbs per day by this fall. From the data we see, the perchlorate values continue to drop as well going into Lake Mead from the Wash. The perchlorate concentrations measured at Willow Beach in the Colorado River system continue to drop and were reported at 3.6 ppb for June 2004.

Kerr McGee has a new treatment system online and they have been in start up mode since January 2004. They are close to full hydraulic loading and chemical loading. Since start up began they have been discharging an effluent that routinely has < 18 ppb for perchlorate. The current focus for Kerr McGee is to optimize their solids removal. The effluent has excess solids in it. They are working with a variety of coagulants and flocculants and are trying to optimize these to see if they can get a clearer looking effluent.

NDEP has met with AMPAC a week ago and we are close to signing a consent agreement and that should be out in a few months. The schedule we are currently looking at will be the installation of two remedial systems, one down at the leading edge of the plume and one in the core part of the plume. The remedial system near the leading edge of the plume should go in the ground and begin startup around January of 2005. The full-scale remedial system to address the core part of the plume should begin startup by May or June of 2005.

Removal of perchlorate from the environment to date: 1,254 tons total; 310 tons from the seep area; 254 tons from Athens road; and 690 tons from the on-site system.

SNWA reported 6 ppb of perchlorate for raw and 7 ppb of perchlorate in finished water during May.

Todd Croft

From: Karen Howard
Sent: Wednesday, August 04, 2004 11:03 AM
To: Todd Croft
Subject: perchlorate summary from june meeting

08/04/04
OK
- Pour / Revise.

Hi Todd,

Attached is the perchlorate summary of the June meeting.
I've been out of the office lately, so I just started the minutes.
Would you please look this over. There are some sections, I can't hear you too well.

I appreciate your time and effort!

If you could get it back to me by August 16th, that would be great!

Thanks!

Karen

Karen Howard
Administrative Assistant III
Nevada Division of Environmental Protection
Bureau of Water Quality Planning
333 West Nye Lane
Carson City, NV 89706

khoward@ndep.nv.gov
775-687-9444

Todd Croft

From: Todd Croft
Sent: Wednesday, August 04, 2004 3:21 PM
To: Karen Howard
Subject: June 2004 LMWQF Perchlorate summary; revised

Karen:

Attached, please find a revised perchlorate summary for the June 22, 2004 LMWQF.

Please let me know if you need anything else.

Perchlorate June 22 2004 LMWQF...

THX BYE

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: June 21, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica, Tamara Pelham
   b. KM: Keith Bailey, Susan Crowley
2. First meeting was held at 10:30 AM.
3. Discussed flow measurement.
   a. Currently the flow is measured at the discharge by a flow meter.
   b. It was noted that flow could be calculated in other ways.
   c. All of the other means of determining flow appear to indicate that the flow meter is inaccurate (low).
   d. The correct flow appears to be approximately 1,000 – 1,030 gpm.
   e. NDEP noted that for permit compliance it is desired that KM not back calculate any of the historic flows. It was suggested that an explanation of the problem be provided and the flow meter be fixed or replaced. It was suggested that it might be helpful to have two flow meters so that while one is out for calibration the other could be put in service. It was suggested that the field log books note which meter is in service in case there is any difference in calibration.
   f. For April:
      i. Flow meter: 858 gpm
      ii. Addition of wells, pond and GW treatment system: 1,022 gpm
      iii. Addition of FBR and Wash IX: 1,029 gpm
   g. It was noted that the Wash IX has been shut down since June 11, 2004 with all current flows being diverted to the FBRs.
   h. Tamara reminded KM that the schedule of compliance requires them to notify NDEP once 1,000 gpm has been achieved.
4. Next meeting was held at 1:15 PM.
   a. Discussed NDEP observations from 6/20/04 at 5:30 PM.
   b. Discharge appears to be of better quality (dilute tea colored as opposed to milky white due to the use of ferric chloride as a coagulant in the DAF system).
   c. Seep area rocks remain stained.
   d. Water near culvert has a thin layer of scum remaining.

e. Discharge to Wash still has an opacity to it.

5. Discussed system operations.
   a. The hydraulic limitations of the discharge line appear to be remedied through the use of a booster pump.
   b. Other discussions per today's earlier call.
   c. KM noted that they plan on using the existing flow meter and then once they have a recalibrated or new meter and they can confirm 1,000 gpm flow they will notify NDEP per the permit requirements.
6. Discussed solids management.
   a. KM notified NDEP on Friday (Val King) due to some black materials (particulates) within the discharge.
   b. It was noted that KM is skimming 1-2 times per day at the Seep Area.
   c. KM has changed injection points for the coagulant and has asked Veolia to look in to alternatives to the Acti-Flow filtration system.
   d. KM has taken some turbidity samples and analyzed them at their process lab.
      i. Out of DAF = 30-40 ntu
      ii. LV Wash = 10-27 ntu depending on where the sample is taken.
      iii. NDEP clarified that it was desired to take a sample in the Seep stream immediately prior to the confluence with the Wash and upstream in the Wash.
      iv. It was noted that during the April 27th incident the turbidity was likely greater than 100 ntu.
   e. It was noted that KM remains below their iron discharge limitation (10 mg/L).
7. Discussed possible solutions to solids issues.
   a. KM noted that both DAFs are currently running to try and maximize residence time. KM continues to try and optimize DAF operation.
   b. NDEP asked if it would be possible to pipe in a container or tank to add residence time prior to discharge to the Wash in order to allow some of the solids to settle?
   c. NDEP asked if it would be possible to run the discharge through a sand filter?
   d. NDEP asked if it would be possible to have the discharge run to a holding pond to allow some of the solids to settle out?
   e. NDEP asked if KM had investigated using a pre-coat or diatomaceous earth filter? KM noted that they had and they may be looking in to this again. This may work for the larger particles.
   f. KM noted that the fines would not be addressed by a filter unless it was a 0.45 micron or smaller filter.
   g. KM will look in to the NDEP's suggestions.
   h. NDEP suggested a permanent solution for the reduction in solids is needed and the time to explore options is running out. A permanent solution is desired by the NDEP within the next few weeks.
8. Next meeting: telephone conference on 6/29/04 at 1:30 PM – call in number to be provided.

Todd Croft

From: Brian Rakvica
Sent: Thursday, June 24, 2004 3:02 PM
To: Todd Croft; Jennifer Carr; Jeff Johnson; Jon Palm; Tamara Pelham; Alan Tinney; Leo Drozdoff
Subject: meeting notes from 6/21/04 Kerr-McGee meeting

All,

Attached are the finalized meeting notes from our conference call, for your use.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
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ALLEN BIAGGI, *Administrator*

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STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

June 21, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC (KM)
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Site-Related Chemical List

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides the following comments:

1. It is indicated that the document is being provided in "draft form". This is not acceptable as the due date for the document was June 15, 2004. This due date was the date that the finalized document was due, not a draft document. Documents submitted to the NDEP on the due date should represent KM's best efforts at providing a document that is approvable. In the future, if KM would like to discuss a document or provide a preliminary draft to the NDEP it is necessary to do this within the constraints of the schedule that has been agreed upon. KM should also realize that the NDEP has limited resources and can not commit to any time frame for the review of preliminary draft documents. As mentioned previously, if the schedule requires adjustment, KM will need to request an amendment to the schedule.
2. It is also indicated that the document includes "PRGs, MCLs and SSLs" as requested by the NDEP. The NDEP feels that there is confusion on this issue as the February 11, 2004 NDEP letter did not request these items be presented with the site-related chemicals list. The presentation of this information may be more

appropriate in an evaluation of screening levels or another document to be prepared by KM. KM should also note that the applicability of various screening levels must be evaluated for site-specific conditions. Also, KM should note that there are additional screening levels that should be evaluated. These levels are not applicable to the site-related chemicals document and should be deleted from the revised submittal.

3. Laboratory limits are not listed for a number of chemicals. Please explain.
4. The NDEP believes that this document does not include a number of chemicals and compounds which appear to be site-related. These chemicals and compounds include (but are not limited to): anti-foam agent, argon, barite, boric acid, calcium chloride, chelant (Nalco 1745), chlorinated organics, chlorinated paraffin, chloride, coagulants, coal, coke, DDD, DDE, ethylbenzene, filter aid, flammables, flocculents, graphite, heavy metal sulfides, 2-hexanone, magnesium, paraffin wax, pH, phosphorous, unknown SVOCs, synthetic detergent, tank mud, tetrachloroethene, tin, titanium tetrachloride, trichloroethene, unknowns, and various lab wastes. It concerns NDEP that magnesium was omitted from the list of site-related chemicals as this site is located on the former plant site of Basic Magnesium Incorporated.
5. Some of the items listed do not appear to list all of the appropriate analytical methods. For example, magnesium perchlorate only includes the analysis for perchlorate by EPA Method 314.0. Please explain how magnesium will be analyzed for. Since this document was submitted in "draft form" NDEP did not verify the applicability of all of the methods listed. Also, as the project progresses towards a data useability assessment and risk assessment the applicability of these methods will need to be revisited.
6. Mixtures
    a. There are a number of mixtures presented on the site-related chemical list and mentioned in comment #4. It is necessary for KM to identify and explain what the components and degradation by-products are of these mixtures.
    b. Examples of mixtures include: anti-foam agent, chelant (Nalco 1745), coagulants, flocculents, glycols, paints, solvents, synthetic detergent, tank mud, and Tumbleaf defoliant.
    c. It is suggested that the components of these mixtures be addressed in a supplementary list as described in comment #16 below.
7. Unknowns
    a. The site-related chemicals pertaining to a number of the activities on the site are unknown.
    b. USEPA guidance (USEPA, April 1992, Guidance for Data Usability in Risk Assessment) states that if historical data are incomplete, a broad spectrum analysis should be performed on selected samples from each sampling location to provide necessary scoping information. The NDEP requests that KM explain what broad spectrum analyses are expected to be performed to address the unknowns at the site.
    c. NDEP requests that KM use Tentatively Identified Compounds (TICs) in their evaluation of unknowns at the site (in accordance with USEPA guidance). KM

should also note that any historic TICs should be identified as a site-related chemical.

d. KM has presented broad classes of chemicals as site-related chemicals. For example, acids, caustics, glycols, insecticides, and pesticides. KM must provide an explanation for how these broad classes of chemicals will be addressed.

8. Metals
   a. It appears that there are a number of compounds which may contain metals that are listed under the general heading of metals and do not belong under this heading. For example, diatomaceous earth, paints, potassium perchlorate, sodium alpha olefin sulfonate and strontium carbonate. Please refer to comment #16 and clarify this issue.
   b. It appears that cyanide would more appropriately be listed as an ion.
   c. The "laboratory limits" for lead in water is listed as 500 ug/L and the MCL is listed as 15 ug/L. Please explain how KM plans to address this issue as it relates to lead and other chemicals (please note that this problem is not specific to metals). For example, selenium in soil, hexavalent chromium in soil, nitrobenzene in soil, acetone in soil, etc., all have laboratory limits greater than their PRG, SSL or MCL.
9. Semi-Volatile Organic Compounds (SVOCs)
   a. The NDEP would like to note that the proposed list of SVOCs may not be adequate for the list of site-related chemicals. There are a number of unknowns at the site and it may be more appropriate to perform a full 8270C (or similar) analysis and supplement this standard list with any non-standard SVOCs that exist at the site. Please see comment #7 regarding unknowns.
   b. No analytical method is listed for nitrobenzene, however, laboratory limits are listed. Please explain.
10. Volatile Organic Compounds (VOCs)
   a. The NDEP would like to note that the proposed list of VOCs may not be adequate for the list of site-related chemicals. There are a number of unknowns at the site and it may be more appropriate to perform a full 8260 (or similar) analysis and supplement this standard list with any non-standard VOCs that exist at the site. Please see comment #7 regarding unknowns.
11. Organophosphorous Pesticides
   a. This row is blank, please provide an explanation for what is planned for organophosphorous pesticides.
12. Chlorinated Herbicides
   a. The analytical method listed is EPA 8051. The NDEP can not find any reference to an EPA Method 8051. There is a method known as Hach Method 8051 for sulfate. There is an EPA method 8151A which is used for chlorinated herbicides. Please explain.
13. Polynuclear Aromatic Hydrocarbons (PAHs)
   a. Please explain the justification for the list of PAHs presented.

b. The method listed is for the analysis of SVOCs. The appropriate method for PAHs is EPA Method 8310.

14. Water Quality Parameters
    a. This row is blank, please provide an explanation for what is planned for water quality parameters.

15. Radionuclides
    a. The February 11, 2004 letter from NDEP to KM stated that the "uranium series, thorium series, radium 226/228 (and all daughter products), as well as potassium 40" be evaluated. The NDEP would like to clarify that this should include the analysis of uranium 235; uranium 236; the uranium 238 decay series; and the thorium 232 decay series. Also, the daughter products of radium 226/228 should be evaluated. If KM is proposing to exclude these items from the site-related chemical list, adequate justification must be provided. Adequate justification may require documentation from a qualified chemist or toxicologist.
    b. The footnote explanation for gross alpha (adjusted) is incorrect. Adjusted gross alpha is defined as the total gross alpha minus contributions from uranium and radon 222. Please verify the method by which gross alpha (adjusted) radionuclides is analyzed and calculated and revise this footnote. Also, please note that the word "form" in this footnote should be replaced with the word "from".
    c. Please note that uranium will likely need to be evaluated from the chemical and radiological risk standpoints. These two risk pathways may require separate analysis. Please verify that the method proposed for uranium analysis is appropriate and discuss.
    d. The method listed for Thorium 230 is DOE EML HASL-30. It appears that this might be a truncated form of DOE EML HASL-300. Please explain.

16. Formatting and Clarity
    a. The NDEP believes that the project would be best served if the site-related chemicals list is as concise and clear as possible. It is the intent that the site-related chemicals list will list each chemical name only once. This list should be supplemented with a "tracking list" which provides all the necessary detail to understand how the site-related chemical list was developed. This "tracking list" could address a number of issues as discussed below and would provide a historic record which documents that KM investigated all compounds, mixtures and chemicals associated with the site.
    b. The "tracking list" could provide the names of the mixtures associated with the site and document what the components and degradation by-products of the mixtures are. These components and their degradation by-products would be addressed by chemicals listed on the site-related chemical list.
    c. The "tracking list" could also include and document the chemicals and compounds which will be addressed by their degradation by-products. For example, sodium chloride could be addressed by sodium and chloride.

This should substantially reduce the number of items presented on the site-related chemicals list. Also, it will provide clarity as to the types of chemicals that will be analyzed for.

d. The "tracking list" could also include chemicals which have no toxicity, rapid breakdown in the environment, insignificant volume of breakdown product, or other factors that eliminate health risks. For example, argon gas.
e. The "tracking list" should include synonyms as applicable.
f. If KM has any questions regarding the formatting of this "tracking list' or what is expected to be included it is suggested that KM contact NDEP to discuss.
g. The site-related chemical list includes the various ranges of hydrocarbons. It is necessary to explain what mixtures (diesel, gasoline, fuel oil, grease, motor oil, etc.) each of the ranges addresses. Some mixtures may also require additional analyses to address their components and degradation by-products. Further justification is needed.
h. Lime is listed under "general chemistry parameters" and "inorganics". Please delete the "general chemistry parameters" entry.
i. The category labeled "Nonhalogenated" appears to be a truncated form of "Nonhalogenated Organics". Please explain.

In summary, the NDEP is concerned that KM does not understand the expectations of the project or is not applying the right personnel to the project. If KM has questions on these expectations a conference call or meeting should be scheduled as soon as possible. If KM does not understand the NDEP's comments, questions should be asked or clarification should be requested. The NDEP is available to address these questions or provide clarifications by telephone, electronic mail, hard-copy mail, or in person.

By **July 22, 2004** KM shall address the issues outlined herein. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

ALLEN BIAGGI, *Administrator*

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STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

TRANSMITTAL

To: Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

From: Brian A. Rakvica

Date: 6/18/04

Re: Site-Related Chemicals

Enclosed we transmit the following:

Copies of the materials pertaining to site-related chemicals at the BMI Common Areas and TIMET.

Please call if there are any questions.

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: June 18, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson

RE: KM Meeting – Site-Related Chemicals (SRC)

1. Brian met with Susan to review the SRC document she had submitted.
2. Brian reviewed the major points of the comment letter that he will be issuing including: discussion on the components of mixtures; discussion on how broad classes of chemicals and unknowns will be addressed; chemicals which were missed on the list; discussion of the fact that the document was very draft (the NDEP expects a best effort on the submittal – not a rough draft);
3. Also discussed was the project schedule. Brian indicated that if the entire project schedule is not realistic KM needs to reevaluate it and propose an amendment. The project schedule needs to be reasonable, however, it also must be achievable.
4. Discussed preliminary drafts. Brian indicated that he would try to review rough draft documents to point KM in the right direction, however, due to workload it will not be possible to do this in every case. Brian also indicated that the submitted document should be a finished product. This submittal contained many blanks and no explanation.
5. Discussed the idea of creating a trimmed down SRC list and an expanded explanation in text form and a detailed table showing components of compounds and degradation by-products.
6. It was noted that the screening levels probably should not be included in this document unless they are being used as a metric for a rough comparison to detection limits.
7. Discussed radionuclides and expectations versus what was submitted.
8. Discussed the PIP letter from Jennifer Carr. Susan indicated she had not seen the letter. Brian provided a copy.
9. Susan requested copies of the BMI and TIMET documents on SRC. Brian to provide by mail.
10. Discussed various typos throughout the document.
11. Brian asked if Susan had reviewed the 6/11/04 letters to her on the personnel document and the ECIA response. Susan indicated that she had not seen these yet.
    a. Discussed the personnel document. Brian indicated that it was important to identify who the project team was so that NDEP could be assured that appropriate expertise was being applied to the project (with Superfund

experience). Susan indicated that they had not yet gotten to that point. Brian indicated that with the schedule that had been presented to NDEP it is necessary to have that team in place by now. If Susan needs time to get the team together she needs to revise the schedule as such and let NDEP know.

b. Discussed the ECIA response and the fact that "comments noted" does not necessarily indicate concurrence or disagreement. Susan agreed. Brian indicated that if the NDEP's comments were going to be addressed through future submittals that needs to be indicated in the response. "Comments noted' does not provide any information.

Brian Rakvica

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Tuesday, June 15, 2004 7:44 AM
To: Brian Rakvica
Cc: Todd Croft; jjohnson@ndep.nv.gov
Subject: Kerr-McGee Site-Related Chemical List

Brian,
Attached please find the Kerr-McGee site-related chemical list. The hard copy was forwarded by Fed Ex yesterday (we've backed our deliverable date up by a day to ensure the documents are in your hands by the scheduled date). The hard copy includes an 11x17 version of the list - this should be a little more readable than the 81/2 x11 provided in this e-version.

Note the list is provided in draft form - we'd appreciate your comments before finalizing the document. Let me know if you have any questions.

<<Digital_4.pdf>>

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

June 14, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA – Site-Related Chemical List

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) under the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the schedule provided to your office April 8, 2004 (and amended June 1, 2004), Kerr-McGee has prepared the attached draft site-related chemical list. Included in this list are potential analytical method references along with laboratory limits, which would be relevant under ideal conditions. Also, as requested, included are PRGs, MCLs and SSLs.

This document as been provided in draft form, and we request your input. Please feel free to comment on either the format or the content. Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc:
Tom Reed
Richard Waters
Rick Simon, ENSR
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Stater
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP (2 copies)
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

DRAFT

Known or Suspected Chemicals
Associated with
Historical Site Operations
Kerr-McGee Henderson Facility, Nevada

Parameters of Interest	Compound List	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes	PRG Residential Soil (mg/kg)	PRG Industrial Soil (mg/kg)	SSL DAF 1 (mg/kg)	MCL (ug/l)
					Soil (mg/kg)	Water (ug/l)					
Ions	ammonium perchlorate	7790-98-9	S, A	EPA 314		4	Phase I				
	chlorine	7782-50-5	S	EPA 300	10		Phase I				4,000
	chlorate										
	hydrogen chloride	7647-01-0	--	None			Historically present in gas form	--	--	--	
	hydrogen peroxide	7722-84-1	--	None			Relatively unstable compound that requires stabilization to avoid deterioration over time; no known analysis method				
	hydrogen sulfide	7783-06-4	--	EPA 376.2	1		Historically present in gas form; Phase I	--	--	--	
	nitrates	NA	S, A	EPA 300	2	100		--	--		100
	perchlorate	7601-90-3	S, A	EPA 314		4	Phase I	7.82	102.2	--	
	phosphate	NA	S, A	EPA 300			Phase I				
Asbestos	asbestos	1332-21-4	S	ISO 10312 TEC		0.2 MFL*	Phase I				7 MFL*
General Chemistry Parameters	ammonia	7664-41-7	--	EPA 350.2	1		Historically present in gas form; Phase I	-	-	-	-
	lime	NA		EPA 150.1			Phase I				
	acids	NA		EPA 150.1			Phase I				
	caustics	NA		EPA 150.1			Phase I				
Metals	cyanide	57-12-5	S, A	EPA 335.1, 335.2	2.5	10	Phase I	1,222.1	12,313.1	--	200
	aluminum	7429-90-5	S, A	EPA 6010, 6020	50	25					
	antimony	7440-36-0	S, A	EPA 6010, 6020	0.5	1		31.29	408.8	0.3	6
	arsenic	7440-38-2	S, A	EPA 6010, 6020	0.1	1		21.65	255.93		10
	barium	7440-39-3	S, A	EPA 6010, 6020	1	2	Phase I	5,374.91	66,577.35	82	2000
	barium hydroxide	NA	S, A	EPA 6010, 6020			Phase I				
	barium sulfide	21109-95-5	S, A	EPA 6010, 6020, 376.1			Phase I				
	beryllium	7440-41-7	S, A	EPA 6010, 6020	0.5	1		154.37	1,940.69	3	4
	borax	1303-96-4	S, A	EPA 6010, 6020			Phase I				
	boron	7440-42-8	S, A	EPA 6010, 6020	10	50	Phase I	15,621.84	100,000	-	-
	boron carbide	12069-32-8	S, A	EPA 6010, 6020			Phase I				
	boron tribromide	10294-33-4	S, A	EPA 6010, 6020			Phase I				
	boron trichloride	10294-34-5	S, A	EPA 6010, 6020			Phase I				
	cadmium	7440-43-9	S, A	EPA 6010, 6020	1	1	LOU Response				5
	calcium	7440-70-2	S, A	EPA 6010, 6020	10	100	Phase I				
	calcium carbonate	471-34-1	A	EPA 310.1			Phase I				
	calcium hypochlorite	777-54-3	S, A	EPA 6010, 6020, pH			Phase I				
	calcium sulfate	7778-18-1	S, A	EPA 6010, 6020, 300.0			Phase I				
	cobalt	7440-48-4	S, A	EPA 6010, 6020	2	60,000	Phase I	902.89	1,921.35	--	
	copper	7440-50-8	S, A	EPA 6010, 6020	2	2	Phase I	3,128.55	40,676.66	--	1,300**
	diatomaceous earth	NA					Phase I				
	iron	7439-89-6	S, A	EPA 6010, 6020	20	10	Phase I	23,463.18	100,000	--	
	iron oxide	1332-37-2	S, A	EPA 6010, 6020			Phase I				
	lead	7439-92-1	S, A	EPA 6010, 6020	5	500	Phase I	150	150	--	15 **
	magnesium carbonate	7439-95-4	S, A	EPA 6010, 6020, 310.1	10		Phase I				
	magnesium chlorate	NA	S, A	EPA 6010, 6020, 300.0							
	magnesium chloride	7786-30-3	S, A	EPA 6010, 6020, 300.0			Phase I				
	magnesium perchlorate	10034-81-8	S, A	EPA 314			Phase I				
	manganese	7439-96-4	S, A	EPA 6010, 6020	1	2	Phase I	1,762.35	19,458.11	--	--
	manganese dioxide	1313-13-9	S, A	EPA 6010, 6020			Phase I				
	manganese oxide	1344-43-0	S, A	EPA 6010, 6020			Phase I				
	manganese sulfate	7785-87-7	S, A	EPA 6010, 6020, 300.0			Phase I				
	molybdenum	7439-98-7	S, A	EPA 6010, 6020	10	2	LOU Response	391.07	5,109.95	--	--
	nickel	7440-02-0	S, A	EPA 6010, 6020	5	5	Phase I	1,564.28	20,439.16	--	--
	paints	NA		EPA 6010, 8015			Phase I				
	platinum	7440-06-4	S, A	EPA 6010, 6020			Phase I				
	potassium	7440-09-7	S, A	EPA 6010, 6020	500	1,000	Phase I				
	potassium chlorate	3811-04-9	S, A	EPA 6010, 6020			Phase I				
	potassium chloride	7447-40-7	S, A	EPA 6010, 6020, 300.0			Phase I				
	potassium perchlorate	7440-09-7	S, A	EPA 314			Phase I				
	potassium phosphate	7758-11-4-		EPA 6010, 6020			Phase I				
	selenium	7782-49-2	S, A	EPA 7740 or 0270.2 (furnace)	1	5		391.07	5,109.95	0.3	50
	silica	7631-86-9	S, A	EPA 6010, 6020			as silicon; Phase I				
	silicon tetrabromide	7789-66-4	S, A	EPA 6010, 6020, 300.0			Phase I				
	silicon tetrachloride	10026-04-7	S, A	EPA 6010, 6020, 300.0			Phase I				
	silver	744-22-4	S, A	EPA 6010, 6020	1	1	LOU Response	391.07	5,109.95	2	

Known or Suspected Chemicals
Associated with
Historical Site Operations
Kerr-McGee Henderson Facility, Nevada

Parameters of Interest	Compound List	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes	PRG Residential Soil (mg/kg)	PRG Industrial Soil (mg/kg)	SSL DAF 1 (mg/kg)	MCL (ug/l)
					Soil (mg/kg)	Water (ug/l)					
Metals	sodium	744-23-5	S, A	EPA 6010, 6020	50	1,000	Phase I				
	soda arsenite	NA	S, A	EPA 6010, 6020			LOU Response				
	sodium alpha olefin sulfonate	68439-57-6	--	None			Phase I				
	sodium borate	1330-43-4	S, A	EPA 6010, 6020			Phase I				
	sodium carbonate	497-19-8	S, A	EPA 6010, 6020, 310.1			Phase I				
	sodium chlorate	7775-09-9	S, A	EPA 6010, 6020			Phase I				
	sodium chloride	7647-14-5	S, A	EPA 6010, 6020, 300.0			Phase I				
	sodium dichromate	7789-12-0	S, A	EPA 6010, 6020			Phase I				
	sodium hexametaphosphate	10124-56-8	S, A	EPA 6010, 6020			Phase I				
	sodium hydrosulfide	16721-80-5	S, A	EPA 6010, 6020			Phase I				
	sodium hydroxide	1310-73-2	S, A	EPA 150.1			Phase I				
	sodium hyposulfide	NA	S, A	EPA 6010, 6020, 300.0							
	sodium oxide	NA	S, A	EPA 6010, 6020			Phase I				
	sodium perchlorate	7601-89-0	S, A	EPA 314			Phase I				
	sodium sulfite	7757-83-7	S, A	EPA 6010, 6020, 377.1			Phase I				
	sulfur dioxide	7446-09-5	S, A	None			Historically present in gas form				
	strontium carbonate	1633-05-2	S, A	EPA 6010, 6020, 310.1	1		Phase I				
	thallium	7440-28-0	S, A	EPA 6010, 6020	0.05	1		5.16	67.45	--	2
	titanium	744031-5	S, A	EPA 6010, 6020	1						
	tungsten	7440-33-7	S, A	EPA 6010, 6020							
	vanadium	7440-62-2	S, A	EPA 6010, 6020	1			547.5	7,153.9	300	
	zinc	744-66-6	S, A	EPA 6010, 6020	2	5	Phase I	23,463.16	100,000	620	--
	chromium (total)	7440-47-3			2	1	Phase I	210.68	448.32	2	100
	chromium (VI)	18540-29-9	S, A	EPA 6010, 7196A	4	5	Phase I	30.1	64.05	2	
	mercury (elemental)	7439-97-6				0		23.46	306.6	--	2
	mercury (methyl)	7439-97-6	S, A	EPA 7470/7471A	0.05			6.11	61.57	--	
Semi Volatile Organic Compounds (SVOCs)	pyridine	110-86-1	S, A	EPA 8270C			Phase I				
	nitrobenzene	98-95-3	S, A		0.33	5	Phase I	19.84	102.93	0.01	
Volatile Organic Compounds (VOCs)	1,1,1-TCA	71-55-6	S, A	EPA 8260B	5	1	Phase I	1,200.00	1,200	0.10	200
	2-butanone	78-93-3	S, A	EPA 8260B	20	10	LOU Response				
	acetone	67-64-1	S, A	EPA 8260B	20	10	Phase II ECI	1,569.64	6,035.96	0.80	
	benzene	71-43-2	S, A	EPA 8260B	5	1	Phase II ECI	0.8	1.31	0.002	1
	chlorobenzol	108-90-7	S, A	EPA 8260B		1		--	--	--	
	chloroform	67-66-3	S, A	EPA 8260B	5	1	Phase II ECI	3.56	11.68	0.03	80
	methanol	67-56-1	S, A	EPA 8015			Phase I	30,551.55	100,000	--	
	methyl isobutyl ketone	108-10-1		EPA 8260B	20		Phase I	786.53	2,636.77	--	
	monochlorobenzene	108-90-7	S, A	EPA 8260B	5		as 1,2-, 1,3- and 1,4- isomers; Phase I				100
	orthodichlorobenzene	95-50-1	S, A	EPA 8260B	5		as 1,2-, 1,3- and 1,4- isomers; Phase I				
	paints	NA		EPA 6010, 8015			Phase I				
	paradichlorobenzene	106-46-7	S, A	EPA 8260B	5		as 1,2-, 1,3- and 1,4- isomers; Phase I				1
	xylene	1330-20-7	S, A	EPA 8260B	15	2	As total xylenes;LOU Response	274.96	420	10	10000
	solvents	NA		EPA 8260B	Various						
	toluene	108-88-3	S, A	EPA 8260B	5	1	Phase I	520	520	0.6	1000
Inorganic Acids	hydrochloric acid	7647-01-0	S, A	EPA 150.1			Phase I				
	muriatic acid	NA					Phase I				
	sulfuric acid	7664-93-9	S, A	EPA 150.1			Phase I				
Inorganics	lime	NA	S, A	EPA 150.1							
	soda ash	497-19-8					Phase I				
	tricalcium phosphate	7758-87-4	S, A	EPA 6010, 6020, 300			Phase I				
Organic Acids	citric acid	77-92-9		EPA 150.1							
	urea	57-13-6					Urea will be covered under the ammonia analytical method; Phase I				
Organophosphorous Pesticides				EPA 8141A							
Chlorinated Herbicides	tumbleaf defoliant	NA		EPA 8051			Phase I				

Known or Suspected Chemicals
Associated with
Historical Site Operations
Kerr-McGee Henderson Facility, Nevada

Parameters of Interest	Compound List	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes	PRG Residential Soil (mg/kg)	PRG Industrial Soil (mg/kg)	SSL DAF 1 (mg/kg)	MCL (ug/l)
					Soil (mg/kg)	Water (ug/l)					
Polychlorinated Dibenzodioxins/Dibenzo furans	dioxins/furans	NA		EPA 1613				0.000004/2.50	0.000016/8.50	--	0.00003 (as dioxin 2,3,7,8 TCDD)
Nonhalogenated	methyl isobutyl ketone	108-10-1		EPA 8015			Phase I	786.53	2,836.77		
Organochlorine Pesticides	DDT	50-29-3		EPA 8081A	0.0017	0.6 -0.8	Phase I	1.72	7.02	2	
	insecticides	NA		EPA 8081A		0.6 -0.8	Phase I				
	pesticides	NA		EPA 8081A	0.0017	0.6 -0.8	Phase I				
Polychlorinated Biphenyls (PCBs)	PCBs	NA	S, A	EPA 8082			Phase I	0.22	0.74	--	
	Aroclor 1016	1267-41-12		EPA 8082	0.1	1	Phase I	3.93	21.25	--	
	Aroclor 1221	1110-42-82		EPA 8082	0.2	1	Phase I	0.22	0.74	--	
	Aroclor 1232	1114-11-65		EPA 8082	0.1	1	Phase I	0.22	0.74	--	
	Aroclor 1242	5346-92-19		EPA 8082	0.1	1	Phase I	0.22	0.74	--	
	Aroclor 1248	1267-22-96		EPA 8082	0.1	1	Phase I	0.22	0.74	--	
	Aroclor 1254	1109-76-91		EPA 8082	0.1	1	Phase I	0.22	0.74	--	
	Aroclor 1260	1109-68-25		EPA 8082	0.1	1	Phase I	0.22	0.74	--	
Polynuclear Aromatic Hydrocarbons (PAHs)	PAHs			EPA 8270			Phase I	--	--	--	
	Acenaphthene	83-32-9		EPA 8270	0.01	5	Phase I	3,681.71	29,219.33	29	
	Anthracene	120-12-7		EPA 8270	0.01	5	Phase I	21,896.12	100,000	590	--
	Benz(a)anthracene	56-55-3		EPA 8270	0.01	5	Phase I	0.62	2.11	0.08	--
	Benzo(b)fluoranthene	205-99-2		EPA 8270	0.01	5	Phase I	0.62	2.11	0.20	--
	Benzo(k)fluoranthene	207-08-9		EPA 8270	0.01	5	Phase I	6.21	21.1	2	--
	Benzo(a)pyrene	50-32-8		EPA 8270	0.01	5	Phase I	0.06	0.21	0.4	0.2
	Chrysene	218-01-9		EPA 8270	0.01	5	Phase I	62.15	210.98	8	--
	Dibenz(ah)anthracene	53-70-3		EPA 8270	0.01	10	Phase I	0.06	0.21	0.08	
	Fluoranthene	206-44-0		EPA 8270	0.01	5	Phase I	2,293.61	22,000.35	210	
	Fluorene	86-73-7		EPA 8270	0.01	5	Phase I	2,747.11	28,281.43	28	--
	Indeno(1,2,3-cd)pyrene	193-39-5		EPA 8270	0.01	10	Phase I	0.62	2.11	0.7	--
	Napthalene	97-20-3		EPA 8270	0.01	1	Phase I	55.92	187.69	4	--
	Octachlorostyrene	29082-74-4		EPA 8080, 8081 or 8270			Phase I				
	Pyrene	129-00-0		EPA 8270	0.01	5	Phase I	2,315.95	29,126.2	210	--
Glycols	glycols	107-21-1		EPA 8015	10						
Total Petroleum Hydrocarbons	TPH			EPA 8015M			Phase I				
	C4-C12			EPA 8015M	30	0.05	Phase I				
	C13-C22			EPA 8015M	30	0.5	Phase I				
	C23+			EPA 8015M	30		Phase I				
Water Quality Parameters											
Total Dissolved Solids	TDS		A	EPA 160.1		10,000	Phase I				
Total Suspended Solids	TSS		A	EPA 160.2		10,000					
Radionuclides (note: units are picocuries per liter pCi/L)											
	gross alpha (adjusted) [3]			EPA 900.0			NDEP request 2/11/04 letter				15
	radium 226	7440-14-4		EPA 903.1M			NDEP request 2/11/04 letter				5 (with Ra^{228})
	radium 228	7440-14-4		EPA 904.2M			NDEP request 2/11/04 letter				5 (with Ra^{226})
	thorium 230			DOE EML HASL-30			NDEP request 2/11/04 letter				
	total uranium	7440-61-1		EPA ASTM D5174			NDEP request 2/11/04 letter				30

Notes:

[1] Abbreviations used: S = soil sample; A = aqueous sample

[2] Analytical Method may test for ions or indicators not necessarily the compound listed

[3] Adjusted gross alpha is calculated by subtracting total uranium and thorium form gross alpha

-- = Chemical is on the EPA list but there is no Goal or Level Established for the referenced category.

mg/l = milligrams per liter

ug/l = micrograms per liter

Known or Suspected Chemicals
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Historical Site Operations
Kerr-McGee Henderson Facility, Nevada

Parameters of Interest	Compound List	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes	PRG Residential Soil (mg/kg)	PRG Industrial Soil (mg/kg)	SSL DAF 1 (mg/kg)	MCL (ug/l)
					Soil (mg/kg)	Water (ug/l)					

NA - not available
LOU = Letter of Understanding between Kerr McGee Chemical Corporation (KMCC) and NDEP, August 15, 1994
Phase I = Kleinfelder, Inc. Environmental Conditions Assessment, KMCC, Henderson Nevada, April 1993
Phase II = ENSR Environmental Conditions Assessment at KMCC Henderson Nevada, August 7, 1997
MFL* = Asbestos, Million fibers per Liter
** = Action Level (mg/L), for Copper and Lead
PRG = Preliminary Remediation Goals
SSL = Soil Screening Levels
DAF1 = Dilution Attenuation Factor of 1
MCL = Maximum Contaminant Level from 2004 EPA Edition of the Drinking Water Standards and Health Advisories
PAH's and PCB's are itemized, not all may be present on site.
PRG and SSL DAF1 data from EPA Region 9 PRG's October 1, 2002 Table, with Revisions posted through June 2, 2004 on the Internet.
If cell is blank, the compound was not on the referenced regulatory list.

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

June 14, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

RECEIVED
2004 JUN 15 AM 9:3?
DIVISION ... LAS VEGAS

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA – Site-Related Chemical List

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) under the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the schedule provided to your office April 8, 2004 (and amended June 1, 2004), Kerr-McGee has prepared the attached draft site-related chemical list. Included in this list are potential analytical method references along with laboratory limits, which would be relevant under ideal conditions. Also, as requested, included are PRGs, MCLs and SSLs.

This document as been provided in draft form, and we request your input. Please feel free to comment on either the format or the content. Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc:
Tom Reed
Richard Waters
Rick Simon, ENSR
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
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Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

DRAFT

Known or Suspected Chemicals
Associated with
Historical Site Operations
Kerr-McGee Henderson Facility, Nevada

Parameters of Interest	Compound List	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes	PRG Residential Soil (mg/kg)	PRG Industrial Soil (mg/kg)	SSL DAF 1 (mg/kg)	MCL (ug/l)
					Soil (mg/kg)	Water (ug/l)					
Ions	ammonium perchlorate	7790-98-9	S, A	EPA 314		4	Phase I				
	chlorine	7782-50-5	S	EPA 300	10		Phase I				4,000
	chlorate										
	hydrogen chloride	7647-01-0	--	None			Historically present in gas form	--	--	--	
	hydrogen peroxide	7722-84-1	--	None			Relatively unstable compound that requires stabilization to avoid deterioration over time; no known analysis method				
	hydrogen sulfide	7783-06-4	--	EPA 376.2	1		Historically present in gas form; Phase I	--	--	--	
	nitrates	NA	S, A	EPA 300	2	100		--	--		100
	perchlorate	7601-90-3	S, A	EPA 314		4	Phase I	7.82	102.2	--	
	phosphate	NA	S, A	EPA 300			Phase I				
Asbestos	asbestos	1332-21-4	S	ISO 10312 TEC		0.2 MFL*	Phase I				7 MFL*
General Chemistry Parameters	ammonia	7664-41-7	--	EPA 350.2	1		Historically present in gas form; Phase I	-	-	-	-
	lime	NA		EPA 150.1			Phase I				
	acids	NA		EPA 150.1			Phase I				
	caustics	NA		EPA 150.1			Phase I				
Metals	cyanide	57-12-5	S, A	EPA 335.1, 335.2	2.5	10	Phase I	1,222.1	12,313.1	--	200
	aluminum	7429-90-5	S, A	EPA 6010, 6020	50	25					
	antimony	7440-36-0	S, A	EPA 6010, 6020	0.5	1		31.29	408.8	0.3	6
	arsenic	7440-38-2	S, A	EPA 6010, 6020	0.1	1		21.65	255.93		10
	barium	7440-39-3	S, A	EPA 6010, 6020	1	2	Phase I	5,374.91	66,577.35	82	2000
	barium hydroxide	NA	S, A	EPA 6010, 6020			Phase I				
	barium sulfide	21109-95-5	S, A	EPA 6010, 6020, 376.1			Phase I				
	beryllium	7440-41-7	S, A	EPA 6010, 6020	0.5	1		154.37	1,940.69	3	4
	borax	1303-96-4	S, A	EPA 6010, 6020			Phase I				
	boron	7440-42-8	S, A	EPA 6010, 6020	10	50	Phase I	15,621.84	100,000	-	-
	boron carbide	12069-32-8	S, A	EPA 6010, 6020			Phase I				
	boron tribromide	10294-33-4	S, A	EPA 6010, 6020			Phase I				
	boron trichloride	10294-34-5	S, A	EPA 6010, 6020			Phase I				
	cadmium	7440-43-9	S, A	EPA 6010, 6020	1	1	LOU Response				5
	calcium	7440-70-2	S, A	EPA 6010, 6020	10	100	Phase I				
	calcium carbonate	471-34-1	A	EPA 310.1			Phase I				
	calcium hypochlorite	777-54-3	S, A	EPA 6010, 6020, pH			Phase I				
	calcium sulfate	7778-18-1	S, A	EPA 6010, 6020, 300.0			Phase I				
	cobalt	7440-48-4	S, A	EPA 6010, 6020	2	80,000	Phase I	902.89	1,921.35	--	
	copper	7440-50-8	S, A	EPA 6010, 6020	2	2	Phase I	3,128.55	40,876.66	--	1,300**
	diatomaceous earth	NA					Phase I				
	iron	7439-89-6	S, A	EPA 6010, 6020	20	10	Phase I	23,463.18	100,000	--	
	iron oxide	1332-37-2	S, A	EPA 6010, 6020			Phase I				
	lead	7439-92-1	S, A	EPA 6010, 6020	5	500	Phase I	150	150	--	15 **
	magnesium carbonate	7439-95-4	S, A	EPA 6010, 6020, 310.1	10		Phase I				
	magnesium chlorate	NA	S, A	EPA 6010, 6020, 300.0							
	magnesium chloride	7786-30-3	S, A	EPA 6010, 6020, 300.0			Phase I				
	magnesium perchlorate	10034-81-8	S, A	EPA 314			Phase I				
	manganese	7439-96-4	S, A	EPA 6010, 6020	1	2	Phase I	1,762.35	19,458.11	--	--
	manganese dioxide	1313-13-9	S, A	EPA 6010, 6020			Phase I				
	manganese oxide	1344-43-0	S, A	EPA 6010, 6020			Phase I				
	manganese sulfate	7785-87-7	S, A	EPA 6010, 6020, 300.0			Phase I				
	molybdenum	7439-98-7	S, A	EPA 6010, 6020	10	2	LOU Response	391.07	5,109.95	--	--
	nickel	7440-02-0	S, A	EPA 6010, 6020	5	5	Phase I	1,564.28	20,439.16	--	--
	paints	NA		EPA 6010, 8015			Phase I				
	platinum	7440-06-4	S, A	EPA 6010, 6020			Phase I				
	potassium	7440-09-7	S, A	EPA 6010, 6020	500	1,000	Phase I				
	potassium chlorate	3811-04-9	S, A	EPA 6010, 6020			Phase I				
	potassium chloride	7447-40-7	S, A	EPA 6010, 6020, 300.0			Phase I				
	potassium perchlorate	7440-09-7	S, A	EPA 314			Phase I				
	potassium phosphate	7758-11-4-		EPA 6010, 6020			Phase I				
	selenium	7782-49-2	S, A	EPA 7740 or 0270.2 (furnace)	1	5		391.07	5,109.95	0.3	50
	silica	7631-86-9	S, A	EPA 6010, 6020			as silicon; Phase I				
	silicon tetrabromide	7789-66-4	S, A	EPA 6010, 6020, 300.0			Phase I				
	silicon tetrachloride	10026-04-7	S, A	EPA 6010, 6020, 300.0			Phase I				
	silver	744-22-4	S, A	EPA 6010, 6020	1	1	LOU Response	391.07	5,109.95	2	
	sodium	744-23-5	S, A	EPA 6010, 6020	50	1,000	Phase I				
	soda arsenite	NA	S, A	EPA 6010, 6020			LOU Response				
	sodium alpha olefin sulfonate	68439-57-6	--	None			Phase I				
	sodium borate	1330-43-4	S, A	EPA 6010, 6020			Phase I				
	sodium carbonate	497-19-8	S, A	EPA 6010, 6020, 310.1			Phase I				
	sodium chlorate	7775-09-9	S, A	EPA 6010, 6020			Phase I				
	sodium chloride	7647-14-5	S, A	EPA 6010, 6020, 300.0			Phase I				

Known or Suspected Chemicals
Associated with
Historical Site Operations
Kerr-McGee Henderson Facility, Nevada

Parameters of Interest	Compound List	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes	PRG Residential Soil (mg/kg)	PRG Industrial Soil (mg/kg)	SSL DAF 1 (mg/kg)	MCL (ug/l)
					Soil (mg/kg)	Water (ug/l)					
Metals	sodium dichromate	7789-12-0	S, A	EPA 6010, 6020			Phase I				
	sodium hexametaphosphate	10124-56-8	S, A	EPA 6010, 6020			Phase I				
	sodium hydrosulfide	16721-80-5	S, A	EPA 6010, 6020			Phase I				
	sodium hydroxide	1310-73-2	S, A	EPA 150.1			Phase I				
	sodium hyposulfide	NA	S, A	EPA 6010, 6020, 300.0							
	sodium oxide	NA	S, A	EPA 6010, 6020			Phase I				
	sodium perchlorate	7601-89-0	S, A	EPA 314			Phase I				
	sodium sulfite	7757-83-7	S, A	EPA 6010, 6020, 377.1			Phase I				
	sulfur dioxide	7446-09-5	S, A	None			Historically present in gas form				
	strontium carbonate	1633-05-2	S, A	EPA 6010, 6020, 310.1	1		Phase I				
	thallium	7440-28-0	S, A	EPA 6010, 6020	0.05	1		5.16	67.45	--	2
	titanium	744031-5	S, A	EPA 6010, 6020	1						
	tungsten	7440-33-7	S, A	EPA 6010, 6020							
	vanadium	7440-62-2	S, A	EPA 6010, 6020	1			547.5	7,153.9	300	
	zinc	744-66-6	S, A	EPA 6010, 6020	2	5	Phase I	23,463.18	100,000	620	--
	chromium (total)	7440-47-3			2	1	Phase I	210.68	448.32	2	100
	chromium (VI)	18540-29-9	S, A	EPA 6010, 7196A	4	5	Phase I	30.1	64.05	2	
	mercury (elemental)	7439-97-6				0		23.46	306.6	--	2
	mercury (methyl)	7439-97-6	S, A	EPA 7470/7471A	0.05			6.11	61.57	--	
Semi Volatile Organic Compounds (SVOCs)	pyridine	110-86-1	S, A	EPA 8270C			Phase I				
	nitrobenzene	98-95-3	S, A		0.33	5	Phase I	19.64	102.93	0.01	
Volatile Organic Compounds (VOCs)	1,1,1-TCA	71-55-6	S, A	EPA 8260B	5	1	Phase I	1,200.00	1,200	0.10	200
	2-butanone	78-93-3	S, A	EPA 8260B	20	10	LOU Response				
	acetone	67-64-1	S, A	EPA 8260B	20	10	Phase II ECI	1,569.64	6,035.96	0.80	
	benzene	71-43-2	S, A	EPA 8260B	5	1	Phase II ECI	0.6	1.31	0.002	1
	chlorobenzol	108-90-7	S, A	EPA 8260B		1		--	--	--	
	chloroform	67-66-3	S, A	EPA 8260B	5	1	Phase II ECI	3.56	11.68	0.03	80
	methanol	67-56-1	S, A	EPA 8015			Phase I	30,551.55	100,000	--	
	methyl isobutyl ketone	108-10-1		EPA 8260B	20		Phase I	786.53	2,836.77	--	
	monochlorobenzene	108-90-7	S, A	EPA 8260B	5		as 1,2-, 1,3- and 1,4- isomers; Phase I				100
	orthodichlorobenzene	95-50-1	S, A	EPA 8260B	5		as 1,2-, 1,3- and 1,4- isomers; Phase I				
	paints	NA		EPA 6010, 8015			Phase I				
	paradichlorobenzene	106-46-7	S, A	EPA 8260B	5		as 1,2-, 1,3- and 1,4- isomers; Phase I				1
	xylene	1330-20-7	S, A	EPA 8260B	15	2	As total xylenes;LOU Response	274.98	420	10	10000
	solvents	NA		EPA 8260B	Various						
	toluene	108-88-3	S, A	EPA 8260B	5	1	Phase I	520	520	0.6	1000
Inorganic Acids	hydrochloric acid	7647-01-0	S, A	EPA 150.1			Phase I				
	muriatic acid	NA					Phase I				
	sulfuric acid	7664-93-9	S, A	EPA 150.1			Phase I				
Inorganics	lime	NA	S, A	EPA 150.1							
	soda ash	497-19-8					Phase I				
	tricalcium phosphate	7758-87-4	S, A	EPA 6010, 6020, 300			Phase I				
Organic Acids	citric acid	77-92-9		EPA 150.1							
	urea	57-13-6					Urea will be covered under the ammonia analytical method; Phase I				
Organophosphorous Pesticides				EPA 8141A							
Chlorinated Herbicides	tumbleaf defoliant	NA		EPA 8051			Phase I				
Polychlorinated Dibenzodioxins/Dibenzofurans	dioxins/furans	NA		EPA 1613				0.000004/2.50	0.000016/8.50	--	0.00003 (as dioxin 2,3,7,8 TCDD)
Nonhalogenated	methyl isobutyl ketone	108-10-1		EPA 8015			Phase I	786.53	2,836.77		
Organochlorine Pesticides	DDT	50-29-3		EPA 8081A	0.0017	0.6 -0.8	Phase I	1.72	7.02	2	
	insecticides	NA		EPA 8081A		0.6 -0.8	Phase I				
	pesticides	NA		EPA 8081A	0.0017	0.6 -0.8	Phase I				
Polychlorinated Biphenyls (PCBs)	PCBs	NA	S, A	EPA 8082			Phase I	0.22	0.74	--	
	Aroclor 1016	1267-41-12		EPA 8082	0.1	1	Phase I	3.93	21.25	--	
	Aroclor 1221	1110-42-82		EPA 8082	0.2	1	Phase I	0.22	0.74	--	
	Aroclor 1232	1114-11-65		EPA 8082	0.1	1	Phase I	0.22	0.74	--	

DRAFT

Known or Suspected Chemicals
Associated with
Historical Site Operations
Kerr-McGee Henderson Facility, Nevada

Parameters of Interest	Compound List	CAS Number	Media[1]	Analytical Method[2]	Laboratory Limits		Notes	PRG Residential Soil (mg/kg)	PRG Industrial Soil (mg/kg)	SSL DAF 1 (mg/kg)	MCL (ug/l)
					Soil (mg/kg)	Water (ug/l)					
	Aroclor 1242	5346-92-19		EPA 8082	0.1	1	Phase I	0.22	0.74	--	
	Aroclor 1248	1267-22-96		EPA 8082	0.1	1	Phase I	0.22	0.74	--	
	Aroclor 1254	1109-76-91		EPA 8082	0.1	1	Phase I	0.22	0.74	--	
	Aroclor 1260	1109-68-25		EPA 8082	0.1	1	Phase I	0.22	0.74	--	
Polynuclear Aromatic Hydrocarbons (PAHs)	PAHs			EPA 8270			Phase I	--	--	--	
	Acenaphthene	83-32-9		EPA 8270	0.01	5	Phase I	3,681.71	29,219.33	29	
	Anthracene	120-12-7		EPA 8270	0.01	5	Phase I	21,896.12	100,000	590	--
	Benz(a)anthracene	56-55-3		EPA 8270	0.01	5	Phase I	0.62	2.11	0.08	--
	Benzo(b)fluoranthene	205-99-2		EPA 8270	0.01	5	Phase I	0.62	2.11	0.20	--
	Benzo(k)fluoranthene	207-08-9		EPA 8270	0.01	5	Phase I	6.21	21.1	2	--
	Benzo(a)pyrene	50-32-8		EPA 8270	0.01	5	Phase I	0.06	0.21	0.4	0.2
	Chrysene	218-01-9		EPA 8270	0.01	5	Phase I	62.15	210.96	8	--
	Dibenz(ah)anthracene	53-70-3		EPA 8270	0.01	10	Phase I	0.06	0.21	0.08	
	Fluoranthene	206-44-0		EPA 8270	0.01	5	Phase I	2,293.61	22,000.35	210	
	Fluorene	89-73-7		EPA 8270	0.01	5	Phase I	2,747.11	26,281.43	28	--
	Indeno(1,2,3-cd)pyrene	193-39-5		EPA 8270	0.01	10	Phase I	0.62	2.11	0.7	--
	Napthalene	97-20-3		EPA 8270	0.01	1	Phase I	55.92	187.69	4	--
	Octachlorostyrene	29082-74-4		EPA 8080, 8081 or 8270			Phase I				
	Pyrene	129-00-0		EPA 8270	0.01	5	Phase I	2,315.95	29,126.2	210	--
Glycols	glycols	107-21-1		EPA 8015	10						
Total Petroleum Hydrocarbons	TPH			EPA 8015M			Phase I				
	C4-C12			EPA 8015M	30	0.05	Phase I				
	C13-C22			EPA 8015M	30	0.5	Phase I				
	C23+			EPA 8015M	30		Phase I				
Water Quality Parameters											
Total Dissolved Solids	TDS		A	EPA 160.1		10,000	Phase I				
Total Suspended Solids	TSS		A	EPA 160.2		10,000					
Radionuclides (note: units are picocuries per liter pCi/L)											
	gross alpha (adjusted) [3]			EPA 900.0			NDEP request 2/11/04 letter				15
	radium 226	7440-14-4		EPA 903.1M			NDEP request 2/11/04 letter				5 (with Ra^{228})
	radium 228	7440-14-4		EPA 904.2M			NDEP request 2/11/04 letter				5 (with Ra^{228})
	thorium 230			DOE EML HASL-30			NDEP request 2/11/04 letter				
	total uranuim	7440-61-1		EPA ASTM D5174			NDEP request 2/11/04 letter				30

Notes:

[1] Abbreviations used: S = soil sample; A = aqueous sample

[2] Analytical Method may test for ions or indicators not necessarily the compound listed

[30] Adjusted gross alpha is calculated by subtracting total uranium and thorium form gross alpha

-- = Chemical is on the EPA list but there is no Goal or Level Established for the referenced category.

mg/l = milligrams per liter

ug/l = micrograms per liter

NA - not available

LOU = Letter of Understanding between Kerr McGee Chemical Corporation (KMCC) and NDEP, August 15, 1994

Phase I = Kleinfelder, Inc. Environmental Conditions Assessment, KMCC, Henderson Nevada, April 1993

Phase II = ENSR Environmental Conditions Assessment at KMCC Henderson Nevada, August 7, 1997

MFL* = Asbestos, Million fibers per Liter

** = Action Level (mg/L), for Copper and Lead

PRG = Preliminary Remediation Goals

SSL = Soil Screening Levels

DAF1 = Dilution Attenuation Factor of 1

MCL = Maximum Contaminant Level from 2004 EPA Edition of the Drinking Water Standards and Health Advisories

PAH's and PCB's are itemized, not all may be present on site.

PRG and SSL DAF1 data from EPA Region 9 PRG's October 1, 2002 Table, with Revisions posted through June 2, 2004 on the internet.

If cell is blank, the compound was not on the referenced regulatory list.

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

June 11, 2004

Val King
Nevada Division of Environmental Protection
123 Nye Lane
Carson City, Nevada

Subject: Permit # NV 0023060 – Follow-up Actions

Dear Ms. King:

Kerr-McGee Chemical LLC (Kerr-McGee) has worked cooperativeiy with their contractor Veolia Water North America (Veolia), to address your requests in correspondence of May 25, 2004. Attached please find a description, provided by Veolia, of actions that are taken upon the indication of a process upset. These actions are intended to provide an immediate response to events that may impact the quality of the discharged perchlorate treated water.

Please note that, as we discussed via phone, the filtration system piloted by Veolia is currently only being piloted. During the pilot test we intend to evaluate the effectiveness of the filter and determine its "value added", when compared to the capabilities of the dissolved air floatation (DAF) tanks. While the test is continuing, at this point in time the DAF tank appears to be performing well and the filtration system may not be needed.

Also included in Veolia response is information on the biological microbes utilized in the perchlorate treatment process. If you have additional questions or comments, please call me at (702) 651-2234 or Keith Bailey at (405) 270-3651.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

Certified Mail
Attachment
cc: Keith Bailey, KM
Pat Corbett, KM
Mary Cheung, Veolia Water NA
Todd Croft, NDEP
Jeff Lambeth, Veolia Water NA
Tamara Pelham, NDEP
Rick Stater, KM
Richard Waters, KM

Attachment 1

Veolia Process Upset Response Plan

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Settings\zsmc1\My D

VEOLIA Water

June 11, 2004

To: Susan Crowley

From: Mary Cheung

Cc: Jeff Lambeth, Keith Bailey

Subject: Response to NDEP Inquiry May 25, 2004

The Henderson FBR Biological Perchlorate Reduction System Start-up and Operations Teams were asked to review the May 25, 2004 letter from Valerie King, from the Bureau of Water Pollution Control at the State of Nevada Department of Environmental Protection (NDEP). As requested in this letter, an Emergency Response Plan and information the biological microbes utilized in the perchlorate treatment system are presented below.

In support of your response to the NDEP's request for an **'Emergency Response Plan for FBR Biological Perchlorate Reduction System Upset'**, I first wanted to briefly review the Veolia Water North America (VWNA) Environmental Health and Safety Incident Procedure and then outline the specific response plan for upsets that might occur in the FBR process.

In the event of a process upset, which may or may not result in a discharge permit exceedance, but was serious enough that an exceedance could have occurred, the Plant Manager must notify the client immediately and complete and internal notification form (Triple I) within 24 hours of discovery of the incident. The Triple I form is issued to the area manager, the business center technical manager, the business center EH&S manager and the business center VP & GM. An incident investigation is then conducted to determine the root cause, contributing causes, corrective and preventative actions. And updated version of the Triple I form, including the results of the investigation, is then issued to the original distribution list.

Parallel to the notification and reporting that is described above, a process upset will elicit response in the form of actions or monitoring. The Henderson Facility Operations Staff utilizes an FBR process monitoring plan and online process monitoring tools to track the performance of the FBR biological perchlorate removal process. Since the April 27th incident, additional monitoring and online PLC safe guards have been added to minimize the likelihood of another similar incident. For your reference an outline of the 'Emergency Response Plan for FBR Biological Perchlorate Reduction System Upset' is provided here:

- Identification of the problem:
  - Auto-shutdown because of loss of feed, chemical feeds or mechanical equipment within facility.
  - High on-line ORP
  - High on-line turbidity
  - Low on-line OPR
  - Process monitoring results showing
    - high perchlorate
    - high sulfide.
  - H_2S odor in facility
  - Outfall effluent clarity or odor problems.

- In the event of a system upset which potentially impacts the treatment system discharge, corrective actions will be taken immediately and an inspection of the wash and outfall area will be conducted as soon as possible. Expected responses include:
  - **Auto-shutdown of the treatment facility** will automatically result in a diversion of feed water to GW-11. There is no impact on the environment.
  - **High on-line ORP** is an indication of problems with the FBR operation and perchlorate removal. This coupled with high perchlorate measurements during standard process monitoring indicates deterioration of treatment capability. Operating procedures instruct operator to increase electron donor and increase monitoring. If perchlorate level continue to rise downstream of the FBR's, flow is diverted and the system is put in recycle. Again, there should be no impact on the environment.
  - **High on-line turbidity** is an indication that the DAF system is not working properly. Operating procedures require operators to verify chemical feeds are working properly and check for system mechanical failures. There is sufficient redundancy in the system, to allow equipment to be isolated for repair.
  - If there is **high turbidity, low on-line ORP or H_2S odor apparent together**, on-line alarms will sound on high H_2S level and process monitoring sulfide readings may read high. This is an indication of overfeeding of ethanol. Effluent and outfall clarity may be impacted. Procedures instruct the operators to verify ethanol feed rates and trim ethanol feed while staying below perchlorate discharge levels.

- Notification of Client and Agency:
  - While an initial information notification is made immediately to the client, a more complete understanding of an incident may take several hours to develop. Considering this, within 24 hours of a known violation of effluent quality as described in the NPDES permit, VWNA will notify Kerr McGee with an incident report including information on the problem, response and estimated impact on the environment. In turn, Kerr-McGee will inform the NDEP. The list of other potential agencies and applicable stakeholders that should be notified is being developed.

- Assessment of the Water Quality Impact:
  - As noted under 'immediate response', once there is confirmation that there has been an incident which may impact effluent quality an inspection of the wash and outfall area will be conducted checking for odors, scum, foam and any other unusual findings. These findings will be submitted to Kerr-McGee as part of the incident report.
  - In addition, the normal daily and weekly samples will be taken. The results of these samples will indicate if there was an impact and if so, how severe that impact on the environment has been. Although the analytes selected for monitoring in the NPDES permit appear appropriate to determine the extent of an incident, depending upon conditions, if there are other samples which will assist in determining the extent of the impact, these will be taken as well.

Valerie King also asked about information on the **biological microbes** utilized in the perchlorate treatment system. The fluidized bed reactors at the Kerr-McGee site in Henderson, NV were seeded with four sources of microbes:

1) Commercial seed supplied by Monmouth Bioproducts containing denitrifying bacteria;
2) Seed supplied by Shaw Environmental derived from the carbon media used during laboratory pilot FBR testing of the Kerr-McGee site water,
3) Media from an operating FBR treating perchlorate-contaminated groundwater discharging to surface water;
4) Media from an operating FBR treating nitrate-contaminated groundwater.

The microbial genera and species for the individual sources were not identified. However, the microbial genera and species should be very similar to those found within biological system treating water containing nitrate (i.e., denitrifying systems). We are unaware of any impact on receiving waters caused by microbes discharged from FBRs treating perchlorate- or nitrate-contaminated groundwater.

The Henderson Operations Staff and their VWNA, Envirex and Shaw support team is working very hard to bring the FBR treatment facility up to design hydraulic and load capacity while meeting the NPDES #NV0023060 permit requirements. If you have questions or require further clarification let me know. Thanks for your support.

Mary Cheung

1556D 6/14

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: June 9, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica, Valerie King
   b. KM: Keith Bailey, Susan Crowley, Rick Stater
2. Remedial System Update.
   a. Discussed DAF optimization.
      i. KM has switched to ferric chloride as a coagulant. Currently they are injecting 30 ppm (down from 35 ppm). They are also using a polymer flocculant.
      ii. KM is trying to refine this operation to minimize the brown (iron) coating on the rocks at the Seep area.
   b. Discussed activation of Acti-flow filtration system.
      i. This system was being tested at 200-225 gpm.
      ii. The water being generated from this system is of about the same quality as the DAF system.
      iii. KM stated that the operation of this system is more complex and they will probably not use this in the future.
   c. Discussed other operational details.
      i. KM will be taking a shut-down this week to install a booster pump and perform additional system modifications.
      ii. Current flows include 55 gpm from the chromium system and 3 gpm from pond GW-11. KM hopes to increase flows from pond GW-11.
      iii. KM noted that they have been getting a slug of high concentration perchlorate at the Athens Road well field and are currently running at 85% of the chemical load of the plant.
      iv. KM noted that they have performed a test of the modified discharge line and this test was successful.
      v. KM noted that they are maintaining the boom at the outfall.
3. Discussed NDEP observations.
   a. As of today at approximately 8:00 – 9:00 AM the effluent quality seemed to be much clearer with some remaining brown opacity.

b. The rocks in the Seep area are no longer white. The rocks are now brown with some green algae.
c. Downstream before the culvert there is still some scum and opacity issues.
d. Downstream after the culvert there is a drop off and there is still some foam and precipitate.
e. KM stated that the backwater area should clear up over time.
f. NDEP asked if there will always be an issue with the precipitate (ppt). KM indicated that they are still in the process of fine-tuning the system and they expect a change in discharge soon. It is not known when the existing discoloration in the Seep will be abated.

4. Discussed NDEP BWPC issues.
   a. It was noted that KM has a response due to Val by Friday.
   b. KM noted that they have evaluated the possibility of the ppt being inorganic. The solids that are being seen have been confirmed as biological by Shaw Environmental.
   c. NDEP noted that they are comfortable with the KM discharge so long as the quality is similar to the LV Wash water quality at the point where the discharge joins the Wash. NDEP requires that this comparison be quantitative in nature (for example, comparison of opacity tests).
5. Next meeting: telephone conference on 6/21/04 at 1:15 PM – call in number to be provided.
   a. It was noted that at the next call KM should be prepared to discuss the observations with regards to the effluent quality.

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

June 11, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC (KM)
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Kerr-McGee Responses to NDEP Comments of February 11, 2004

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document and provides the following comments:

1. As we discussed on the telephone, it is the expectation of the NDEP that the dates presented on the Deliverable Schedule represent the dates that the documents are due to the NDEP. To clarify, on the due date the documents should be received (in hard copy format with wet signature), by the case officer (Brian A. Rakvica, P.E.), no later than 5:00 PM PST. If necessary, hand-delivery is an acceptable form of delivery.
2. Please note that it is not necessary for KM to provide a response to each of these comments if KM concurs with the comment. Lack of response will be considered concurrence. A response is needed for NDEP comments that require action or for comments that KM does not agree with.
3. Please refer to the February 11, 2004 letter from NDEP to KM for additional details on specific comments.
4. Comment #1 – Please reduce the number of copies to one copy for Mr. Jeff Johnson, P.E. in the Carson City office of the NDEP.

5. Comment #4 – The NDEP would like to clarify that the comments provided in comment #4 (regarding averaging of data and composite soil samples) and other comments are partially intended to provide guidance for the development of future documents.
6. Comment #5 – In accordance with the current Public Involvement Plan, please note that in addition to the quarterly progress reports, KM is required to place a copy of "all key summary documents" in the public information repository.
7. Comment #7 – Since KM is currently discharging from pond GW-11 it is requested that the delivery date for the characterization of pond GW-11 contents be expedited. Please provide a revised submittal date.
8. Comment #10 – The NDEP believes that an *"Evaluation of the Detection Limits in the Supplemental Phase II Report"* will not be sufficient to address this comment. KM needs to evaluate the detection limits (in coordination with the project risk assessor and laboratory) for all chemicals in all media and determine appropriate detection limits. The NDEP expects that this issue will be addressed in a revised FSP/QAPP. In addition, an evaluation of data usability and a data quality assessment should be included in the deliverables schedule.
9. Comment #11 – This is an extensive comment provided by NDEP and the submission of reports on Data Quality Objectives and a Background Study alone do not appear to be sufficient to address the NDEP's comments. It appears that (at a minimum), an evaluation of screening levels needs to be completed. The NDEP acknowledges that the completion of a background study may be a key component of this evaluation. KM should also determine if additional evaluations are necessary and continue to supplement the deliverables schedule.

By **July 12, 2004** KM shall address the issues outlined herein. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W.,

Washington, D.C. 20036
Brenda Pohlman, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

June 11, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
ECA Project Organizational Chart and Resumes

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the aforementioned document. This document was due on May 15, 2004 and was received on May 18, 2004 (late). In the future, if KM expects that a deadline will not be met it is necessary to contact the NDEP to discuss this matter and propose a revised deadline in writing.

The February 11, 2004 letter from NDEP to KM stated the following in Attachment A:

"**2. Project Personnel**

a. NDEP needs to understand what personnel are being applied to this project. Please provide current resumes and/or curricula vitae for each project staff member. This is a multi-disciplinary project and the following expertise may be needed to complete this project: hydro-geologist, engineer, toxicologist, radiochemist, risk assessor, expert in fate and transport, statistician and chemist.
b. Please provide an organizational chart for the project team. "

KM has provided an organizational chart which is very general. This chart shows a project leader, hydrogeologist, project manager and "technical expertise (as needed)". The NDEP does not agree with the statement "technical expertise (as needed). Technical expertise will certainly be needed (examples of expertise needed provided in NDEP letter dated February 11, 2004) and this project will require a staff greater than three persons.

The February 2, 2004 proposal provided by ENSR and attached to your letter appeared to be very general and did not provide resumes for the personnel to be applied to this project. Please provide the names of these people, their area of expertise and their resumes.

By **July 6, 2004** KM should provide a revised submittal to the NDEP. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlman, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

MEMORANDUM TO FILE

TO: KM File

FROM: Brian Rakvica

DATE: June 9, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica, Valerie King
   b. KM: Keith Bailey, Susan Crowley, Rick Stater
2. Remedial System Update.
   a. Discussed DAF optimization.
      i. KM has switched to ferric chloride as a coagulant. Currently they are injecting 30 ppm (down from 35 ppm). They are also using a polymer flocculant.
      ii. KM is trying to refine this operation to minimize the brown (iron) coating on the rocks at the Seep area.
   b. Discussed activation of Acti-flow filtration system.
      i. This system was being tested at 200-225 gpm.
      ii. The water being generated from this system is of about the same quality as the DAF system.
      iii. KM stated that the operation of this system is more complex and they will probably not use this in the future.
   c. Discussed other operational details.
      i. KM will be taking a shut-down this week to install a booster pump and perform additional system modifications.
      ii. Current flows include 55 gpm from the chromium system and 3 gpm from pond GW-11. KM hopes to increase flows from pond GW-11.
      iii. KM noted that they have been getting a slug of high concentration perchlorate at the Athens Road well field and are currently running at 85% of the chemical load of the plant.
      iv. KM noted that they have performed a test of the modified discharge line and this test was successful.
      v. KM noted that they are maintaining the boom at the outfall.
3. Discussed NDEP observations.
   a. As of today at approximately 8:00 – 9:00 AM the effluent quality seemed to be much clearer with some remaining brown opacity.

b. The rocks in the Seep area are no longer white. The rocks are now brown with some green algae.
c. Downstream before the culvert there is still some scum and opacity issues.
d. Downstream after the culvert there is a drop off and there is still some foam and precipitate.
e. KM stated that the backwater area should clear up over time.
f. NDEP asked if there will always be an issue with the precipitate (ppt). KM indicated that they are still in the process of fine-tuning the system and they expect a change in discharge soon. It is not known when the existing discoloration in the Seep will be abated.

4. Discussed NDEP BWPC issues.
   a. It was noted that KM has a response due to Val by Friday.
   b. KM noted that they have evaluated the possibility of the ppt being inorganic. The solids that are being seen have been confirmed as biological by Shaw Environmental.
   c. NDEP noted that they are comfortable with the KM discharge so long as the quality is similar to the LV Wash water quality at the point where the discharge joins the Wash. NDEP requires that this comparison be quantitative in nature (for example, comparison of opacity tests).
5. Next meeting: telephone conference on 6/21/04 at 1:15 PM – call in number to be provided.
   a. It was noted that at the next call KM should be prepared to discuss the observations with regards to the effluent quality.

Todd Croft

From: Brian Rakvica
Sent: Wednesday, June 16, 2004 7:51 AM
To: Todd Croft; Jennifer Carr; Jeff Johnson; Jon Palm; Tamara Pelham; Alan Tinney; Leo Crader; Valerie King
Subject: KM mtg notes from 6/9/04

All,

attached are the finalized KM meeting notes, for your use

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

June 1, 2004

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee General Responses to NDEP Comments of February 11, 2004

Dear Mr. Rakvica:

Kerr McGee appreciates the opportunity to continue our productive dialog regarding the comments raised in the February 11, 2004 letter addressing the *Supplemental Phase II Report*. As you are aware, the 18 comments included in the NDEP letter raise many complex issues. The following activities and submittals have been completed with relation to responding to the NDEP's requests:

- April 1, 2004 meeting to discuss NDEP expectations.
- April 8, 2004 letter addressing expected deliverable documents and providing a schedule for their delivery to NDEP.
- May 14, 2004 letter documenting project personnel with an organizational chart and resumes, as well as naming the Nevada Certified Environmental Manager.

This letter provides a summary sheet addressing the status of each response to the 18 comments. Included also is a revised Deliverable Schedule (Attachment A) to reflect additional activities planned for the near future.

If you have any questions or require additional information please do not hesitate to call me at (702) 651-2234. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc:
Tom Reed
Rick Stater
Richard Waters
Dave Gerry, ENSR
Rick Simon, ENSR
Sally Bilodeau, ENSR
Ed Krish, ENSR
Jim Najima, NDEP
Jon Palm, NDEP
Todd Croft, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Tamara Pelham, NDEP
Jeff Johnson, NDEP (2 copies)
Barry Conaty
Brenda Pohlmann, COH
Mitch Kaplan, US EPA
Carrie Stowers, CCCP

Kerr-McGee Chemical LLC Response to NDEP Comments on the
Supplemental Phase II Report – Environmental Conditions Assessment
June 1, 2004

NDEP Item #	Kerr-McGee Response
1.	The submission of documents will be revised accordingly. With regard to electronic data deliverables, Kerr-McGee will work with NDEP to determine the appropriate format and provide the information needed.
2.	Information requested regarding to the project personnel was provided in correspondence to your office dated May 14, 2004.
3.	Comments noted. Iso-countours will be prepared as appropriate for the information being displayed. Please see Kerr-McGee correspondence to Brian Rakvica, NDEP, dated April 8, 2004 for a schedule of preparing a conceptual site model.
4.	Comments noted. Specific to the *Supplemental Phase II Report*, NDEP provided approval of the Work Plan prior to field sampling. Field sampling was performed according to that Work Plan.
5.	Quarterly progress reports will be provided and as is our custom, Kerr-McGee will continue to place these in the public repository at the James I. Gibson Public Library in Henderson, Nevada.
6.	Comments noted. Please see the amended Deliverable Schedule in Attachment A. Added is a line item for delivery of a *Summary of Groundwater Monitoring.*
7.	Comments noted. Please see the amended Deliverable Schedule in Attachment A. Added is a line item for *Characterization of the GW-11 Pond Contents.*
8.	Comments noted. Kerr-McGee plans to continue treatment for hexa-valent chromium reduction at the Athens Road collection well field, while this is needed to meet the discharge limitations of the NPDES Permit #NV0023060 associated with the perchlorate remediation project. Included with the next *Semi-Annual Chromium Mitigation Performance Report* will be the additional information requested in this NDEP comment.
9.	Comments noted. Please see Kerr-McGee correspondence to Brian Rakvica, NDEP, dated April 8, 2004 for a schedule on delivery of the *Chemical List.*
10.	Comments noted. Please see the amended Deliverable Schedule in Attachment A. Added is a line item for evaluation of detection limits in the *Supplemental Phase II Report.*
11.	Comments noted. Please see Kerr-McGee correspondence to Brian Rakvica, NDEP, dated April 8, 2004 for a schedule on the study of background conditions and development of data quality objectives.
12.	Comments noted. Please see Kerr-McGee correspondence to Brian Rakvica, NDEP, dated April 8, 2004 for a schedule on development of a conceptual site model.
13.	Additional information need to understand soil impact will be evaluated as the data quality objective and the conceptual site model are developed.
14.	Comment noted. Please see response to item # 16.
15.	Comment noted. Please see response to item # 16.
16.	Comments noted. Please see the amended Deliverable Schedule in Attachment A. Added is a line item for appropriate revisions of the *Supplemental Phase II Report.*
17.	Comments noted.
18.	Comment noted.

Attachment A

Kerr-McGee Chemical LLC
Response to NDEP Comments of February 11, 2004

Deliverable Schedule
Revised June1, 2004

Deliverable	Date
Project Organizational Chart / Resumes	May 15, 2004
KM Response to NDEP Comments (2/11 Letter)	June 1, 2004
Chemical List	June 15, 2004
Summary of Groundwater Monitoring	July 15, 2004
Background Study	
• Work Plan submittal to NDEP	June 30, 2004
• Field Sampling	120 days following NDEP approval
• Report	120 days following sampling
Response to NDEP Comments re the *Semi-Annual Chromium Mitigation Performance Report*	July 28, 2004
Data Quality Objectives	July 31, 2004
Conceptual Site Model	August 31, 2004
Evaluation of Detection Limits in the *Supplemental Phase II Report*	September 15, 2004
Characterization of GW-11 Pond Contents	September 30, 2004
Supplemental Phase II Report – Revision 1 (Revised as appropriate to address NDEP comments)	October 30, 2004

RECORD OF COMMUNICATION	DISCUSSION FIELD TRIP CONFERENCE PHONE CALL **X** OTHER (SPECIFY)	
	(Record of item checked above)	
TO: Susan Crowley Kerr-McGee	FROM: Brian Rakvica	DATE:6/1/04 TIME:4:00 pm
SUBJECT: due date		

SUMMARY OF COMMUNICATION:

1. Spoke with Susan regarding deliverable that was due today. Susan indicated that she had hoped that the document would go in the mail today.
2. Brian stated that the document was due today and would be late if mailed today. This reflects poorly on KM as it appears that they are blowing off scheduled due dates in the public record.
3. Susan indicated that she felt that the due date was the date that the document was to be mailed. Brian stated that this was incorrect. Susan stated that she felt that only documents like DMRs were required to be delivered on the due date. Brian stated that this was also incorrect and that unless Susan could find something to state to the contrary in the Phase II Consent Agreement that Brian believes that due dates are the date by which the document must be received by NDEP. Brian also indicated that hand delivery is an acceptable form of delivery if KM can not insure that the document is at NDEP by the due date.
4. Susan thought that maybe we should discuss this issue with Todd Croft. Brian indicated that he is the case officer for this project and discussing this matter with Todd Croft was unnecessary.
5. Susan indicated that she would take Brian's opinion "under advisement".
6. Document was received by e-mail at 4:45 PM later that day. Hard copy followed by certified mail and was late.

Brian Rakvica

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Tuesday, June 01, 2004 4:44 PM
To: Brian Rakvica
Cc: Todd Croft
Subject: Kerr-McGee Response to NDEP's 2-11-04 Comments re the Supplemental Phase II Report

Brian,
Please excuse the delay in getting this to you. Attached please find the Kerr-McGee's general response to your letter of February 11, 2004. While many of the items are being addressed via deliverables already discussed with you, several additional deliverables were found appropriate and a revised Deliverable Schedule has been included in the attached document. Two hard copies of the attached document has been forwarded to you as well. Thanks.

<<KM Response to Rakvica 2-11-04 Comments.pdf>>

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

June 1, 2004

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89119-0837

Subject: NDEP Facility ID H-000539 – Kerr-McGee General Responses to NDEP Comments of February 11, 2004

Dear Mr. Rakvica:

Kerr McGee appreciates the opportunity to continue our productive dialog regarding the comments raised in the February 11, 2004 letter addressing the *Supplemental Phase II Report*. As you are aware, the 18 comments included in the NDEP letter raise many complex issues. The following activities and submittals have been completed with relation to responding to the NDEP's requests:

- April 1, 2004 meeting to discuss NDEP expectations.
- April 8, 2004 letter addressing expected deliverable documents and providing a schedule for their delivery to NDEP.
- May 14, 2004 letter documenting project personnel with an organizational chart and resumes, as well as naming the Nevada Certified Environmental Manager.

This letter provides a summary sheet addressing the status of each response to the 18 comments. Included also is a revised Deliverable Schedule (Attachment A) to reflect additional activities planned for the near future.

If you have any questions or require additional information please do not hesitate to call me at (702) 651-2234. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc: Tom Reed
Rick Stater
Richard Waters
Dave Gerry, ENSR
Rick Simon, ENSR
Sally Bilodeau, ENSR
Ed Krish, ENSR
Jim Najima, NDEP
Jon Palm, NDEP
Todd Croft, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Tamara Pelham, NDEP
Jeff Johnson, NDEP (2 copies)
Barry Conaty
Brenda Pohlmann, COH
Mitch Kaplan, US EPA
Carrie Stowers, CCCP

Kerr-McGee Chemical LLC Response to NDEP Comments on the
Supplemental Phase II Report – Environmental Conditions Assessment
June 1, 2004

NDEP Item #	Kerr-McGee Response
1.	The submission of documents will be revised accordingly. With regard to electronic data deliverables, Kerr-McGee will work with NDEP to determine the appropriate format and provide the information needed.
2.	Information requested regarding to the project personnel was provided in correspondence to your office dated May 14, 2004.
3.	Comments noted. Iso-countours will be prepared as appropriate for the information being displayed. Please see Kerr-McGee correspondence to Brian Rakvica, NDEP, dated April 8, 2004 for a schedule of preparing a conceptual site model.
4.	Comments noted. Specific to the *Supplemental Phase II Report*, NDEP provided approval of the Work Plan prior to field sampling. Field sampling was performed according to that Work Plan.
5.	Quarterly progress reports will be provided and as is our custom, Kerr-McGee will continue to place these in the public repository at the James I. Gibson Public Library in Henderson, Nevada.
6.	Comments noted. Please see the amended Deliverable Schedule in Attachment A. Added is a line item for delivery of a *Summary of Groundwater Monitoring.*
7.	Comments noted. Please see the amended Deliverable Schedule in Attachment A. Added is a line item for *Characterization of the GW-11 Pond Contents.*
8.	Comments noted. Kerr-McGee plans to continue treatment for hexa-valent chromium reduction at the Athens Road collection well field, while this is needed to meet the discharge limitations of the NPDES Permit #NV0023060 associated with the perchlorate remediation project. Included with the next *Semi-Annual Chromium Mitigation Performance Report* will be the additional information requested in this NDEP comment.
9.	Comments noted. Please see Kerr-McGee correspondence to Brian Rakvica, NDEP, dated April 8, 2004 for a schedule on delivery of the *Chemical List.*
10.	Comments noted. Please see the amended Deliverable Schedule in Attachment A. Added is a line item for evaluation of detection limits in the *Supplemental Phase II Report.*
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12.	Comments noted. Please see Kerr-McGee correspondence to Brian Rakvica, NDEP, dated April 8, 2004 for a schedule on development of a conceptual site model.
13.	Additional information need to understand soil impact will be evaluated as the data quality objective and the conceptual site model are developed.
14.	Comment noted. Please see response to item # 16.
15.	Comment noted. Please see response to item # 16.
16.	Comments noted. Please see the amended Deliverable Schedule in Attachment A. Added is a line item for appropriate revisions of the *Supplemental Phase II Report.*
17.	Comments noted.
18.	Comment noted.

Attachment A

Kerr-McGee Chemical LLC
Response to NDEP Comments of February 11, 2004

Deliverable Schedule
Revised June1, 2004

Deliverable	Date
Project Organizational Chart / Resumes	May 15, 2004
KM Response to NDEP Comments (2/11 Letter)	June 1, 2004
Chemical List	June 15, 2004
Summary of Groundwater Monitoring	July 15, 2004
Background Study	
• Work Plan submittal to NDEP	June 30, 2004
• Field Sampling	120 days following NDEP approval
• Report	120 days following sampling
Response to NDEP Comments re the *Semi-Annual Chromium Mitigation Performance Report*	July 28, 2004
Data Quality Objectives	July 31, 2004
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Evaluation of Detection Limits in the *Supplemental Phase II Report*	September 15, 2004
Characterization of GW-11 Pond Contents	September 30, 2004
Supplemental Phase II Report – Revision 1 (Revised as appropriate to address NDEP comments)	October 30, 2004

Brian Rakvica

From: Brian Rakvica
Sent: Wednesday, May 26, 2004 6:44 AM
To: Todd Croft; Jennifer Carr; Jeff Johnson; Jon Palm; Tamara Pelham; Alan Tinney; Leo Drozdoff
Subject: KM mtg notes

All,

Attached are the finalized meeting notes from our 5/19 call with KM. Also attached are drafts from the 5/4 and 5/12 meetings. When these become final I will re-issue.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

~~DRAFT~~

ISSUED

MEMORANDUM TO FILE

TO: KMCC File

5/26

FROM: Brian Rakvica

DATE: May 19, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica, Jon Palm, Alan Tinney, Valerie King, Tamara Pelham
   b. KM: Keith Bailey, Susan Crowley
2. Remedial System Update.
   a. KM had a shutdown yesterday from 9:00 AM to 4:00 PM to make the tie-ins to the transmission line near the D-1 building. During this period the Athens Road wellfield was routed to pond GW-11.
   b. FBR systems is operating at the same levels as last week (800 gpm total including 55 gpm from the on-site wellfield and 3 gpm from pond GW-11. The ramp up of the chemical loading has been stopped to deal with the solids management issues.
   c. KM noted that they skimmed off about 30 gallons of scum from the Seep area this morning and will continue to do so as necessary.
   d. KM noted that the trailer mounted filter unit is being shipped to the site and is expected next week. This unit is the U.S. Filter Actiflow which uses 'micro-sand" particles for clarification. The sludge from this unit will be sent to the thickener. This unit may operate in parallel (as a replacement) or in series (as a polish step) with the DAF.
   e. KM noted that they continue to use coagulant and flocculants in the DAF. KM is also testing different flocculants and coagulants in the laboratory. Part of the problem has been that they have had success in the jar tests, however, they have not been able to successfully deploy at full scale.
   f. KM noted that the effluent is still a bit cloudy and they believe that this is bio-solids. NDEP requested that KM verify that this is indeed bio-solids.
   g. KM is working with Violia to try and streamline/expedite the analytical process.
   h. KM noted that they feel that visual inspection of the effluent is the best indicator of the cloudiness issue. TSS and BOD analysis are still run to confirm.
3. Discussed the latest KM submittal. NDEP requests the full analytical package as soon as it is ready.

4. Discussed sample designations. Noted that "IX-effluent" is the discharge to the Seep and that "effluent" is the discharge from the FBR.
5. Discussed GW upwelling in to the Seep Stream. KM noted that this is minimal in the hot months.
6. Discussed the operational incident. It was noted that due to the residence time of the system and transmission line that the sample taken by Km was probably representative of when the incident occurred. KM to discuss. Val indicated that she would be following up with a letter regarding this incident and items that require further clarification.
7. It was discussed that it would be helpful to know what genus of bacteria ~~are~~ is present in the system and that it would be helpful to note that the bacteria are non-pathogenic.
8. Next meeting: telephone conference on 6/9/04 at 10:30 AM – call in number to be provided.

DRAFT TO Todd 5/13

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: May 12, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call with USEPA

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica
   b. USEPA: Larry Bowerman, Mitch Kaplan
2. Remedial System Update.
   a. Currently discharging approximately 800 gpm. This includes approximately 3 gpm from pond GW-11, 55 gpm from the on-site chromium treatment system and the remainder from Athens Road and the Seep well fields.
   b. The discharge line is still experiencing air binding. KM has completed some investigations in to this problem, has installed additional air vents and is contemplating the installation of a parallel transmission line.
   c. KM is investigating the possibility of performing the 30-day test at 100% of the chemical load and less than 100% of the hydraulic load.
   d. KM continues to have problems with the opacity of its discharge and occasional sulfide odors. KM has been initiating software and hardware controls to minimize the possibility of excess ethanol addition to the system (which results in the sulfide odor due to degradation of sulfate). It was noted that these opacity issues are not present by the time the water reaches Pabco weir (which is well before the end of the mixing zone).
   e. Discussed the "operational incident" which occurred on 4/27/04 in which the operator added an excess of ethanol to the system.
   f. KM is currently working to provide an explanation of the "operational incident". This will include analytical data, possible environmental impacts, etc. This is being done in conjunction with NDEP BWPC.
3. Discussed recent analytical results at Northshore Road and Willow Beach.
4. Discussed recent and future construction activities in the Las Vegas Wash with regards to the erosion control structures and bank stabilization.
5. Reviewed Ampac.
   a. AOC meeting scheduled for mid-June.
   b. Presentation of the leading edge of the Ampac plume due 6/1/04.
   c. A 3rd party will be assisting with the review of some of the Ampac submittals.

d. Investigation of GW continues.

DRAFT
TO TODD 5/4, 5/13

MEMORANDUM TO FILE

Sent to Todd 5/4 and 5/13

TO: KMCC File

FROM: Brian Rakvica

DATE: May 4, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica
   b. KM: Keith Bailey
2. Remedial System Update.
   a. KM is still working on the issue of air binding in their transmission lines. KM is investigating the installation of parallel transmission lines.
   b. Discussed current operations of the FBR system.
      i. Approximately 55 gpm from the plant site GW capture system.
      ii. Plan to pump from GW-11 today. Flow meter installation has delayed this effort thus far.
   c. Discussed solids management. KM stated that the discharge at the Wash is much improved.
   d. KM noted that programming and operational checks have been installed to minimize the possibility for excess ethanol addition.
   e. KM noted that the ND's in their discharge have varied and have been as low as 4 ppb. Once KM is able to reliably record a ND value they will let NDEP know.
   f. Discussed 30-day performance test. KM is investigating the possibility of running the plant at full chemical load and reduced hydraulic load to test the system (while the transmission line issue is being dealt with).
3. Discussed Ampac.
   a. Noted that the AOC meeting has been delayed until June.
   b. Noted that Ampac is expected to have a deliverable to NDEP by June 4, 2004.
   c. Noted that the last Ampac report (presenting the 2003 drilling results) may not have accounted for the presence of p-CBS in soil. Ampac is investigating.
4. Next meeting: telephone conference on 5/19/04 at 9:00 AM – call in number to be provided.

Brian Rakvica

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Friday, May 21, 2004 1:35 PM
To: Brian Rakvica
Cc: Stater, Rick
Subject: RE: beta ditch

Brian,
See your question below. KM still maintains the capability to discharge once-through non-contact cooling water (untreated water from Lake Mead - via the BMI reservoir) into the beta ditch, under permit NV0000078. It is used primarily when one of the non-contact cooling towers is shutdown for maintenance, several times per year. Under that same permit, water leaks are also a permitted discharge, and occur at irregular frequencies, but often clustered together. These are the result of failures in the original water supply lines installed in the 40's as the complex was constructed. Let me know if you have questions. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Brian Rakvica [mailto:brakvica@ndep.nv.gov]
Sent: Friday, May 21, 2004 1:26 PM
To: Crowley, Susan
Subject: beta ditch

Susan,

Does Km still discharge cooling water to the beta ditch per permit NV78? The last time I was at TIMET I noticed that the beta ditch was dry and was wondering if it was still used at all and in what capacity?

Please call if you would like to discuss.

Thanks,

Brian

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Friday, May 21, 2004 12:24 PM
To: Brian Rakvica
Subject: RE: cc list change

OK.

Susan Crowley
Kerr-McGee Chemical LLC

PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Brian Rakvica [mailto:brakvica@ndep.nv.gov]
Sent: Friday, May 21, 2004 1:21 PM
To: Crowley, Susan
Subject: RE: cc list change

I did not receive.

Todd has a copy and I can borrow his.

It will just be easier in the future if I receive my own copy.

Thanks,

Brian

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Friday, May 21, 2004 12:19 PM
To: Brian Rakvica
Subject: RE: cc list change

Will do. Did you receive a copy of what was forwarded to Val King, or do you need a copy from me?

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Brian Rakvica [mailto:brakvica@ndep.nv.gov]
Sent: Friday, May 21, 2004 11:16 AM
To: Crowley, Susan
Subject: cc list change

Susan,

In the future, please include me as a Cc on all submittals to NDEP (perchlorate or

non-perchlorate remedial activities).

Thank you,

Brian

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Monday, May 10, 2004 9:57 AM
To: Brian Rakvica
Subject: RE: copy request

We got our copies. Legal Copy Cats did a fine job. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

-----Original Message-----
From: Brian Rakvica [mailto:brakvica@ndep.nv.gov]
Sent: Monday, May 10, 2004 9:04 AM
To: Crowley, Susan
Subject: copy request

Susan,

This letter is to follow up to your copy request. The requested documents were sent to Legal Copy Cats for reproduction . The originals have been returned to our office and the
copies should have been sent to your office at the same time. It is our understanding that your copy
request has been fulfilled.

If there is anything further please do not hesitate to contact me.

Sincerely,

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870

fax: 702-486-2863
email: brakvica@ndep.nv.gov

Important Notice!
If you are not the intended recipient of this e-mail message, any use, distribution or copying of the message is prohibited.
Please let me know immediately by return e-mail if you have received this message by mistake,
then delete the e-mail message.
Thank you.

Important Notice!
If you are not the intended recipient of this e-mail message, any use, distribution or copying of the message is prohibited.
Please let me know immediately by return e-mail if you have received this message by mistake,
then delete the e-mail message.
Thank you.

Important Notice!
If you are not the intended recipient of this e-mail message, any use, distribution or copying of the message is prohibited.
Please let me know immediately by return e-mail if you have received this message by mistake,
then delete the e-mail message.
Thank you.

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: May 19, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica, Jon Palm, Alan Tinney, Valerie King, Tamara Pelham
   b. KM: Keith Bailey, Susan Crowley
2. Remedial System Update.
   a. KM had a shutdown yesterday from 9:00 AM to 4:00 PM to make the tie-ins to the transmission line near the D-1 building. During this period the Athens Road wellfield was routed to pond GW-11.
   b. FBR systems is operating at the same levels as last week (800 gpm total including 55 gpm from the on-site wellfield and 3 gpm from pond GW-11. The ramp up of the chemical loading has been stopped to deal with the solids management issues.
   c. KM noted that they skimmed off about 30 gallons of scum from the Seep area this morning and will continue to do so as necessary.
   d. KM noted that the trailer mounted filter unit is being shipped to the site and is expected next week. This unit is the U.S. Filter Actiflow which uses 'micro-sand" particles for clarification. The sludge from this unit will be sent to the thickener. This unit may operate in parallel (as a replacement) or in series (as a polish step) with the DAF.
   e. KM noted that they continue to use coagulant and flocculants in the DAF. KM is also testing different flocculants and coagulants in the laboratory. Part of the problem has been that they have had success in the jar tests, however, they have not been able to successfully deploy at full scale.
   f. KM noted that the effluent is still a bit cloudy and they believe that this is bio-solids. NDEP requested that KM verify that this is indeed bio-solids.
   g. KM is working with Veolia to try and streamline/expedite the analytical process.
   h. KM noted that they feel that visual inspection of the effluent is the best indicator of the cloudiness issue. TSS and BOD analysis are still run to confirm.
3. Discussed the latest KM submittal. NDEP requests the full analytical package as soon as it is ready.

4. Discussed sample designations. Noted that "IX-effluent" is the discharge to the Seep and that "effluent" is the discharge from the FBR.
5. Discussed GW upwelling in to the Seep Stream. KM noted that this is minimal in the hot months.
6. Discussed the operational incident. It was noted that due to the residence time of the system and transmission line that the sample taken by Km was probably representative of when the incident occurred. KM to discuss. Val indicated that she would be following up with a letter regarding this incident and items that require further clarification.
7. It was discussed that it would be helpful to know what genus of bacteria are present in the system and that it would be helpful to note that the bacteria are non-pathogenic.
8. Next meeting: telephone conference on 6/9/04 at 10:30 AM – call in number to be provided.

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

May 14, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee ECA Project Organizational Chart and Resumes

Kerr-McGee Chemical LLC (Kerr-McGee) is undergoing an Environmental Conditions Assessment (ECA) under the direction of Nevada Division of Environmental Protection (NDEP). As required in your correspondence of February 11, 2004 and in accordance with the schedule provided to your office April 8, 2004, Kerr-McGee has prepared the attached information relating to the current project team. An organizational chart as well as resumes for the key personnel follows. Note that Kerr-McGee has partnered with ENSR Corporation and will be drawing upon the expertise within this group to fill needs as they arise during the ECA.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

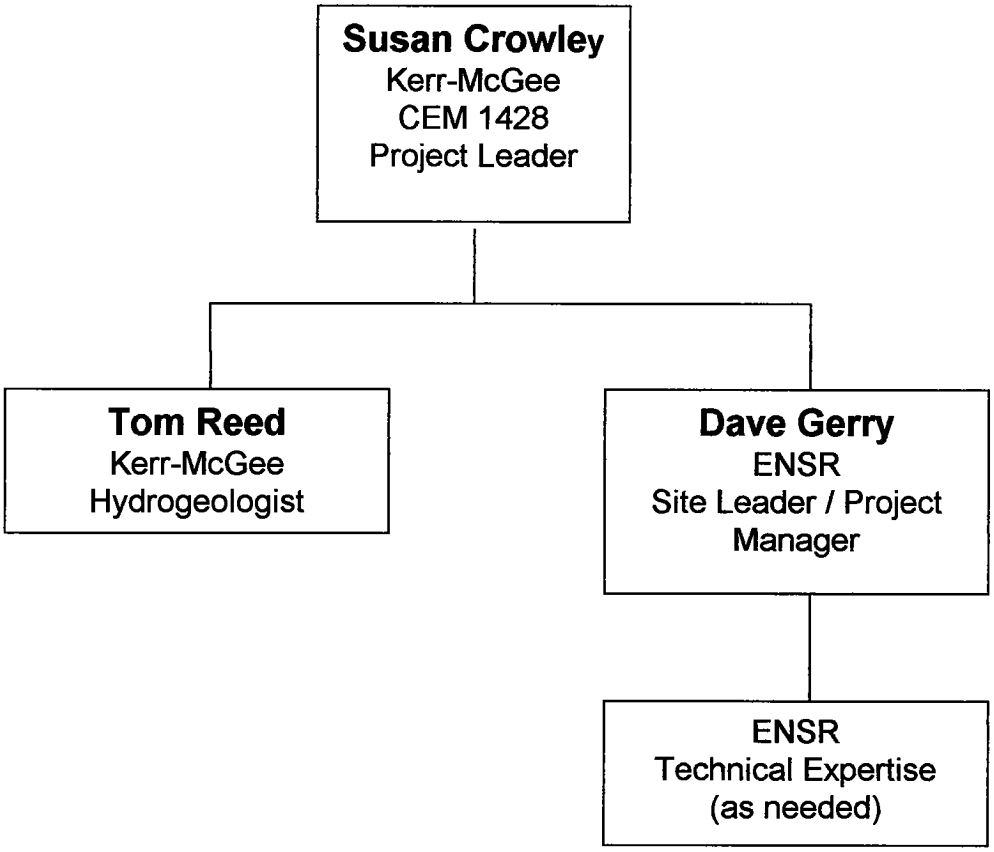
Attachment
Certified Mail

Cc: Tom Reed
Richard Waters
Rick Simon, ENSR
Jon Palm, NDEP
Jennifer Carr, NDEP
Valerie King, NDEP
Barry Conaty
Mitch Kaplan, US EPA
Rick Stater
Dave Gerry, ENSR
Jim Najima, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
Tamara Pelham, NDEP
Brenda Pohlmann, COH
Carrie Stowers, CCCP

Kerr-McGee Chemical LLC
Henderson, Nevada
Environmental Conditions Assessment
May 2004

Project Organizational Chart

Please also see the attached ENSR
List of Key Personnel including Technical Experts



Kerr-McGee
PO Box 55
Henderson, NV
89014

(702) 651-2234
scrowley@kmg.com

Susan Crowley

Objective

Provide professional environmental management services.

Experience

1993–Present Kerr-McGee Chemical LLC Henderson and Apex, NV

Staff Environmental Specialist

- Manage the environmental affairs for inorganic chemical manufacturing facility operating the Clark County, NV.
- Manage site remediation projects, interacting with consultant technical expertise and agencies.
- Member of perchlorate remediation investigation team, responsible for permit development and agency interactions.

1987–1993 Kerr-McGee Chemical Corp Henderson, NV

Production Superintendent

- Managed the operations / maintenance activities for production of the inorganic chemical, manganese dioxide.
- Developed and managed financial production budget of approximately $10,000,000. Maintained production volumes of high quality material while minimizing costs.

1985–1987 Kerr-McGee Chemical Corp Henderson, NV

Senior Environmental Specialist

- Managed the environmental affairs for organic chemical manufacturing facility in Clark County, NV.
- Initiated and completed successful project to design / install groundwater "pump and treat" remediation plant for hexavalent chromium.

1981–1985 Stauffer Chemical Company Henderson, NV

Environmental Engineer

- Managed the environmental affairs for a chemical manufacturing facility in Clark County, NV.
- Responsible for industrial hygiene program for organic chemical manufacturing facility.

1976–1981 Stauffer Chemical Company Henderson, NV

Lab Supervisor / Process Chemist

- Managed the analytical lab for organic manufacturing chemical facility. Provided process development improvements to enhance yields and reduce side reaction for organic manufacturing processes.

Education

1972–1976 University of Nevada Las Vegas Las Vegas, NV

- B.S., Chemistry.
- Post graduate university courses in engineering, geology, environmental engineering and business administration.

Interests

Nevada Certified Environmental Manager - CEM 1428, Member Clark County Board of Health (appointed by Henderson, NV Mayor), member of Nevada State Emergency Response Commission (appointed by Nevada Governor)

Kerr-McGee
PO Box 25861
Oklahoma City,
OK 73125

(405) 270-2654
treed@kmg.com

Thomas W. Reed

Objective

Provide professional environmental assessment and remediation oversight.

Experience

1988–Present Kerr-McGee Shared Services – Oklahoma City, OK

Senior Staff Hydrologist

- Coordinate and supervise site groundwater and soil assessment and remediation activities at operating and non-operating Kerr-McGee facilities.
- Interact with State regulatory agencies in compliance with facility environmental assessment and remediation activities.

1987–1988 Grace Petroleum Company – Oklahoma City, OK

Consulting Geologist

- Petroleum drilling prospect generation and property evaluation in Oklahoma, Texas, Wyoming, and Kansas.

1980–1987 Mewbourne Oil Company – Oklahoma City, OK

Petroleum Exploration Geologist

- Generated oil and gas drilling prospects in western Oklahoma and the Texas panhandle.
- Supervised joint-venture drilling prospects with multiple companies.

1978–1980 Southland Royalty Company – Oklahoma City, OK

Petroleum Exploration Geologist

- Generated oil and gas drilling prospects in western Oklahoma and southwest Kansas.
- Reviewed existing property holdings for drilling potential and/or acreage farmout.

1975–1978 Kerr-McGee Corporation – Oklahoma City, OK.

Geologist

- Conducted uranium exploration / exploitation projects in Wyoming, Colorado, Oklahoma, Texas, and Utah.
- Conducted coal exploration activities in West Virginia, Illinois, and Kentucky.

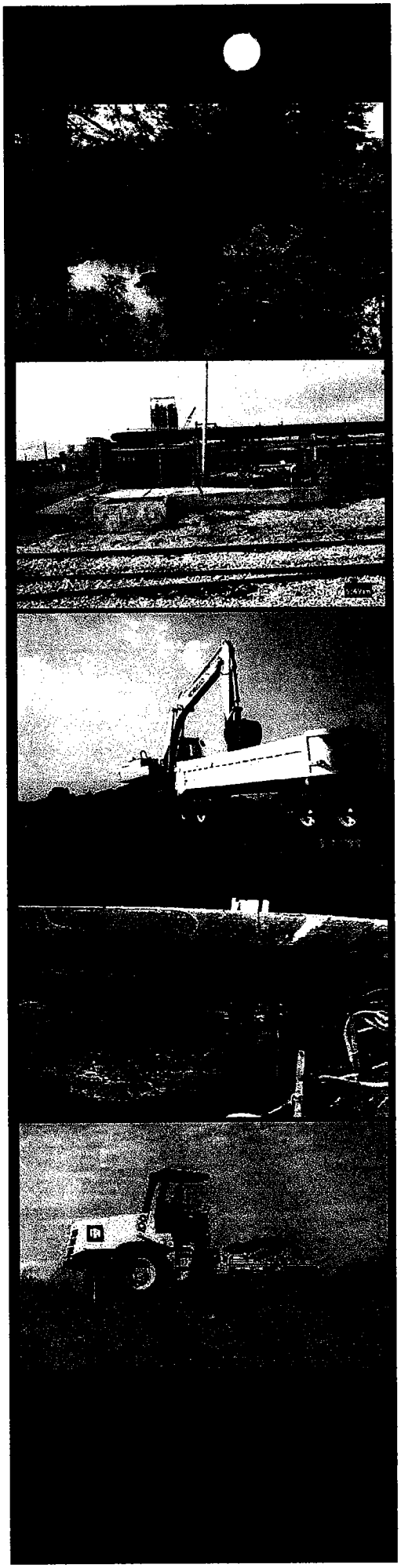
Education

1969–1975 Oklahoma State University – Stillwater, OK

- B.S., Geology
- M.S., Geology
- Thesis: Trace Element Distribution and Alteration Study of the Copper Cities Deposit, Arizona.

Certifications

Certified Geologist #7584 – American Institute of Professional Geologists.



Proposal

Full Service Environmental Consulting at Remediation Sites

February 2, 2004

Submitted to:

KERR-McGEE CORPORATION

Kerr-McGee Shared Services Company, LLC
Safety and Environmental Affairs Division

Submitted by:

ENSR INTERNATIONAL

ENSR Corporation

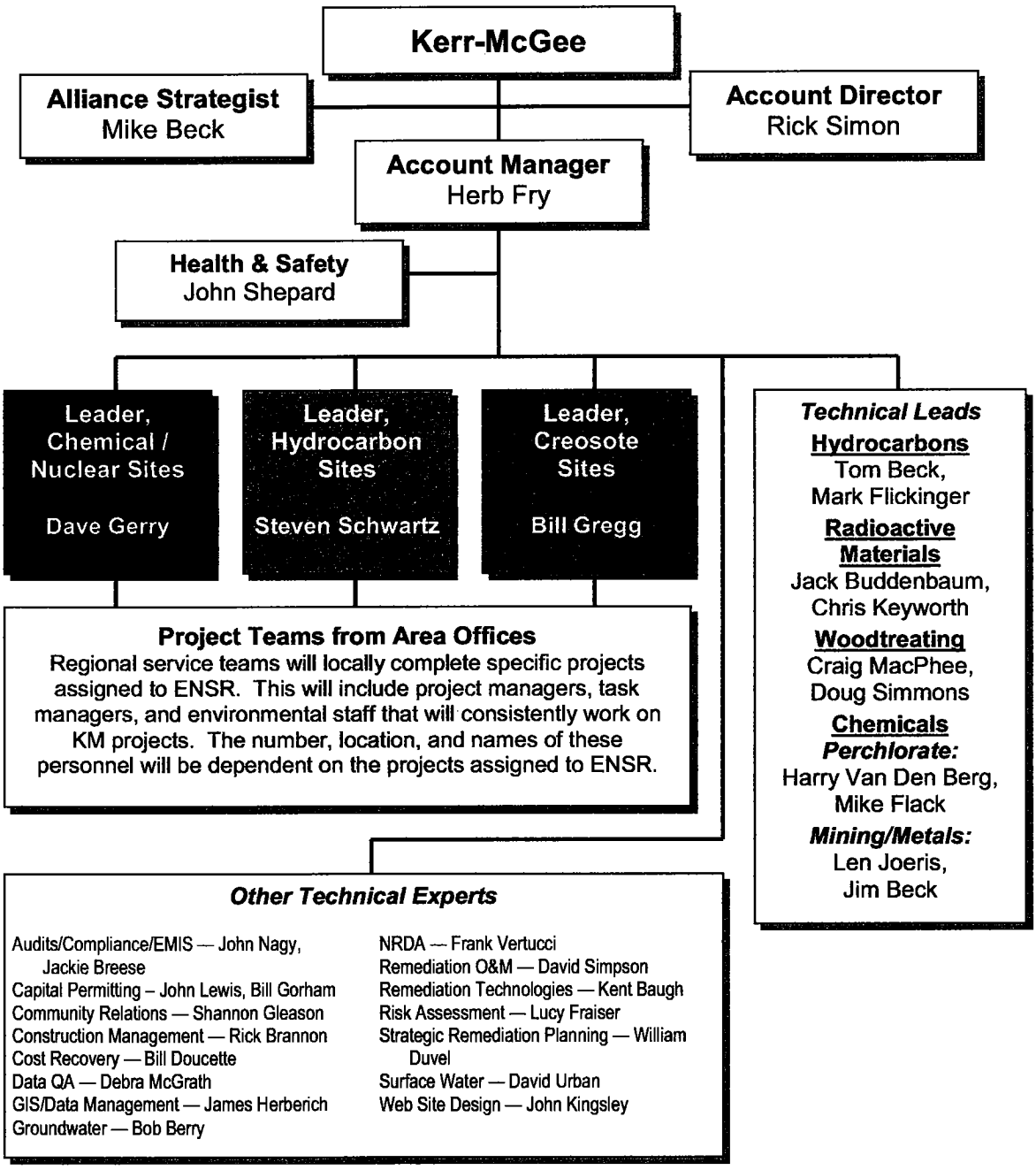
ENSR Proposal 04020A28

6. Staffing

6.1 *Organizational Structure*

ENSR proposes the organizational structure shown in Figure 6-1 to most effectively serve Kerr-McGee.

Figure 6–1: Organization Chart



This structure consists of an Account Management Team (i.e., Mike Beck, Rick Simon, and Herb Fry), with Group Leaders in three principal areas that directly mirror Kerr-McGee's three operating groups—Chemical and Radioactive, Creosote, and Hydrocarbon Groups.[1] Based on our experience with other partnerships, this type of organization creates a full alignment of interest, facilitates the development of close working relationships, improves communication, and expedites execution of the work.

We have selected Group Leaders who are mature, senior technical professionals with a base of experience that is directly complementary to your staff. Each Group Leader:

- Is highly experienced with remediation of sites typical of their assigned area;
- Is a mature individual with proven program and project management abilities;
- Has strong inter-personal skills to solidify the personal relationships necessary for an effective partnership;
- Has well-established relationships within ENSR to be able to effectively access our locally based service teams to execute projects.

The Group Leaders are supported by a resource pool of Technical Experts on a wide variety of topics and issues. These technical experts will be available as needed to any of the Key Leaders and their Project Teams.

To execute the work, the Group Leaders will establish one or more Project Teams to service a particular program (such as the UST program described in Section 3.2.7), project, or site. To the extent practicable, the Project Teams will be drawn from the ENSR Client Service Centers that are physically closest to the project site.

Figure 6-2 shows the location of ENSR offices in relation to Kerr-McGee project sites.

As you can see, ENSR has project delivery capability at many locations in close proximity to Kerr-McGee project sites. We have offices in or have worked in every state where there is a Kerr-McGee site.

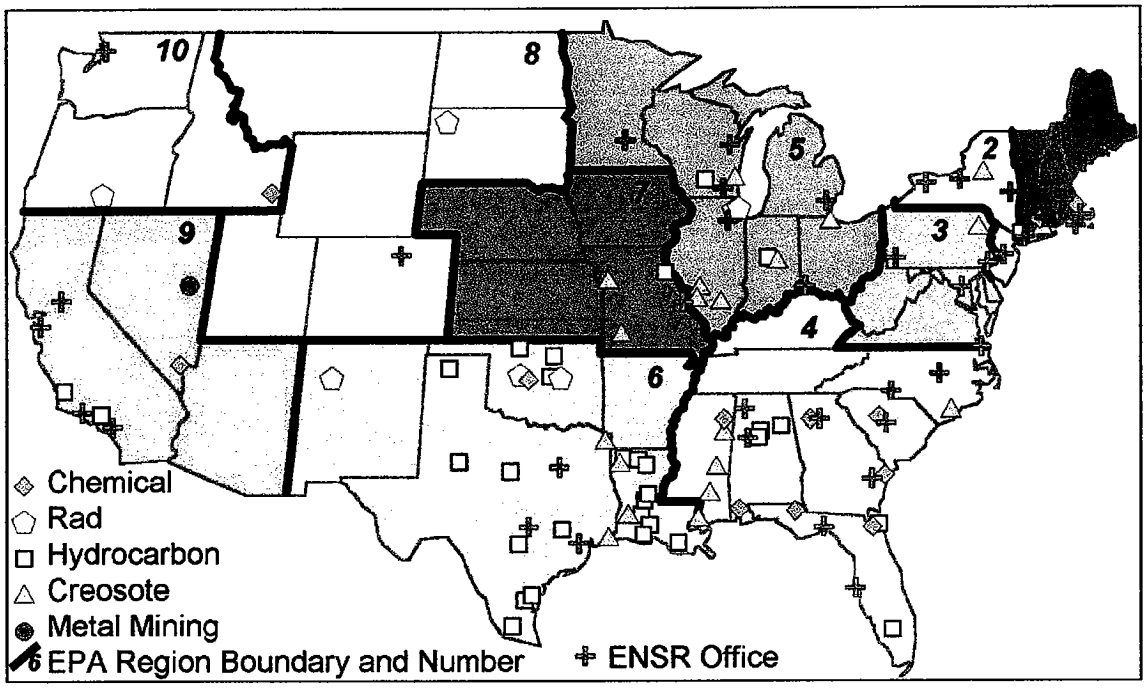
It is our intent to try to utilize, as much as possible, the same local personnel on all Kerr-McGee projects within a given area. The degree with which we can accomplish this will depend largely upon the number, size, and location of projects ultimately assigned to ENSR.

This structural approach has worked quite well for many of our partnership/alliance relationships. We have effectively been able to serve clients, such as BP, Unocal, Williams, Shell, MeadWestvaco, and International Paper, to name a few; and we believe will work well for Kerr-McGee.

---

[1] Please note that this organization is modified from the organization described previously in our SOQ (pages 3 and 4). With a better understanding of your organization and the priorities expressed in the bidder's meeting, we have reorganized the team to be more responsive to your needs.

Figure 6–2: Kerr-McGee Remediation Sites, ENSR Offices, and EPA Regions



6.2 Corporate Commitment

Our Senior Management Team offers the highest level of commitment to serving Kerr-McGee. We sincerely desire to earn your confidence and develop a full partnering relationship. That goal is a fundamental tenet of our business strategy. As a concrete expression of that interest, we have assigned Mike Beck, a Senior Vice President, and a member of our Senior Management Team to the Kerr-McGee account. He is highly experienced in developing effective partnerships (e.g., BASF, BP, 7-Eleven). He will have a personal, direct role in structuring our partnership with Kerr-McGee and ensuring that it stays vital and healthy. You will no doubt find Mike to be highly professional, very creative, thoughtful, engaging, enthusiastic, and a pleasure to work with.

6.3 Key Personnel Resumes

Brief biographical sketches of our proposed key technical staff were provided in the SOQ. To provide additional information, we have included two-page resumes for the following key personnel in Appendix A.

Key Personnel

Cross Reference of ENSR Personnel Names and Program Roles

Alphabetical by Last Name

Kent Baugh — Remediation Technologies
James Beck — Mining/Metals
Michael Beck — Account Strategist
William Beck — Hydrocarbons
Robert Berry — Groundwater Modeling and Geochemistry
Rick Brannon — Construction Management
Jacqueline Breese — EHS Compliance Management and Auditing
Jack Buddenbaum — Radioactive Materials
Jean Decker — Audits/Compliance/Environmental Management Information Systems
William Doucette — Cost Recovery
William Duvel — Strategic Remediation Planning
Michael Flack — Perchlorate
Mark Flickinger — Hydrocarbons
Lucy Fraiser — Risk Assessment
Herbert Fry — Account Manager
David Gerry — Leader, Chemical and Radioactive Materials Sites
Shannon Gleason — Community Relations
William Gorham — Capital Permitting/NEPA/Biology
William Gregg — Leader, Creosote Sites
James Herberich — GIS/Data Management
Leonard Joeris — Chemicals (Mining/Metals)
Christopher Keyworth — Radioactive Materials
John Kingsley — Web Site Design
John Lewis — Capital Permitting
Craig MacPhee — Creosote
Debra McGrath — Data QA
John Nagy — Audits/Compliance/Environmental Management Information Systems Lead
Steven Schwartz — Leader, Hydrocarbon Sites
John Shepard — Health and Safety
Douglas Simmons — Creosote
Richard Simon — Account Director
David Simpson — Remediation Operations and Maintenance
David Urban — Surface Water
Harry Van Den Berg — Chemicals (Perchlorate)
Frank Vertucci — Natural Resource Damage Assessment (NRDA)

Alphabetical by Program Role

Account Director — Richard Simon
Account Manager — Herbert Fry
Account Strategist — Michael Beck
Audits/Compliance/Environmental Management Information Systems — Jean Decker
Audits/Compliance/Environmental Management Information Systems Lead — John Nagy
Capital Permitting — John Lewis
Capital Permitting/NEPA/Biology — William Gorham
Chemicals (Mining/Metals) — Leonard Joeris
Chemicals (Perchlorate) — Harry Van Den Berg
Community Relations — Shannon Gleason
Construction Management — Rick Brannon
Cost Recovery — William Doucette
Creosote — Craig MacPhee
Creosote — Douglas Simmons
Data QA — Debra McGrath
EHS Compliance Management and Auditing — Jacqueline Breese
GIS/Data Management — James Herberich
Groundwater Modeling and Geochemistry — Robert Berry
Health and Safety — John Shepard
Hydrocarbons — William Beck
Hydrocarbons — Mark Flickinger
Leader, Chemical and Radioactive Materials Sites — David Gerry
Leader, Creosote Sites — William Gregg
Leader, Hydrocarbon Sites — Steven Schwartz
Mining/Metals — James Beck
Natural Resource Damage Assessment (NRDA) — Frank Vertucci
Perchlorate — Michael Flack
Radioactive Materials — Jack Buddenbaum
Radioactive Materials — Christopher Keyworth
Remediation Operations and Maintenance — David Simpson
Remediation Technologies — Kent Baugh
Risk Assessment — Lucy Fraiser
Strategic Remediation Planning — William Duvel
Surface Water — David Urban
Web Site Design — John Kingsley

Program Management Team

David L. Gerry, RG, CEG, HG — Leader, Chemical and Radioactive Materials Sites

Years Experience: 30

Technical Specialties

- Project and Program Management
- CERCLA and RCRA Compliance
- DoD Environmental Action and Installation Restoration
- RI/FS Preparation and Implementation
- Hydrogeologic and Geologic Characterization
- Soil and Groundwater Remediation
- Underground Storage Tank Investigation and Remedial Action
- Litigation Support

Education

- Graduate Study (Hydrogeology/Hazardous Waste) Colorado School of Mines
- MS (Engineering Geology) Colorado State University
- Hazardous Materials Management Certificate, University of California, Los Angeles
- BA (Geology) University of California, Riverside

Professional Registrations and Affiliations

- Registered Geologist (RG # 4256), California
- Certified Engineering Geologist (CEG #1502), California
- Certified Hydrogeologist (HG #251), California
- Certified Environmental Manager (EM-1524), Nevada
- Certified Hazardous Materials Manager
- Association of Groundwater Scientists and Engineers

Representative Project Experience

David Gerry has managed **characterization and remediation in multi-site programs** for clients such as the U.S. Navy, Shell, Chevron, Texaco, Arco, and Pacific Bell. On behalf of **Kerr-McGee** in Henderson, Nevada, he served as program manager for a broad range of onsite services including groundwater and soil assessment and the specialized sampling of hazardous material impoundments,. In addition, Mr. Gerry was the program manager for planning, and installing a system to intercept and remediate chromium and ammonium perchlorate impacted groundwater that posed a threat to the downgradient Las Vegas Wash. Also for **Kerr-McGee** in Trona, California, he currently serves as Registered Geologist for post-closure monitoring of closed boiler ash landfill. Mr. Gerry's principal strengths are in project and program management, CERCLA and RCRA compliance, and soil and groundwater remediation. He has also provided litigation support in a number of cases.

Specific projects he has managed include the following:

Kerr-McGee, Environmental Services, Henderson, NV. Program manager for providing technical environmental services at heavy manufacturing facility in Las Vegas Valley, including a. broad range of services including, groundwater and soil assessment. Managed thedata collection, remedial design and installation of a system to interceptchromium, and ammonium perchlorate impacted groundwater prior to its discharge into the Las Vegas Wash. / Provided specialized sampling of hazardous material impoundments.

Kerr-McGee, RCRA Closure, Trona, CA. Program manager for on-going post closure monitoring of closed boiler ash landfill. Currently am working with the Lahontan Region RWQCB, to assure that all monitoring is completed as set forth in approved work plans, and that the engineered landfill closure is performing as planned.

IMC Chemical, Inc., Trona, CA. Responsible geologist for remedial planning, design and execution of closure of a large-scale oil-water separator located on the shore of Searles Lake. Resolved issues of TPH and arsenic soil impacts by selective removal and encapsulation. Achieved closure under the oversight of the Lahontan Region RWQCB.

Naval Facilities Engineering Command, Pacific Division, Remediation Investigation, Guam. Technical lead and program coordinator for scoping and preparation of CERCLA-level RI documents, RI planning/implementation over 10 naval facility sites in Guam, Saipan, and Hawaii. Projects include uncontrolled hazardous waste landfills, wetlands, tank and impoundment closures, and hazardous waste storage facilities. This work was performed as part of the Environmental Action Navy (CLEAN).

Hillview-Porter Superfund Site, RI/FS Work Plan, California. Technical lead in preparation of RI/FS work plan addressing groundwater contamination caused by spills of industrial solvents. Project involved coordinating with California State Agencies (DTSC and RWQCB) to complete the site characterization, well installation and monitoring, aquifer assessment, groundwater modeling, and remediation. Remedial actions included pump and treat, air stripping, and regional monitoring.

W.P. Carey – Los Angeles Unified School Districts. Served as SeniorProgram Manager responsible for successfully conducting an 18-month, $3 million environmental services program to remediate a group of historic industrial 'brownfield' properties for ultimate use as a public high school campus. The work was conducted under a severely compressed time schedule, and successfully achieved the necessary regulatory closure to comply with deadlines for governmental funding.

RECORD OF COMMUNICATION	DISCUSSION FIELD TRIP CONFERENCE PHONE CALL **X** OTHER (SPECIFY)	
	(Record of item checked above)	
TO: Susan Crowley Kerr-McGee	FROM: Brian Rakvica	DATE:5/17/04 TIME:1:30 pm
SUBJECT: due date		
SUMMARY OF COMMUNICATION: 1. Spoke with Susan regarding deliverable that was due on 5/15/04 (the personnel and organization chart). Susan indicated that it would go out today by certified mail.		

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

May 12, 2004

Val King
Nevada Division of Environmental Protection
123 Nye Lane
Carson City, Nevada

Subject: Process Incident – Permit # NV 0023060

Dear Ms. King:

As reported in my letter dated May 6, 2004, the Kerr-McGee Chemical LLC biological treatment plant designed and operated by Veolia Water North America experienced an incident April 27, 2004. This letter responds to your request for additional information regarding the incident including:

- More information on the cause of the incident and recovery
- Measures taken to ensure that the problem does not recur
- Support for the Kerr-McGee statement that there was no environmental impact as a consequence of the incident
- Mitigation efforts to control odor from the process discharge
- Mitigation of scum at the outfall which was formed during the incident
- Plans to improve the appearance of the discharge water, which even after recovery from the incident continues to be cloudy despite meeting the permit numerical requirements for TSS.

We appreciate your willingness to work with us as we continue start-up of the new and complex biological treatment system.

Incident Description and Process Recovery

As we reported previously, a Veolia operator training on the system inadvertently entered a wrong proportioning factor for ethanol on one of the four fluidized bed primary bio-reactors (0.98 rather than 0.098). Ethanol is supplied to the bacteria as "food" and reacts with oxygen stripped from nitrate, chlorate and perchlorate by the bacteria to form carbon dioxide and biomass solids. The regular process operator caught the problem within three hours, but an error with a supervisor who believed there was an instrumentation question delayed response for an additional several hours. The result was an increase in the BOD concentration and a degradation of performance by the Dissolved Air Flotation (DAF) system designed to remove bio-solids prior to discharge of the treated water. The higher organic loading also resulted in the bacteria destroying a small part of the sulfate in the water which produced a sulfide odor.

Once the error was identified, ethanol feed ratios were reduced to allow consumption of the excess by the process. By the following day, the process had largely returned to

normal operation. Odor was eliminated and solids recovery was restored to pre-incident levels. Discharge during the incident was reported as "milky white" and has improved to slightly cloudy. Total suspended solids levels in the discharge immediately after the incident remained within permit limits at 33 mg/L (limit 135 mg/L).

Measures Taken to Ensure the Problem Does not Recur

Veolia has implemented a review of ethanol feed rates twice per shift to compare projected ethanol requirements with actual use. Supervisors have been cautioned to correct any problems as soon as they are identified. The plant process control system is being programmed to question any operator input outside the normal range to enable rapid correction of any entry errors.

Environmental Impact and Mitigation of Scum and Odor

When my May 6th letter was issued, we did not have analytical data other than the plant process control lab information and believed that there was no environmental impact. We subsequently received analytical data from the certified Montgomery Watson lab (Attachment 1) indicating that the permit limitation for BOD (Inhibited) was exceeded for the sample taken on the morning of April 28, 2004. The BOD measured was 207 mg/L compared to the permit limits of 25 mg/L (30 day) and 40 mg/L (7 day). The high BOD in the discharge was short lived, and to the best of our knowledge has not had an adverse impact on the receiving water.

Suspended solids, despite being below permit limits, were observed to form a foam or scum layer at the outfall. The scum has been largely eliminated, though small patches can be observed at the outfall. Veoila is placing booms in the area of the outfall to collect any remaining scum before it enters Las Vegas Wash.

A sulfide odor was evident at the outfall during the incident, which has been eliminated as the process returned to normal. Maintaining appropriate process control on the biological system will prevent recurrence of the odor.

Plans to Improve the Appearance of the Discharge Water

While the discharge water meets the permit limits for total suspended solids, NDEP has indicated that the cloudy appearance is unacceptable. Kerr-McGee and Veolia have developed a plan (Attachment 2) to rapidly resolve the problem. Parallel activities are in progress to optimize operation of existing plant equipment, specifically the DAF units, along with work on filtration as a fallback alternative. Schedules are being prepared and will be provided to NDEP as soon as possible, but it appears we may be able to have temporary filtration operating in about 4 weeks.

The water being fed to the biological process is unique to the Henderson site and the cloudy appearance is unexpected. Optimization of chemical coagulants and polymers

has not yet eliminated the cloudy appearance. Jar test results producing clear water have not been reproducible in the full scale plant. We continue to move forward on the attached plan and will keep NDEP informed in weekly conference calls.

If you have additional questions or comments, please call me at (702) 651-2234 or Keith Bailey at (405) 270-3651.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

Certified Mail

cc: Keith Bailey, KM
Pat Corbett, KM
Todd Croft, NDEP
Jeff Lambeth, Veolia
Tamara Pelham, NDEP
Richard Waters, KM

Attachments

Attachment 1

Initial Analytical Data from April 28, 2004 Samples

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Laboratory Report

for

Kerr McGee Chemical Company - Henderson
PO Box 55

Henderson , NV 89009

Attention: Susan Crowley
Fax: 702-651-2310

ACCREDITED IN ACCORDANCE WITH nelac 01114CA

ADE Andy Eaton
Project Manager

Report#: 126132
CLO4

Laboratory certifies that the test results meet all **NELAC** requirements unless noted in the Comments section or the Case Narrative. Following the cover page are Comments,QC Report,QC Summary,Data Report,Hits Report, totaling 15 page[s].

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Report Comments #126132

(QC Ref#: 2404290066)
Test: Hexavalent chromium(Dissolved) (EPA 218.6)
H3- Sample was received and analyzed past holding time.

(QC Ref#: 2404290067)
Test: Hexavalent chromium(Dissolved) (EPA 218.6)
H3- Sample was received and analyzed past holding time.

(QC Ref#: 2404290068)
Test: Hexavalent chromium(Dissolved) (EPA 218.6)
H3- Sample was received and analyzed past holding time.

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Laboratory Hits Report #126132

Kerr McGee Chemical Company - Henderson
Susan Crowley
PO Box 55
Henderson , NV 89009

Samples Received
29-apr-2004 13:29:27

Analyzed	Sample#	Sample ID	Result	UNITS	MRL
	2404290066	**IX INFLUENT**			
04/29/04		Apparent Color	5	ACU	3.000
05/07/04		Chlorate by IC	23000	ug/l	******
04/29/04		Chloride	930	mg/l	20.000
05/06/04		Kjeldahl Nitrogen	0.39	mg/l	.200
04/29/04		Lab pH	7.4	Units	.001
04/29/04		Nitrate as Nitrogen by IC	6.6	mg/l	2.000
05/03/04		PercentUnionized Ammonia 25C	1.38	%	.001
05/09/04		Perchlorate	13000	ug/l	******
05/05/04		Total Dissolved Solid (TDS)	3580	mg/l	10.000
05/05/04		Total Inorganic Nitrogen-Calc	6.60	mg/l	.200
05/05/04		Total phosphorus-P	0.02	mg/l	.010
	2404290067	**IX EFFLUENT**			
04/30/04		Ammonia Nitrogen	2.84	mg/l	.250
04/29/04		Apparent Color	5	ACU	3.000
05/05/04		Boron, Total, ICAP	3.1	mg/l	.100
04/29/04		Carbonaceous BOD	207.2	mg/l	3.000
05/07/04		Chlorate by IC	4200	ug/l	******
04/29/04		Chloride	1700	mg/l	20.000
05/05/04		Iron, Total, ICAP	0.13	mg/l	.020
05/06/04		Kjeldahl Nitrogen	7.6	mg/l	.200
04/29/04		Lab pH	6.6	Units	.001
05/03/04		PercentUnionized Ammonia 25C	0.221	%	.001
05/02/04		Sulfide,Total	5.14	mg/l	1.000
05/05/04		Total Dissolved Solid (TDS)	4960	mg/l	10.000
05/05/04		Total Inorganic Nitrogen-Calc	2.84	mg/l	.200
05/05/04		Total Suspended Solids (TSS)	33	mg/l	10.000
05/05/04		Total phosphorus-P	0.38	mg/l	.010

SUMMARY OF POSITIVE DATA ONLY.

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Laboratory Hits Report #126132

Kerr McGee Chemical Company - Henderson
Susan Crowley
PO Box 55
Henderson , NV 89009

Samples Received
29-apr-2004 13:29:27

Analyzed	Sample#	Sample ID	Result	UNITS	MRL
	2404290068	**INFLUENT**			
	2404290068	**INFLUENT**			
04/29/04		Apparent Color	5	ACU	3.000
05/07/04		Chlorate by IC	310000	ug/l	******
04/29/04		Chloride	1600	mg/l	20.000
05/03/04		Chromium, Total, ICAP/MS	11	ug/l	5.000
04/29/04		Hexavalent chromium(Dissolved)	9.9	ug/l	.100
04/29/04		Lab pH	7.2	Units	.001
04/29/04		Nitrate as Nitrogen by IC	8.6	mg/l	2.000
05/03/04		PercentUnionized Ammonia 25C	0.873	%	.001
05/09/04		Perchlorate	150000	ug/l	******
05/05/04		Total Dissolved Solid (TDS)	5780	mg/l	10.000
05/05/04		Total Inorganic Nitrogen-Calc	8.60	mg/l	.200

SUMMARY OF POSITIVE DATA ONLY.

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Laboratory Data Report #126132

Kerr McGee Chemical Company - Henderson
Susan Crowley
PO Box 55
Henderson , NV 89009

Samples Received
04/29/04

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
IX INFLUENT (2404290066) Sampled on 04/28/04 06:30								
	04/29/04 00:00	231158	(ML/SM 5210B)	Carbonaceous BOD	ND	mg/l	3.0	1
	04/29/04 20:28	230331	(ML/EPA 300)	Chloride	930	mg/l	20	20
	05/07/04 00:00	231065	(ML/EPA 300.1B)	Chlorate by IC	23000	ug/l	1000	100
	05/09/04 18:11	231306	(CADHS/EPA314)	Perchlorate	13000	ug/l	2000	500
	04/29/04 00:00	230288	(ML/S2120B)	Apparent Color	5	ACU	3.0	1
	05/03/04 16:01	230756	(EPA/ML 200.8)	Chromium, Total, ICAP/MS	ND	ug/l	5.0	5
	04/29/04 12:13	230275	(EPA 218.6)	Hexavalent chromium(Dissolved)	ND(H3)	ug/l	0.10	1
	05/05/04 10:51		(ML/EPA 300.0)	Total Inorganic Nitrogen-Calc	6.60	mg/l	0.20	1
	04/30/04 00:00	230614	(ML/EPA 350.1)	Ammonia Nitrogen	ND	mg/l	0.050	1
	05/03/04 13:31		( )	PercentUnionized Ammonia 25C	1.38	%	0.0010	1
	04/29/04 20:28	230335	(ML/EPA 300.0)	Nitrite, Nitrogen by IC	ND	mg/l	2.0	20
	04/29/04 20:28	230324	(ML/EPA 300.0)	Nitrate as Nitrogen by IC	6.6	mg/l	2.0	20
			(EPA 413.1 (sub)	Oil and Grease (Grav) subbed		mg/l	5.0	1
	04/29/04 00:00	230175	(S4500HB/E150.1)	Lab pH	7.4	Units	0.0010	1
	05/02/04 12:30	230979	(ML/EPA 376.2)	Sulfide,Total	ND	mg/l	0.10	1
	05/05/04 14:46	231074	(S4500PE/E365.1)	Total phosphorus-P	0.02	mg/l	0.010	1
05/05/04	05/05/04 15:30	230970	(SM 2540C)	Total Dissolved Solid (TDS)	3580	mg/l	10	1
	05/06/04 15:11	231080	(ML/EPA 351.2)	Kjeldahl Nitrogen	0.39	mg/l	0.20	1
IX EFFLUENT (2404290067) Sampled on 04/28/04 07:00								
	05/05/04 12:33	230776	(ML/EPA 200.7)	Boron, Total, ICAP	3.1	mg/l	0.10	2
	04/29/04 00:00	231158	(ML/SM 5210B)	Carbonaceous BOD	207.2	mg/l	3.0	1
	04/29/04 21:06	230331	(ML/EPA 300)	Chloride	1700	mg/l	20	20
	05/07/04 00:00	231065	(ML/EPA 300.1B)	Chlorate by IC	4200	ug/l	2000	200
			(CADHS/EPA314)	Perchlorate		ug/l	4.0	1
	04/29/04 00:00	230288	(ML/S2120B)	Apparent Color	5	ACU	3.0	1
			(EPA/ML 200.8)	Chromium, Total, ICAP/MS		ug/l	1.0	1
	04/29/04 12:21	230275	(EPA 218.6)	Hexavalent chromium(Dissolved)	ND(H3)	ug/l	0.10	1
	05/05/04 12:33	230766	(ML/EPA 200.7)	Iron, Total, ICAP	0.13	mg/l	0.020	2
			(EPA/ML 200.8)	Manganese, Total, ICAP/MS		ug/l	2.0	1
	05/05/04 10:51		(ML/EPA 300.0)	Total Inorganic Nitrogen-Calc	2.84	mg/l	0.20	1

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Laboratory Data Report #126132

Kerr McGee Chemical Company - Henderson (continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	04/30/04 00:00	230614	(ML/EPA 350.1)	Ammonia Nitrogen	2.84	mg/l	0.25	5
	05/03/04 13:31		( )	PercentUnionized Ammonia 25C	0.221	%	0.0010	1
	04/29/04 21:06	230335	(ML/EPA 300.0)	Nitrite, Nitrogen by IC	ND	mg/l	2.0	20
	04/29/04 21:06	230324	(ML/EPA 300.0)	Nitrate as Nitrogen by IC	ND	mg/l	2.0	20
			(EPA 413.1 (sub)	Oil and Grease (Grav) subbed		mg/l	5.0	1
	04/29/04 00:00	230175	(S4500HB/E150.1)	Lab pH	6.6	Units	0.0010	1
	05/02/04 12:30	230979	(ML/EPA 376.2)	Sulfide,Total	5.14	mg/l	1.0	10
	05/05/04 14:46	231074	(S4500PE/E365.1)	Total phosphorus-P	0.38	mg/l	0.010	1
05/05/04	05/05/04 15:30	230970	(SM 2540C)	Total Dissolved Solid (TDS)	4960	mg/l	10	1
	05/06/04 15:11	231080	(ML/EPA 351.2)	Kjeldahl Nitrogen	7.6	mg/l	0.20	1
	05/05/04 22:46	230960	(ML/EPA 160.2)	Total Suspended Solids (TSS)	33	mg/l	10	1
				Gross Alpha Radiation				
			(ML/EPA 900.0)	Alpha, Gross		pCi/l	3.0	1
			(ML/EPA 900.0)	Alpha, Two Sigma Error		pCi/l	0.0000	1
			(ML/EPA 900.0)	Alpha, Min Detectable Activity		pCi/l	0.0000	1
				Radium 226 (Sub)				
			(ML/EPA 903.1)	Radium 226		pCi/l	1.0	1
			(ML/EPA 903.1)	Radium 226, Two Sigma Error		pCi/l	0.0000	1
			(ML/EPA 903.1)	Radium 226, Minimal Detectable		pCi/l	0.0000	1
				Radium 228 (Sub)				
			(ML/EPA 904.0)	Radium 228		pCi/l	1.0	1
			(ML/EPA 904.0)	Radium 228, Two Sigma Error		pCi/l	0.0000	1
			(ML/EPA 904.0)	Radium 228, Minimum Detectable		pCi/l	0.0000	1
INFLUENT (2404290068)				**Sampled on 04/28/04 07:30**				
	04/29/04 00:00	**231158**	**(ML/SM 5210B)**	**Carbonaceous BOD**	**ND**	**mg/l**	**3.0**	**1**
	04/29/04 21:19	**230331**	**(ML/EPA 300)**	**Chloride**	**1600**	**mg/l**	**20**	**20**
	05/07/04 00:00	**231065**	**(ML/EPA 300.1B)**	**Chlorate by IC**	**310000**	**ug/l**	**5000**	**500**
	05/09/04 18:45	**231306**	**(CADHS/EPA314)**	**Perchlorate**	**150000**	**ug/l**	**8000**	**2000**
	04/29/04 00:00	**230288**	**(ML/S2120B)**	**Apparent Color**	**5**	**ACU**	**3.0**	**1**
	05/03/04 16:03	**230756**	**(EPA/ML 200.8)**	**Chromium, Total, ICAP/MS**	**11**	**ug/l**	**5.0**	**5**
	04/29/04 12:29	**230275**	**(EPA 218.6)**	**Hexavalent chromium(Dissolved)**	**9.9(H3)**	**ug/l**	**0.10**	**1**

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Laboratory Data Report #126132

Kerr McGee Chemical Company - Henderson (continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	05/05/04 10:51		(ML/EPA 300.0)	Total Inorganic Nitrogen-Calc	8.60	mg/l	0.20	1
	04/30/04 00:00	230614	(ML/EPA 350.1)	Ammonia Nitrogen	ND	mg/l	0.050	1
	05/03/04 13:31		( )	PercentUnionized Ammonia 25C	0.873	%	0.0010	1
	04/29/04 21:19	230335	(ML/EPA 300.0)	Nitrite, Nitrogen by IC	ND	mg/l	2.0	20
	04/29/04 21:19	230324	(ML/EPA 300.0)	Nitrate as Nitrogen by IC	8.6	mg/l	2.0	20
			(EPA 413.1 (sub)	Oil and Grease (Grav) subbed		mg/l	5.0	1
	04/29/04 00:00	230175	(S4500HB/E150.1)	Lab pH	7.2	Units	0.0010	1
	05/02/04 12:30	230979	(ML/EPA 376.2)	Sulfide,Total	ND	mg/l	0.10	1
	05/05/04 14:46	231074	(S4500PE/E365.1)	Total phosphorus-P	ND	mg/l	0.010	1
05/05/04	05/05/04 15:30	230970	(SM 2540C)	Total Dissolved Solid (TDS)	5780	mg/l	10	1
	05/06/04 15:11	231080	(ML/EPA 351.2)	Kjeldahl Nitrogen	ND	mg/l	0.20	1

EFFLUENT (2404290069) Sampled on 04/28/04 08:00

			(CADHS/EPA314)	**Perchlorate**		**ug/l**	**4.0**	**1**

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Laboratory
QC Summary
#126132

Kerr McGee Chemical Company -
Henderson

QC Ref #230175 - Lab pH **Analysis Date: 04/29/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #230275 - Hexavalent chromium(Dissolved) **Analysis Date: 04/29/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #230288 - Apparent Color **Analysis Date: 04/29/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #230324 - Nitrate as Nitrogen by IC **Analysis Date: 04/29/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #230331 - Chloride **Analysis Date: 04/29/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #230335 - Nitrite, Nitrogen by IC **Analysis Date: 04/29/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

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Kerr McGee Chemical Company -
Henderson
(continued)

QC Ref #230614 - Ammonia Nitrogen **Analysis Date: 04/30/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #230756 - Chromium, Total, ICAP/MS **Analysis Date: 05/03/2004**

2404290066	IX INFLUENT
2404290068	INFLUENT

QC Ref #230766 - Iron, Total, ICAP **Analysis Date: 05/05/2004**

2404290067	IX EFFLUENT

QC Ref #230776 - Boron, Total, ICAP **Analysis Date: 05/05/2004**

2404290067	IX EFFLUENT

QC Ref #230960 - Total Suspended Solids (TSS) **Analysis Date: 05/05/2004**

2404290067	IX EFFLUENT

QC Ref #230970 - Total Dissolved Solid (TDS) **Analysis Date: 05/05/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #230979 - Sulfide,Total **Analysis Date: 05/02/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

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Kerr McGee Chemical Company -
Henderson
(continued)

QC Ref #231065 - Chlorate by IC **Analysis Date: 05/07/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #231074 - Total phosphorus-P **Analysis Date: 05/05/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #231080 - Kjeldahl Nitrogen **Analysis Date: 05/06/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #231158 - Carbonaceous BOD **Analysis Date: 04/29/2004**

2404290066	IX INFLUENT
2404290067	IX EFFLUENT
2404290068	INFLUENT

QC Ref #231306 - Perchlorate **Analysis Date: 05/09/2004**

2404290066	IX INFLUENT
2404290068	INFLUENT

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Laboratory
QC Report
#126132

Kerr McGee Chemical Company -
Henderson

QC Ref #230175 Lab pH

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
DUP	Lab pH	5.9	5.9	UNIT		(0-20)	0.0

QC Ref #230275 Hexavalent chromium(Dissolved)

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Hexavalent chromium(Dissolved)	2.0	2.06	UGL	103.0	(90-110)	
LCS2	Hexavalent chromium(Dissolved)	2.0	2.07	UGL	103.5	(90-110)	0.48
MBLK	Hexavalent chromium(Dissolved)	ND	<0.10	UGL			
MS	Hexavalent chromium(Dissolved)	2.0	2.05	UGL	102.5	(90-110)	
MSD	Hexavalent chromium(Dissolved)	2.0	1.85	UGL	92.5	(90-110)	10

QC Ref #230288 Apparent Color

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
DUP	Apparent Color	3	3	ACU		(0-20)	0.0

QC Ref #230324 Nitrate as Nitrogen by IC

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Nitrate as Nitrogen by IC	2.5	2.67	MGL	106.8	(90-110)	
LCS2	Nitrate as Nitrogen by IC	2.5	2.61	MGL	104.4	(90-110)	2.3
MBLK	Nitrate as Nitrogen by IC	ND	<0.10	MGL			
MS	Nitrate as Nitrogen by IC	2.5	2.71	MGL	108.4	(80-120)	
MSD	Nitrate as Nitrogen by IC	2.5	2.72	MGL	108.8	(80-120)	0.37

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining. Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

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Kerr McGee Chemical Company - Henderson
(continued)

QC Ref #230331 Chloride

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Chloride	25	26	MGL	104.0	(90-110)	
LCS2	Chloride	25	25.4	MGL	101.6	(90-110)	2.3
MBLK	Chloride	ND	<1.0	MGL			
MS	Chloride	25	25.8	MGL	103.2	(80-120)	
MSD	Chloride	25	25.6	MGL	102.4	(80-120)	0.78

QC Ref #230335 Nitrite, Nitrogen by IC

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Nitrite, Nitrogen by IC	1.0	1.05	MGL	105.0	(90-110)	
LCS2	Nitrite, Nitrogen by IC	1.0	1.04	MGL	104.0	(90-110)	0.96
MBLK	Nitrite, Nitrogen by IC	ND	<0.10	MGL			
MS	Nitrite, Nitrogen by IC	1.0	0.907	MGL	90.7	(80-120)	
MSD	Nitrite, Nitrogen by IC	1.0	0.906	MGL	90.6	(80-120)	0.11

QC Ref #230614 Ammonia Nitrogen

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	04280341	MGL		(0-0)	
LCS1	Ammonia Nitrogen	1.00	1.03	MGL	103.0	(90-110)	
LCS2	Ammonia Nitrogen	1.00	1.03	MGL	103.0	(90-110)	0.00
MBLK	Ammonia Nitrogen	ND	<0.050	MGL			
MS	Ammonia Nitrogen	1.00	0.904	MGL	90.4	(90-110)	
MSD	Ammonia Nitrogen	1.00	0.906	MGL	90.6	(90-110)	0.22

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining. Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

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Kerr McGee Chemical Company -
Henderson
(continued)

QC Ref #230756 Chromium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	04150121	UGL		(0-0)	
LCS1	Chromium, Total, ICAP/MS	100	103	UGL	103.0	(85-115)	
LCS2	Chromium, Total, ICAP/MS	100	99.4	UGL	99.4	(85-115)	3.6
MBLK	Chromium, Total, ICAP/MS	ND	<1.0	UGL			
MS	Chromium, Total, ICAP/MS	100	95.3	UGL	95.3	(70-130)	
MSD	Chromium, Total, ICAP/MS	100	102	UGL	102.0	(70-130)	6.8

QC Ref #230766 Iron, Total, ICAP

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Iron, Total, ICAP	5.0	5.07	MGL	101.4	(85-115)	
LCS2	Iron, Total, ICAP	5.0	5.3	MGL	106.0	(85-115)	4.4
MBLK	Iron, Total, ICAP	ND	<0.010	MGL			
MS	Iron, Total, ICAP	5.0	4.68	MGL	93.6	(70-130)	
MSD	Iron, Total, ICAP	5.0	5.15	MGL	103.0	(70-130)	9.6

QC Ref #230776 Boron, Total, ICAP

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Boron, Total, ICAP	0.5	0.531	MGL	106.2	(85-115)	
LCS2	Boron, Total, ICAP	0.5	0.544	MGL	108.8	(85-115)	2.4
MBLK	Boron, Total, ICAP	ND	<0.050	MGL			
MS	Boron, Total, ICAP	0.5	0.525	MGL	105.0	(70-130)	
MSD	Boron, Total, ICAP	0.5	0.535	MGL	107.0	(70-130)	1.9

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining. Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

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Henderson
(continued)

QC Ref #230960 Total Suspended Solids (TSS)

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	04280333	MGL		(0-0)	
LCS1	Total Suspended Solids (TSS)	175	162	MGL	92.6	(80-120)	
LCS2	Total Suspended Solids (TSS)	175	164	MGL	93.7	(80-120)	1.2
MBLK	Total Suspended Solids (TSS)	ND	<10	MGL			

QC Ref #230970 Total Dissolved Solid (TDS)

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	05040088	MGL		(0-0)	
DUP	Total Dissolved Solid (TDS)	54	56	MGL		(0-10)	3.6
LCS1	Total Dissolved Solid (TDS)	175	180	MGL	102.9	(85-115)	
LCS2	Total Dissolved Solid (TDS)	700	708	MGL	101.1	(85-115)	
MBLK	Total Dissolved Solid (TDS)	ND	<10	MGL			

QC Ref #230979 Sulfide,Total

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	04260008	MGL		(0-0)	
LCS1	Sulfide,Total	0.5	0.478	MGL	95.6	(90-110)	
LCS2	Sulfide,Total	0.5	0.457	MGL	91.4	(90-110)	4.5
MBLK	Sulfide,Total	ND	<0.10	MGL			
MS	Sulfide,Total	0.5	0.442	MGL	88.4	(80-120)	
MSD	Sulfide,Total	0.5	0.469	MGL	93.8	(80-120)	5.9

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining. Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

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Kerr McGee Chemical Company -
Henderson
(continued)

QC Ref #231065 Chlorate by IC

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Chlorate by IC	200	194	UGL	97.0	(75-125)	
LCS2	Chlorate by IC	200	195	UGL	97.5	(75-125)	0.51
MBLK	Chlorate by IC	ND	<10	UGL			
MS	Chlorate by IC	100	85	UGL	85.0	(75-125)	
MSD	Chlorate by IC	100	84	UGL	84.0	(75-125)	1.2

QC Ref #231074 Total phosphorus-P

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	04280341	MGL		(0-0)	
LCS1	Total phosphorus-P	0.4	0.400	MGL	100.0	(90-110)	
LCS2	Total phosphorus-P	0.4	0.390	MGL	97.5	(90-110)	2.5
MBLK	Total phosphorus-P	ND	<0.010	MGL			
MS	Total phosphorus-P	0.4	0.400	MGL	100.0	(90-110)	
MSD	Total phosphorus-P	0.4	0.390	MGL	97.5	(90-110)	2.5
RPD_LCS	Total phosphorus-P	100.000	97.500	MGL	2.5	(0-10)	
RPD_MS	Total phosphorus-P	100.000	97.500	MGL	2.5	(0-10)	

QC Ref #231080 Kjeldahl Nitrogen

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	04280336	MGL		(0-0)	
LCS1	Kjeldahl Nitrogen	4	3.90	MGL	97.5	(90-110)	
LCS2	Kjeldahl Nitrogen	4	4.00	MGL	100.0	(90-110)	2.5
MBLK	Kjeldahl Nitrogen	ND	<0.20	MGL			
MS	Kjeldahl Nitrogen	4	3.81	MGL	95.2	(90-110)	
MSD	Kjeldahl Nitrogen	4	3.77	MGL	94.2	(90-110)	1.1
RPD_LCS	Kjeldahl Nitrogen	97.500	100.000	MGL	2.5	(0-20)	

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Kerr McGee Chemical Company - Henderson
(continued)

RPD_MS	Kjeldahl Nitrogen	95.250	94.250	MGL	1.1	(0-10)

QC Ref #231158 Carbonaceous BOD

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Carbonaceous BOD	198	195	MGL	98.5	(85-115)	
MBLK	Carbonaceous BOD	ND	<3.0	MGL			

QC Ref #231306 Perchlorate

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Perchlorate	25.0	22.3	UGL	89.2	(85-115)	
LCS2	Perchlorate	25.0	22.1	UGL	88.4	(85-115)	0.90
MBLK	Perchlorate	ND	<4.0	UGL			
MS	Perchlorate	25.0	25.1	UGL	100.4	(70-130)	
MSD	Perchlorate	25.0	25.4	UGL	101.6	(70-130)	1.2

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining. Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

Attachment 2

Plan for Control of Discharge Solids from the Kerr-McGee Biological Treatment Plant

1. Optimize existing Dissolved Air Flotation (DAF) operation. Complete lab test results are expected by May 21st. Interim results will be applied to the plant operation as appropriate.

    a) Samples have been submitted for rapid turn-around laboratory studies to determine organic and inorganic compositions of the suspended solids.
    b) DAF treatability testing is underway to optimize chemical additions, process variables such as recycle water (control of flotation dissolved air) rates.
    c) Biological analyses of the solids are being performed to determine the types of bacterial which may be responsible for the cloudy water.

2. Mitigation of Odor and Floating Solids – In progress.
    a) Booms are being deployed to capture any floating solids at the discharge line outfall. Solids captured will be properly disposed of at appropriate facilities.
    b) Odor control is being accomplished by limiting the extent of excess ethanol fed to the process. A small excess is needed to complete perchlorate destruction, and will be kept within permit limits.

3. Filtration of Discharge Water. A parallel path effort is under way to identify the most effective filtration options then install temporary portable rental filter units while a permanent filter system is installed.
    a) Laboratory tests are being performed to identify the most effective filter options. Samples have been sent to the lab and results are expected early next week.
    b) On-site pilot filter tests of the systems identified in lab tests are to begin during the week of May 17th.
    c) Temporary installation of portable filtration equipment to treat the entire discharge of the biological treatment plant. The rental filter units would stay in place until a permanent system can be installed. Timing will depend on results of the tests in a) and b) above, but is expected in early June 2004.
    d) Permanent filter installation will likely require 6-12 months, but temporary filters will treat the plant discharge until the permanent system is complete.

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

May 6, 2004

2004 MAY 10 AM 7:10

DOM/NEDEP
LAS VEGAS

Val King
Nevada Division of Environmental Protection
123 West Nye Lane
Carson City, NV

Subject: Process Incident – Permit # NV0023060

Dear Ms. King:

Please find attached the description of an incident which occurred during the start-up phase of the biological perchlorate remediation process, operated by Veolia NA. This incident caused an odor and a milky appearance to the discharge associated with the NPDES permit NV0023060, however analytical has not been returned on samples that were taken during the incident. Results of these will be forwarded as they are received from the contract lab.

Other than the odor and milky color associated with the discharge, to our knowledge, there was no environmental impact during this incident; however, as explained in Veolia's description, several actions have been taken to prevent reoccurrence. The computer based process control is being modified to produce a review of information outside the normal range of acceptable input.

Please feel free to call Keith Bailey (405) 270-3651 or me (702) 651-2234, if you have any questions relating to this incident.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

Cc: Keith Bailey, KM
Todd Croft, NDEP
Jeff Lambeth, Veolia
Tamara Pelham, NDEP
Richard Water, KM

VEOLIA Water

April 5, 2004

Susan Crowley, Staff Environmental Specialist
Keith Bailey,
Kerr-McGee Chemical LLC
Henderson, NV 89015

Re: Incident Report – Excess foam and scum at the wash

DRAFT

I. INTRODUCTION:

January 2004 the Henderson Fluidized Bed Reactor (FBR) Perchlorate removal system began to take flow from the offsite wells. The plant is designed to treat groundwater from well fields which contain varying levels of Perchlorate. Ethanol is fed to the system to degrade perchlorate. In order to guarantee low Perchlorate levels at the outfall, ethanol must be fed in excess to ensure sufficient Perchlorate degradation. However, too much excess ethanol results in the formation of sulfide. Today the plant is at 80% of the designed hydraulic capacity and 70% of design loading. We are still in a startup period and have not yet reached steady state.

II. WHAT HAPPENED:

A process incident occurred on April 27, 2004, as a result of an improper input into the Fluidized Bed Reactor (FBR) process control computer. The proportionality factor that controls ethanol to flow (k factor) ratio was calculated by the operational control computer model to be 0.098. The actual operator input to the process control

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VEOLIA Environment

computer was 0.980, resulting in an over-feed of the ethanol electron donor; 32 gallons per hour vs. the desired gallons per hour of 17.

III. RESPONSE TO EVENT:

The computer inputs were performed at approximately 10:30 am the morning of April 27, 2004. Because there is a historicis in the system, the process control parameters such as ORP, pH, and effluent Perchlorate levels remained steady throughout the day. At approximately 10:00 pm the evening of April 27, 2004, unusual ORP, and pH readings led the operator to investigate the cause, which was then discovered to be an over-dose of ethanol. Once the cause of the over-feed was discovered, the correct settings were input in the process control computer.

The operators continued to monitor the ORP, sulfide, and Perchlorate levels with the on-site ISE probe and adjusting ethanol levels downward. We are still in the process of optimizing the ethanol feed to the system even as we are trying to increase the loading.

IV. ENVIRONMENTAL IMPACTS:

The corresponding ethanol over-feed caused some excess foam, scum and odor to leave the system.

Normal daily discrete samples for the weekly composite were collected as per Permit #NV 0023060. The results of those samples have not yet come back from the contract lab. However, we suspect based on the elevated TOC readings we will see a high

CBOD for that particular sampling event.

V. FUTURE CHANGES:

The Dissolved Air Flotation equipment (DAF) is designed to remove suspended solids which in turn cause turbidity. Coagulant and organic flocculants are fed to optimize the solids capture in the DAF. The excess ethanol actually acted like a solvent rendering the chemical feeds to become less effective resulting in higher turbidity leaving the facility.

The prevention measures we have put into place so far include, twice daily meetings and printouts of the computer screens to verify the proper feed ratios are in place. In addition, we are having our computer programmer change the programming such that if operator inputs are outside of a particular range the computer flags that input notifying the operator that this input is outside of a normal range.

Future plans include optimizing the DAF, making sure excess ethanol does not interfere with the chemical coagulation and flocculation of solids. Samples have been collected at the UV, DAF inlet and outlet and FBR. The biota will be identified in the FBR, further chemical jar tests will be performed to see if we can further optimize the DAF's.

The UV supplier will also receive a sample of the water to evaluate the current turbidity, color, and transmissivity.

Having said all this, the current turbidity in our effluent is caused by suspended solids. We expect that both during this process incident as well as during normal operation we are within our NPDES limit of 135 mg/l, but, again looking to the future, as the DAF's are optimized the turbidity may also lessen.

Todd Croft

From: Todd Croft
Sent: Thursday, May 06, 2004 8:28 AM
To: 'Dr. Jacimaria R. Batista'
Subject: RE: Discharge at Pabco Road; Status of effluent; Improvements expected

Dr. Batista:

The NDEP is working w/ Kerr-McGee to improve the quality and appearance of the perchlorate treatment system discharge. It is our expectation that the effluent quality will improve over the next several weeks as Kerr-McGee continues to move through start-up and into full-scale operation. You are welcome to check with me at your convenience to stay apprised of the status of the Kerr-McGee perchlorate remediation project.

Thank you for your interest. Please let me know if you make additional observations in the vicinity of the Seep that lead you to believe that effluent quality is not improving or appears to be degrading.

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

-----Original Message-----
From: Dr. Jacimaria R. Batista [mailto:jaci@ce.unlv.edu]
Sent: Wednesday, May 05, 2004 7:42 PM
To: Todd Croft
Subject: RE: Discharge at Pabco Road; Status of effluent

Dear Todd:

Thank you for your explanation. I still think it is not acceptable to discharge such water to the Las Vegas Wash. There are ways to biodegrade excess ethanol and it is simply a question of cost. Sulfate reduction will happens and that too can be engineered. NPDES permits issues for local wastewater treatment plants do not give them any break at start up and it should not. I hope NDEP will quickly work with KerrMcGee to get a quality effluent. I also strongly hope it will not take very long.

Thank you and talk to you soon
Jaci

At 05:43 PM 5/4/2004, you wrote:
>Dr. Batista:
>
>Thank you for your e-mail regarding observations of the water quality from
>the Kerr-McGee biological treatment system. You are correct in your
>observations regarding a milky white color and sulfur type odor related to
>this effluent. The NDEP is aware of the milky white color and the odor.
>
>Kerr-McGee is currently conducting the start up phase of the new
>biological treatment system. During the start up phase, the biological
>plant operators are increasing the flow and the chemical loading
>(perchlorate loading) in a step wise sense to allow the bacteria to
>acclimate before increasing flow and loading to the next step. While
>doing this, the operators also increase the amount of ethanol added to the
>system to ensure destruction of perchlorate. On occasion, the amount of
>ethanol added has exceed the amount needed for perchlorate

>destruction. When this has occurred, the sulfur type odor develops due to
>biodegradation of sulfate.
>
>I visited the Seep and Las Vegas Wash today (Tuesday; 05/04/04) between
>approximately 1:00 and 3:00 pm following our telephone conversation
>earlier in the day. The effluent discharge continues to appear somewhat
>milky white. There was very little odor I could detect related to the
>effluent. I walked the area to observe the confluence of the Seep Stream
>w/ the Las Vegas Wash and then stopped at several down stream locations
>starting at the Pabco Road Weir. The milky color was present where the
>Seep Stream enters the Wash but had attenuated/mixed with the wash water
>prior to passing the Pabco Road Weir. The appearance of the wash water
>downstream of the Pabco Road Weir is similar to the appearance several
>miles upstream of the Seep Area.
>
>I appreciate your interest in this project and your e-mail of your
>observations. I will be working with Kerr-McGee to see what steps they
>are taking to continue to improve the effluent quality and
>appearance. Please reply with your phone number if you would like to be
>updated periodically with improvements made by Kerr-McGee to the effluent.
>
>The effluent from the biological treatment system is disinfected through
>use of UV lamps.
>
>Todd J. Croft
>Remediation Branch Supervisor
>NDEP Bureau of Corrective Actions - Las Vegas Office
>tcroft@ndep.nv.gov (Please note the Change)
>(702) 486-2871 (Phone)
>(702) 486-2863 (Fax)
>
>-----Original Message-----
>From: Dr. Jacimaria R. Batista [mailto:jaci@ce.unlv.edu]
>Sent: Monday, May 03, 2004 2:07 PM
>To: Todd Croft; Mayer.Kevin@epamail.epa.gov
>Subject: Discharge at Pabco Road
>
>
>Dear Todd and Kevin:
>
>I went twice last week to the discharge point of the effluent from the
>Kerr-McGee effluent. I do not know how long ago you have been there, but I
>am very concerned about what I saw and smelled. I take they have initiated
>the Bio-treatment. The discharge from is milky and had a horrible
>odor. It seems the effluent is not being disinfected. Is that the
>case? It also appears that they are using lime to control Ph. and that may
>explain the white precipitate in the stones. Anyway , I urge you to check
>this out. It does not seem such an effluent should be discharge into the
>Wash. It is much inferior in quality than the effluent from the wastewater
>treatment plants.
>
>Thank you for your attention.
>
>Jaci Batista

Brian Rakvica

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Wednesday, May 05, 2004 7:32 AM
To: Todd Croft
Cc: Brian Rakvica; Bailey, Keith; Corbett, Pat; Stater, Rick; Reed, Thomas
Subject: FW: Perchlorate Update

Todd,
I'm sorry I missed our update teleconference yesterday today. Keith has filled me in on the discussion. One item that I had intended to cover (but will instead transmit here) was the work that Ed Krish completed - to confirm the mass loading in the Athens Road area. Ed had stepped back to the Sunset Road area to review the aquifer conditions ... and to minimize the impact of the Athens Road pumping on the alluvium so that a calculation of mass loading was less complicated and could provide information on downgradient expectations.

In essence, Ed was able to conclude several items with the Sunset Road work ... the perchlorate mass loading in the Sunset Rd cross section is about 780 lb/day, the underflow is about 200 gpm and the average perchlorate concentration of the cross section is about 324 ppm. This agrees well with activities in the Athens Road area. More detailed information with the supporting data is being prepared for the 2nd quarter 2004 performance report, but I thought you might want the summary results up front, now.

Also, as a group, those on the teleconference selected May 19th, 9:00 am PDT for the next update. We're hopeful that we can move this to 1:30 pm PDT. Will this time work for you? Please let me know and I'll schedule a call-in number. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

ISUGO 4/29

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: April 20, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Remedial System Update.
   a. KM is still working on the installation of vents in their transmission line. It is expected that this will be completed this week.
   b. Discussed current operations of the FBR system.
      i. Approximately 800 gpm; 45 gpm from the plant site GW capture system.
      ii. Will be able to pump from GW-11 soon.
      iii. The current flow rate is 80% of the capacity and the mass load is 66% of the capacity.
   c. Discussed solids management. Noted that the milky color and sulfide smell still persist. KM noted that is because they are still using excess ethanol to meet the perchlorate effluent limits. KM is working with it's contractors to resolve this issue.
   d. 2nd DAF is still running.
   e. KM still anticipates being fully operational by the end of May.
   f. NDEP has received the FBR photograph from KM.
3. Discussed Tours.
   a. Friday, April 23, 2004 – MWD presentation at Hoover Dam. Brian will give presentation.
   b. 4/28/04 – USEPA Superfund Meeting in Las Vegas.
4. Other Discussions
   a. Noted that the USEPA was visited by a variety of environmental groups regarding the Colorado River's listing on the American Rivers organization's list of endangered rivers.
   b. Noted that NPR is trying to have a live panel discussion on the Colorado River. NDEP, CRC, CWC, Sierra Club, SNWA, KM and others have been invited. This will take place on 4/27/04 or 5/5/04.
5. Next meeting: telephone conference on 5/4/04 at 9:00 AM – call in number to be provided.

Todd Croft

From: Dr. Jacimaria R. Batista [jaci@ce.unlv.edu]
Sent: Wednesday, May 05, 2004 7:56 PM
To: dfischer@ci.las-vegas.nv.us; bshepherd@cleanwaterteam.com
Subject: Fwd: RE: Discharge at Pabco Road; Status of effluent


Header

Dear Dan and Bill:

I noticed on my sampling along the Wash that the effluent discharged by KerrMcgee from their biological perchlorate removal is of very poor quality. I contacted (message below) Todd Croft from NDEP and his answer is below. I think that water is of unacceptable quality to be discharged to the Wash (high solids, high BOD, high odor). I think the three dischargers should know about it(I do not have the e-mail for the City of Henderson). My calling and e-mailing him will have no effect for I am just a citizen. He told me in the phone that Kerr McGee got the permit and can operate the plant for several months in such a way. I do not know the P content of the water yet, but I will measure tomorrow. I cannot believe they can get such a permit!
May be the Clean Water Coalition can check this out and put some pressure on them to produce a cleaner effluent asap.

Talk to you soon
Jaci

>Dr. Batista:
>
>Thank you for your e-mail regarding observations of the water quality from
>the Kerr-McGee biological treatment system. You are correct in your
>observations regarding a milky white color and sulfur type odor related to
>this effluent. The NDEP is aware of the milky white color and the odor.
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>plant operators are increasing the flow and the chemical loading
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>acclimate before increasing flow and loading to the next step. While
>doing this, the operators also increase the amount of ethanol added to the
>system to ensure destruction of perchlorate. On occasion, the amount of
>ethanol added has exceed the amount needed for perchlorate
>destruction. When this has occurred, the sulfur type odor develops due to

>biodegradation of sulfate.
>
>I visited the Seep and Las Vegas Wash today (Tuesday; 05/04/04) between

>approximately 1:00 and 3:00 pm following our telephone conversation
>earlier in the day. The effluent discharge continues to appear
somewhat
>milky white. There was very little odor I could detect related to the
>effluent. I walked the area to observe the confluence of the Seep
Stream
>w/ the Las Vegas Wash and then stopped at several down stream locations

>starting at the Pabco Road Weir. The milky color was present where the

>Seep Stream enters the Wash but had attenuated/mixed with the wash
water
>prior to passing the Pabco Road Weir. The appearance of the wash water

>downstream of the Pabco Road Weir is similar to the appearance several
>miles upstream of the Seep Area.
>
>I appreciate your interest in this project and your e-mail of your
>observations. I will be working with Kerr-McGee to see what steps they

>are taking to continue to improve the effluent quality and
>appearance. Please reply with your phone number if you would like to
be
>updated periodically with improvements made by Kerr-McGee to the
effluent.
>
>The effluent from the biological treatment system is disinfected
through
>use of UV lamps.
>
>Todd J. Croft
>Remediation Branch Supervisor
>NDEP Bureau of Corrective Actions - Las Vegas Office
>tcroft@ndep.nv.gov (Please note the Change)
>(702) 486-2871 (Phone)
>(702) 486-2863 (Fax)
>
>-----Original Message-----
>From: Dr. Jacimaria R. Batista [mailto:jaci@ce.unlv.edu]
>Sent: Monday, May 03, 2004 2:07 PM
>To: Todd Croft; Mayer.Kevin@epamail.epa.gov
>Subject: Discharge at Pabco Road
>
>
>Dear Todd and Kevin:
>
>I went twice last week to the discharge point of the effluent from the
>Kerr-McGee effluent. I do not know how long ago you have been there,
but I
>am very concerned about what I saw and smelled. I take they have
initiated
>the Bio-treatment. The discharge from is milky and had a horrible
>odor. It seems the effluent is not being disinfected. Is that the
>case? It also appears that they are using lime to control Ph. and that
may
>explain the white precipitate in the stones. Anyway , I urge you to
check
>this out. It does not seem such an effluent should be discharge into
the
>Wash. It is much inferior in quality than the effluent from the
wastewater
>treatment plants.
>

Thank you for your attention.

Jaci Batista

Todd Croft

From: Todd Croft
Sent: Tuesday, May 04, 2004 5:43 PM
To: 'Dr. Jacimaria R. Batista'; Mayer.Kevin@epamail.epa.gov
Subject: RE: Discharge at Pabco Road; Status of effluent

Dr. Batista:

Thank you for your e-mail regarding observations of the water quality from the Kerr-McGee biological treatment system. You are correct in your observations regarding a milky white color and sulfur type odor related to this effluent. The NDEP is aware of the milky white color and the odor.

Kerr-McGee is currently conducting the start up phase of the new biological treatment system. During the start up phase, the biological plant operators are increasing the flow and the chemical loading (perchlorate loading) in a step wise sense to allow the bacteria to acclimate before increasing flow and loading to the next step. While doing this, the operators also increase the amount of ethanol added to the system to ensure destruction of perchlorate. On occasion, the amount of ethanol added has exceed the amount needed for perchlorate destruction. When this has occurred, the sulfur type odor develops due to biodegradation of sulfate.

I visited the Seep and Las Vegas Wash today (Tuesday; 05/04/04) between approximately 1:00 and 3:00 pm following our telephone conversation earlier in the day. The effluent discharge continues to appear somewhat milky white. There was very little odor I could detect related to the effluent. I walked the area to observe the confluence of the Seep Stream w/ the Las Vegas Wash and then stopped at several down stream locations starting at the Pabco Road Weir. The milky color was present where the Seep Stream enters the Wash but had attenuated/mixed with the wash water prior to passing the Pabco Road Weir. The appearance of the wash water downstream of the Pabco Road Weir is similar to the appearance several miles upstream of the Seep Area.

I appreciate your interest in this project and your e-mail of your observations. I will be working with Kerr-McGee to see what steps they are taking to continue to improve the effluent quality and appearance. Please reply with your phone number if you would like to be updated periodically with improvements made by Kerr-McGee to the effluent.

The effluent from the biological treatment system is disinfected through use of UV lamps.

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

-----Original Message-----
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Sent: Monday, May 03, 2004 2:07 PM
To: Todd Croft; Mayer.Kevin@epamail.epa.gov
Subject: Discharge at Pabco Road

Dear Todd and Kevin:

I went twice last week to the discharge point of the effluent from the Kerr-McGee effluent. I do not know how long ago you have been there, but I am very concerned about what I saw and smelled. I take they have initiated the Bio-treatment. The discharge from is milky and had a horrible odor. It seems the effluent is not being disinfected. Is that the case? It also appears that they are using lime to control Ph. and that may explain the white precipitate in the stones. Anyway , I urge you to check this out. It does not seem such an effluent should be discharge into the

Wash it is much inferior in quality than the effluent from the wastewater treatment plants.

Thank you for your attention.

Jaci Batista

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. Michael Turnipseed, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

May 4, 2004

Legal Copy Cats & Printing
300 4th Street
Las Vegas, Nevada 89101

RE: **Copying Job**
BMI Projects

Dear Sir/Madam:

- The accompanying files are the property of the State of Nevada, Division of Environmental Protection (NDEP). They are **ORIGINAL** official state case files, and are irreplaceable.
- Copies of the accompanying files have been requested by **Ms. Crowley**.
- Please make the number of sets of copies as requested by **Ms. Crowley** in the same order as they have been presented to you. Please maintain the page-to-page order of the files. Double sided originals may be copied to single sided sheets if it makes your process easier and more cost effective.
- Please assure that the exact order of the files and their contents are maintained throughout the process. This is very important.
- Please separate the copies from the originals.
- Please contact **Ms. Crowley** with any questions regarding copy format.
- When the copying job has been completed, please contact the undersigned. All reproduction costs shall be billed to Ms. Susan Crowley, Kerr-McGee Chemical LLC, PO Box 55, Henderson, Nevada 89009; (702) 651-2234. We would like the copy job to be completed **by Monday, May 10, 2004** if at all possible.

- The Nevada Division Case Officer responsible for these files is Brian Rakvica. He can be reached in the Las Vegas Office at 486-2870. Please feel free to call myself or **Ms. Crowley** with any questions.

Sincerely,

Brian A. Rakvica
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP-Las Vegas Office

cc: Todd Croft, NDEP, BCA, Las Vegas

Acknowledged By 5/5/04 Date

rec'd 5/10

Todd Croft

From: Todd Croft
Sent: Tuesday, May 04, 2004 5:02 PM
To: 'kbailey@kmg.com'
Cc: Tamara Pelham
Subject: Effluent from perchlorate treatment system; teleconference desired

Keith:

I visited the seep are this afternoon. The effluent color and odor are improved from prior observations. However, Tamara and I would like to discuss the effluent quality and plans you have for continued improvement. I'll call you around 9:00 am to see what your availability will be or you can reply by e-mail. Tamara and I should both be available by around 9:00 am

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

04/20/04

MEETING WITH ENVIRONMENTAL GROUPS RE: KERR MCGEE, PERCHLORATE AND THE COLORADO RIVER

Keith Takata, Larry Bowerman, Mitch Kaplan and Kevin Mayer with EPA met with a number of environmental groups including the Environmental Advocates, the Natural Resources Defense Council, Environmental Working Group, Clean Water Action and the Center for Public Environmental Oversight (CPEO) on April 16, 2004 in San Francisco to discuss their concerns over perchlorate contamination affecting the Colorado River Basin.

1. Primary Issues Raised:

Lenny Siegel representing CPEO raised the primary issues:

*** Why isn't Kerr McGee (KMCC) on Superfund's National Priorities List (NPL)?**

*** Why isn't more being done by the regulatory agencies including EPA to get KMCC to remove perchlorate from the environment?**

2. Other issues that were raised during the meeting included:

* KMCC should be scored using superfund's HRS scoring system, (including perchlorate as a parameter) and if it scores high enough, added to the NPL.

* The full extent of the perchlorate plume(s) should be mapped.

* Downstream users, especially Californians and the Tribes have not been involved in the cleanup process up to this point. They need to be brought into the process.

* EPA should provide answers to questions about the health impacts of perchlorate.

* Are the regulators using the correct enforcement tools to move the remediation forward.

* The discharge limit for perchlorate in KMCC's NPDES permit should be 4 ppb instead of 18 ppb, as it is currently.

* Since this is arguably "the largest perchlorate plume in the world," EPA should conduct a comprehensive risk assessment for the entire Colorado River basin including drinking water and food pathways (plant and animal bio-accumulation). (Risk Assessments are usually conducted on a facility scale).

* Aquifers in southern California have perchlorate concentrations at levels of concern. Determine who is responsible, which aquifers are recharged by the Colorado River and look at remediation options.

* The two corrective action Environmental Indicators (EIs) have not yet been attained by KMCC.

* American Rivers group recently rated the Colorado River as the most threatened waterway in the U.S. As a result, 4 Western Governors are meeting and EPA will probably get more pressure from them to do more about perchlorate originating from KMCC.

3. Issue of NPL listing for Basic Management Incorporated (BMI):

* Keith Takata (Superfund) explained that BMI could have been listed as an NPL site in the 1980s, but the State of Nevada objected to the possible listing. At that time the site only scored for air.
* If BMI or KMCC now scored high enough for NPL listing, NDEP could ask for a deferral for one year (based on a provision in the new Brownfields Law).
* The State of Nevada entered into a series of Consent Agreements with BMI which is the driving mechanism behind ongoing site investigation/characterization and perchlorate cleanup efforts at BMI.

4. Larry Bowerman summarized the current status of Kerr McGee's Perchlorate Remediation Efforts and the expected downstream benefits. Three documents were given to the enviromental groups.

* December 2003 Perchlorate Monitoring Report
* January 2004 slide presentation entitled "Perchlorate and the Colorado River"
* February 2004 Fact Sheet on Kerr McGee's Perchlorate Control Strategy.

Nevada Annual Superfund Meeting April 28, 2004

Meet at NDEP offices in Las Vegas 930 AM
1771 East Flamingo Road, Suite 121A
(702) 486-2850

EPA: Keith Takata, Betsy Curnow, Steve Simanonok, Jim Hanson
NDEP: Leo Drozdoff, Jim Najima, Tim Murphy, Scott Smale, Tom Dunkleman

930 -10 am Tim Murphy: EPA Grant Overview

Consolidated Grant: CORE, PA/SI, Env. Response, and Carson River MSCA
Currently funded $300K annually
FY05 requests $280K to include IPA costs

Tom Dunkleman IPA , EPA Funded to 10/1/04
Next 2 years Under CORE Grant to 10/1/06

Section 128 Grant: Establish & Enhance
Currently funded at $750K
State performing Baseline Assessment. TBAs and Cleanup
FY05 requests $750 K, more TBAs and Cleanup

10 - 1020am Tom Dunkleman: Nevada=s Environmental Response Program

1030-1130am Site Discussions / Update

Kerr McGee perchlorate treatment system
Rio Tinto Mine, Mtn. City
Anaconda Mine, Yerington
Carson River Mercury - Dayton Area Development
Spill Prevention Control and Countermeasure (SPCC) workshops per NPM&CSA request.

1130-100 Lunch

100-300pm Superfund Grant Quarterly Review
FY05 Grant Negotiations

NDEP Response Program
EPA Presentation 4/28/04

Duty Officer Rotation
7 Duty Officers on 24/7 rotation. This system has been in place for over a year and has been very successful. Procedures for Duty Officers are outlined in NDEP Spill Call Procedures document. Duty Officers receive calls, and staff State EOC. Dispatch NDEP responders as appropriate. Similar role to EPA Spill Phone OSCs.

Response Coordinators
3 Response coordinators (Eric Matus, Bill Story, Tom Dunkelman). Eric and Bill have been undergoing extensive training (Hazmat Technician, ICS 300). Will continue to pursue training. It is anticipated that Tim Murphy's replacement will become the fourth response coordinator, and will also undergo extensive training. Dunkelman and Matus are currently writing Standard Operating Procedures which will document all procedures to be followed ranging from administrative, to response, to legal, etc. This document will also include attachments addressing medical monitoring, health and safety plans, and respiratory protection plans.

Responses
NDEP staff have participated in several responses over the past six months. As the nature of our program becomes known, the frequency of responses has been increasing. Responses over the past six months included the following: Pau Wa Lu Mercury, Saylor Way Mercury, UPRR –Winnemucca Derailment, Highway 395 Oil Spill, Gardnerville Oil Spill, Eagle Crest Mercury.

State Hazardous Materials/WMD Response Plan
A draft plan has been produced by NDEP and NDEM. Both agencies are currently scheduling meetings with various state and local agencies to solicit feedback and to obtain information regarding the response capabilities of these agencies. DEP has received $129,000 in DHS/ODP grant funding for contractor support for this effort.

Response Equipment
NDEP received $89,000 in FY03 DHS/ODP grant funding to purchase response equipment. NDEP is currently purchasing the equipment. NDEP has requested $95,000 in FY04 DHS/ODP grant funding for additional response equipment. NDEP also requested $4,690 in training costs and $237,907 in planning costs (Dunkelman's salary for 2 years) from the FY04 DHS/ODP grant.

Exercises/Inspections/Drills
NDEP staff have participated in Operation Determined Promise (Las Vegas) and Operation Moving Target (Laughlin). NDEP will continue to participate in upcoming exercises. NDEP staff recently participated in a joint Washoe County/Union Pacific Railroad inspection at the Sparks rail yard. NDEP staff also recently participated in the Quad County Hazmat Team quarterly drill. NDEP staff are planning to drill routinely

with several surrounding Hazmat Teams including Washoe County, Reno Fire, Quad County, Douglas County, State OSHES, NV Division of Investigations.

Training
NDEP coordinated and hosted an EPA Swift Water Booming Class on the Truckee River. The training was well-attended and very successful. NDEP also coordinated an EPA Radiation Safety Awareness class that was presented to Reno Fire, Sparks Fire, Washoe County and others. NDEP has been coordinating with EPA R9 and ERT regarding an air monitoring/instrumentation class that would be presented to response agencies. With the influx of DHS/ODP grant funding, many agencies have purchased a wide range of detection equipment. The problem is, few of these agencies know how to use the equipment. This training, to be taught by NDEP, EPA R9 and ERT staff would provide the responders with hands on knowledge of the instruments, and would provide EPA with an excellent opportunity to interact with local responders.

Truckee River Geographic Response Plan
NDEP has been a significant player in the development of this plan, basically coordinating all NV planning activities and writing extensive portions of the plan. NDEP has been instrumental in developing exercises and training (including an EPA Swift Water Booming Class) pertaining to the Truckee. The plan is largely completed, and EPA and NDEP are meeting with local agencies to have them assume ownership of the plan.

Carson River Geographic Response Plan.
Work on this plan should be started this spring. Plans for the Walker River and Colorado River will follow.

Crowley, Susan

From: Crowley, Susan
Sent: Wednesday, April 21, 2004 10:16 AM
To: Larry Bowerman (bowerman.larry@epa.gov)
Cc: Todd Croft (tcroft@ndep.nv.gov); Brian Rakvica (brakvica@ndep.nv.gov); Bailey, Keith; Corbett, Pat; Stater, Rick
Subject: EPA Information - Rev1.xls

Larry,
Attached you'll find the updated perchlorate remediation information we discussed last week. This information is also being printed and a hard copy should be delivered to your office by FedEx tomorrow. As always, fell free to call if you have any questions. Thanks.

EPA Information - Rev1.xls (16...

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(405) 228-6882 fax

On-Site Collection Area

Collection Wells - Upgradient of Slurry Wall

Date	Weighted Average ClO_4 Concentration On-Site (ppm)	Average Flow Rate (gpm)	**Monthly Mass ClO_4 Removed On-Site (lbs)**
Oct-02	1,890	60.9	**43,459**
Nov-02	1,758	53.5	**34,366**
Dec-02	1,560	68	**40,053**
Jan-03	1,673	72	**45,481**
Feb-03	1,618	53.8	**29,686**
Mar-03	1,593	55	**33,060**
Apr-03	1,564	52.2	**29,860**
May-03	1,735	54.5	**35,668**
Jun-03	1,515	59.5	**32,955**
Jul-03	1,495	56.8	**32,064**
Aug-03	1,495	50.6	**28,562**
Sep-03	1,575	50.2	**28,873**
Oct-03	1,520	54.2	**31,085**
Nov-03	1,300	59.9	**28,464**
Dec-03	1,350	58.4	**22,780**
Jan-04	1,325	56.7	**21,673**
Feb-04	1,300	56.5	**25,941**
Mar-04	1,325	57.7	**28,863**
Apr-04			
May-04			
Jun-04			

Monitoring Wells - Downgradient of Slurry Wall

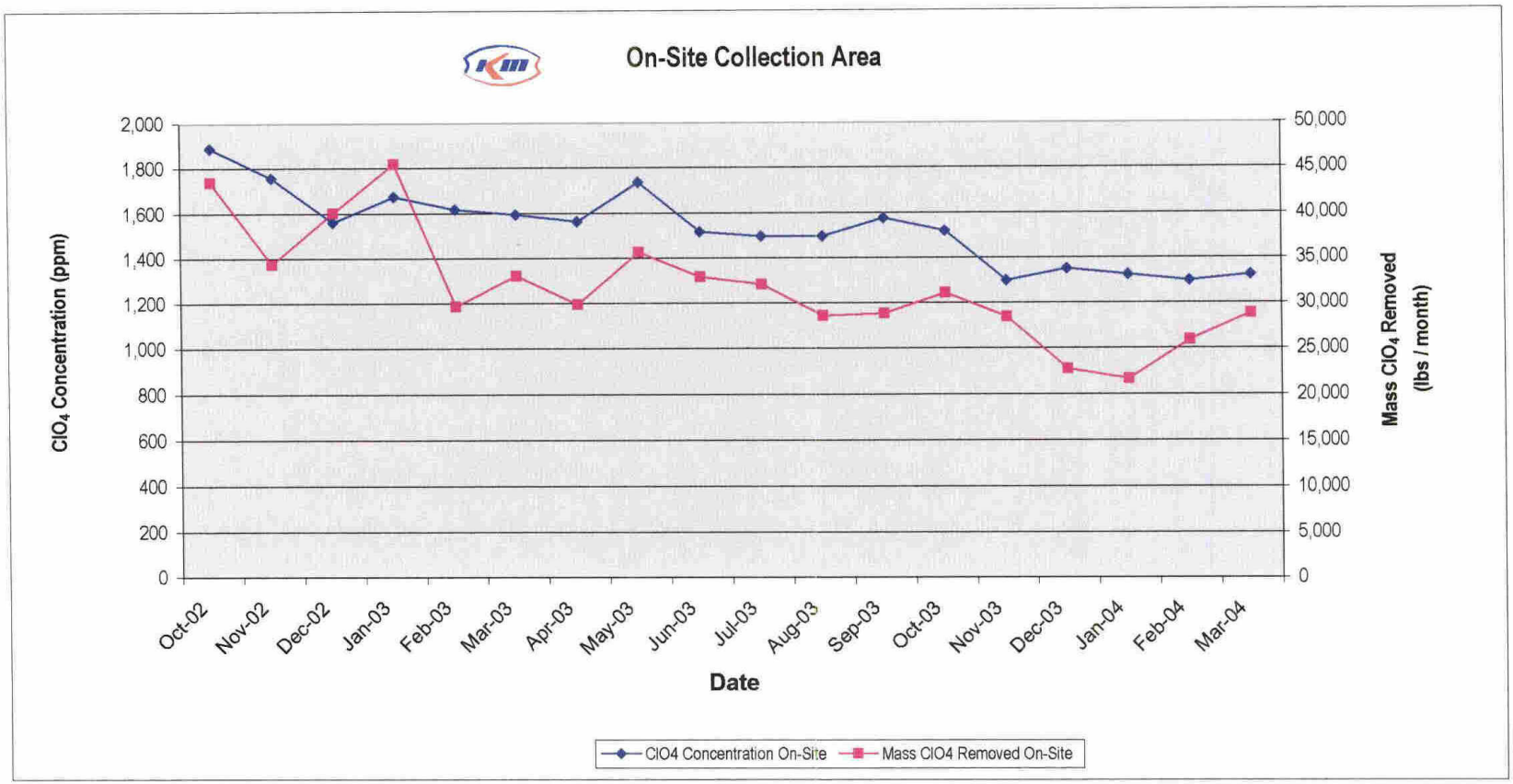
Date	M-100 ClO_4 Concentration (ppm)
May-99	1300
Jun-99	1200
Jul-99	1300
Aug-99	1200
Jan-00	890
Feb-00	1000
Mar-00	940
Apr-00	990
May-00	1600
Jun-00	920
Jul-00	830
Aug-00	850
Sep-00	1000
Oct-00	840
Nov-00	850
Dec-00	1100
Jan-01	860
Feb-01	900
Mar-01	880
Apr-01	910
May-01	1100
Jun-01	1000
Jul-01	1100
Aug-01	1100
Sep-01	1200
Oct-01	1000
Nov-01	1000
Dec-01	1000
Jan-02	1000
Feb-02	910
May-02	610
Sep-02	350
Dec-02	340
Jan-03	230
Apr-03	220
Jul-03	200
Nov-03	160
Feb-04	180

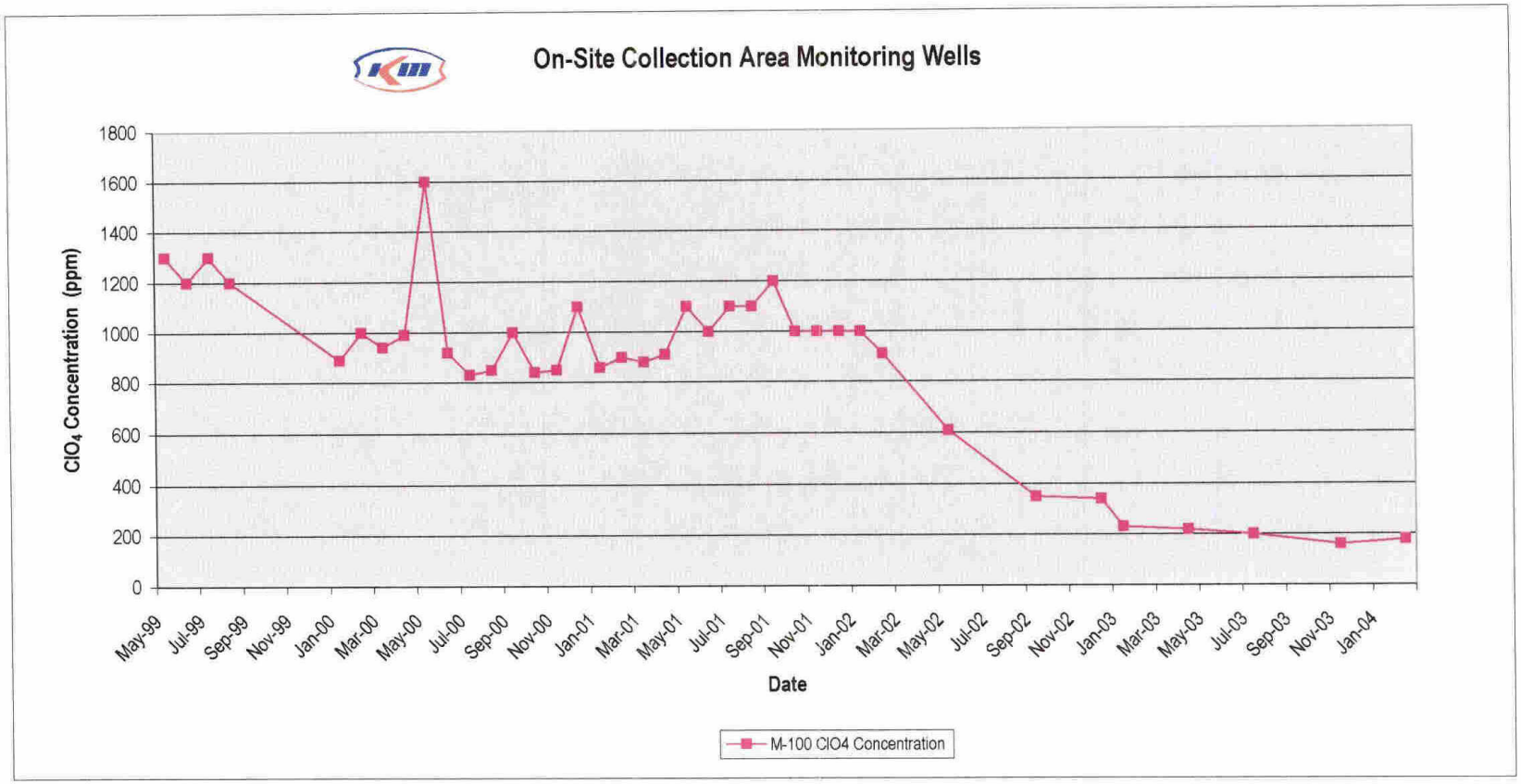
Athens Road Collection Area

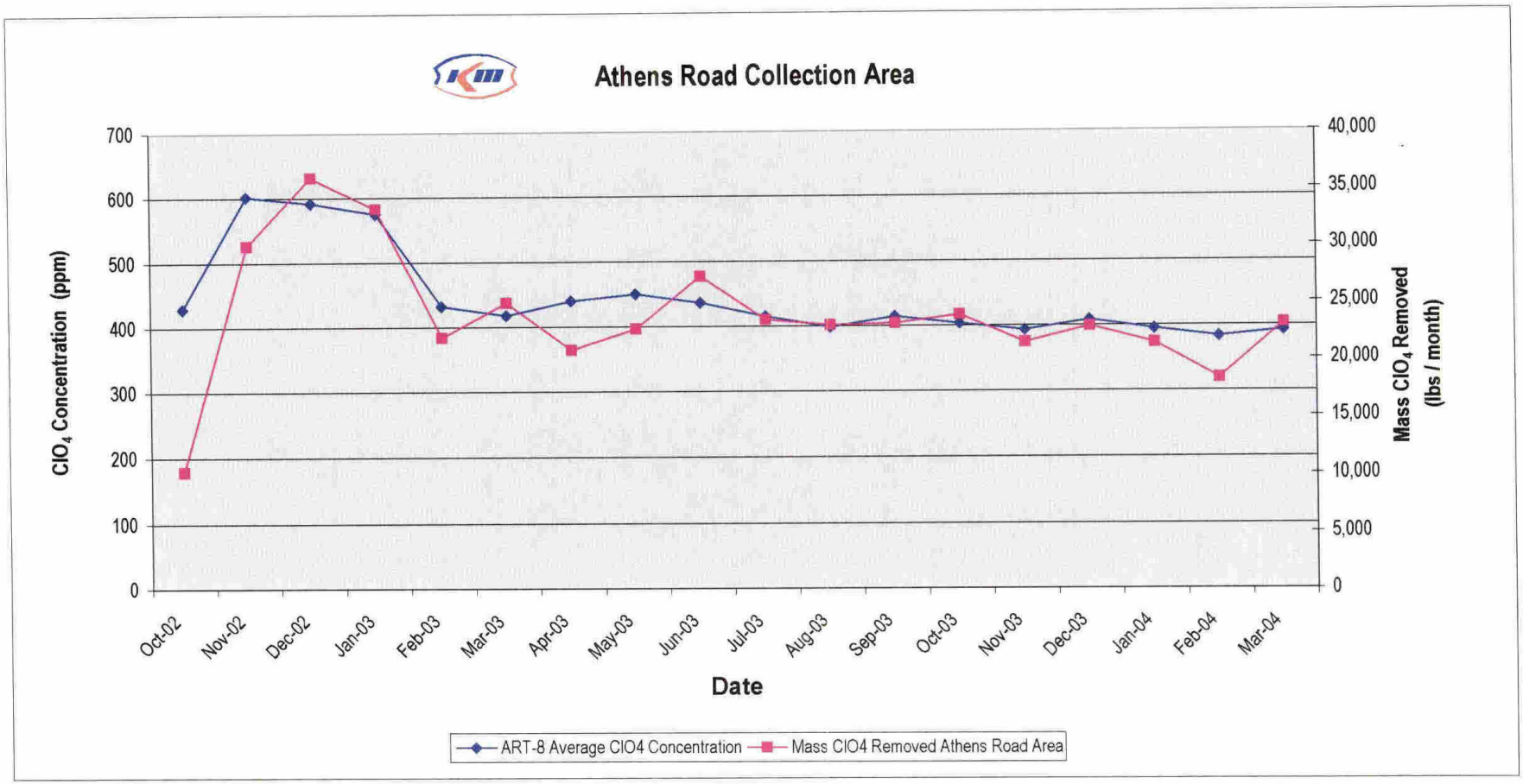
Collection Wells

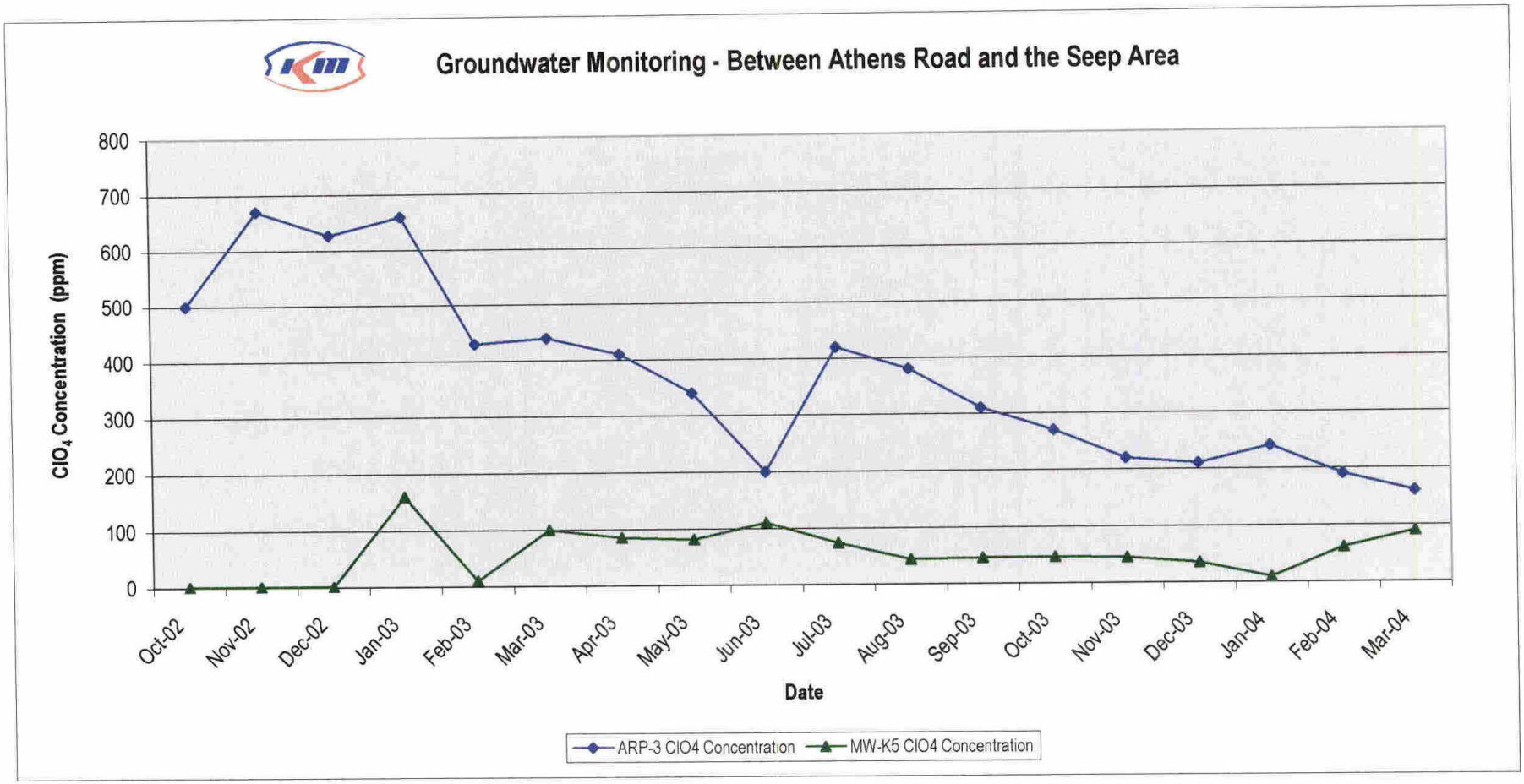
Date	ART-8 Average ClO_4 Concentration (ppm)	Average Athens Road Field Flow Rate (gpm)	**Monthly Mass ClO_4 Removed Athens Road Area (lbs)**
Oct-02	429	250.8	**10,259**
Nov-02	602	266	**30,043**
Dec-02	592	250.4	**36,071**
Jan-03	575	239.3	**33,299**
Feb-03	432	236.9	**21,932**
Mar-03	418	247	**24,977**
Apr-03	440	237	**20,816**
May-03	450	241	**22,633**
Jun-03	436	217	**27,253**
Jul-03	415	225	**23,422**
Aug-03	398	226	**22,959**
Sep-03	414	227	**23,092**
Oct-03	403	230	**23,836**
Nov-03	393	228	**21,409**
Dec-03	408	230	**22,780**
Jan-04	395	220	**21,357**
Feb-04	383	228	**18,276**
Mar-04	392	240	**23,020**
Apr-04			
May-04			
Jun-04			

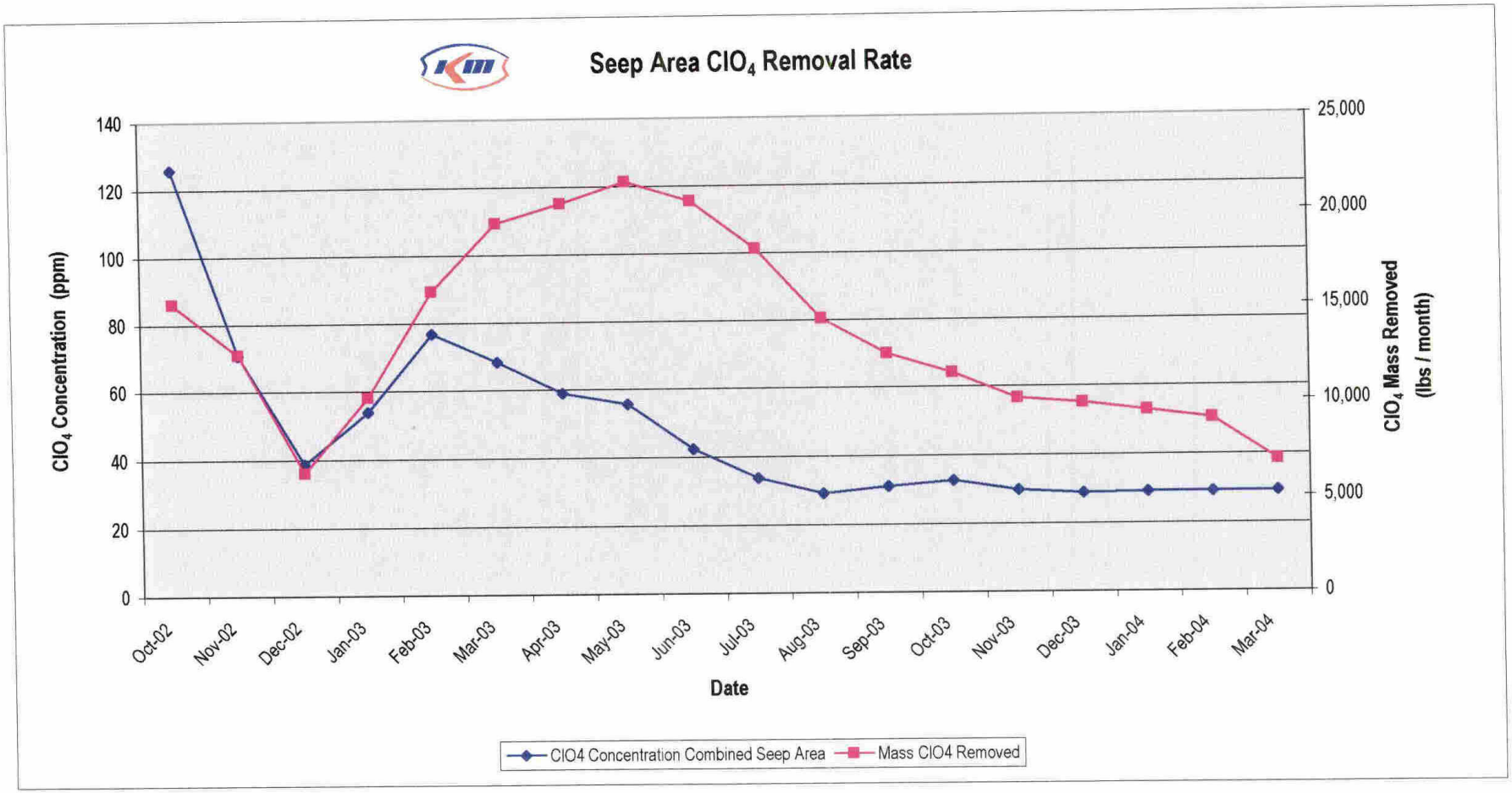
Monitoring Wells			Seep Collection Area					Monitoring Area - Seep	
			Collection Wells		Surface Stream			Monitoring Wells	
Date	ARP-3 ClO4 Concentration (ppm)	MW-K5 ClO4 Concentration (ppm)	Date	Wells Average Flow Rate (gpm)	Stream Average Flow Rate (gpm)	Combined Average ClO_4 Concentration (ppm)	**Monthly Mass ClO_4 Removed - Seep Area (lbs)**	Date	PC-97 ClO_4 Concentration (ppm)
Oct-02	500	0.59	Oct-02	191	132	125.9	**15,354**	Oct-02	77
Nov-02	670	1	Nov-02	203	271	70.7	**12,653**	Nov-02	110
Dec-02	627	1.43	Dec-02	241	201	38.7	**6,459**	Dec-02	119
Jan-03	660	160	Jan-03	337	174	53.8	**10,380**	Jan-03	120
Feb-03	430	10.2	Feb-03	395	156	76.7	**15,957**	Feb-03	86
Mar-03	440	100	Mar-03	427	164	68.3	**19,510**	Mar-03	50
Apr-03	410	85	Apr-03	602	107	58.9	**20,548**	Apr-03	63
May-03	340	82	May-03	656	72	55.6	**21,689**	May-03	60
Jun-03	200	110	Jun-03	784	5.5	42.5	**20,637**	Jun-03	51
Jul-03	420	74	Jul-03	806	0.3	33.8	**18,062**	Jul-03	49
Aug-03	380	44	Aug-03	838	0.1	29.2	**14,367**	Aug-03	34
Sep-03	310	46	Sep-03	819	0	31.2	**12,485**	Sep-03	20
Oct-03	270	47	Oct-03	822	0	32.8	**11,475**	Oct-03	12
Nov-03	220	45	Nov-03	848	3.2	29.9	**10,113**	Nov-03	9.3
Dec-03	210	36	Dec-03	814	7.9	29	**9,837**	Dec-03	7.2
Jan-04	240	9.5	Jan-04	837	11.7	29.2	**9,457**	Jan-04	5.5
Feb-04	190	61	Feb-04	804	57.5	29.3	**9,032**	Feb-04	4.1
Mar-04	160	90	Mar-04	732	82.4	29.4	**6,860**	Mar-04	6.2
Apr-04			Apr-04					Apr-04	
May-04			May-04					May-04	


On-Site Collection Area
ClO4 Concentration (ppm)
Mass ClO4 Removed (lbs / month)
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Oct-02
Nov-02
Dec-02
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Date
ClO4 Concentration On-Site
Mass ClO4 Removed On-Site


On-Site Collection Area Monitoring Wells
ClO4 Concentration (ppm)
1800
1600
1400
1200
1000
800
600
400
200
0
May-99
Jul-99
Sep-99
Nov-99
Jan-00
Mar-00
May-00
Jul-00
Sep-00
Nov-00
Jan-01
Mar-01
May-01
Jul-01
Sep-01
Nov-01
Jan-02
Mar-02
May-02
Jul-02
Sep-02
Nov-02
Jan-03
Mar-03
May-03
Jul-03
Sep-03
Nov-03
Jan-04
Date
M-100 ClO4 Concentration


Athens Road Collection Area
ClO_4 Concentration (ppm)
Mass ClO_4 Removed (lbs / month)
700
600
500
400
300
200
100
0
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Oct-02
Nov-02
Dec-02
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Date
ART-8 Average ClO4 Concentration
Mass ClO4 Removed Athens Road Area


Groundwater Monitoring - Between Athens Road and the Seep Area
ClO4 Concentration (ppm)
800
700
600
500
400
300
200
100
0
Oct-02
Nov-02
Dec-02
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Date
ARP-3 ClO4 Concentration
MW-K5 ClO4 Concentration


Seep Area ClO4 Removal Rate
ClO4 Concentration (ppm)
ClO4 Mass Removed (lbs / month)
140
120
100
80
60
40
20
0
25,000
20,000
15,000
10,000
5,000
0
Oct-02
Nov-02
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Jan-03
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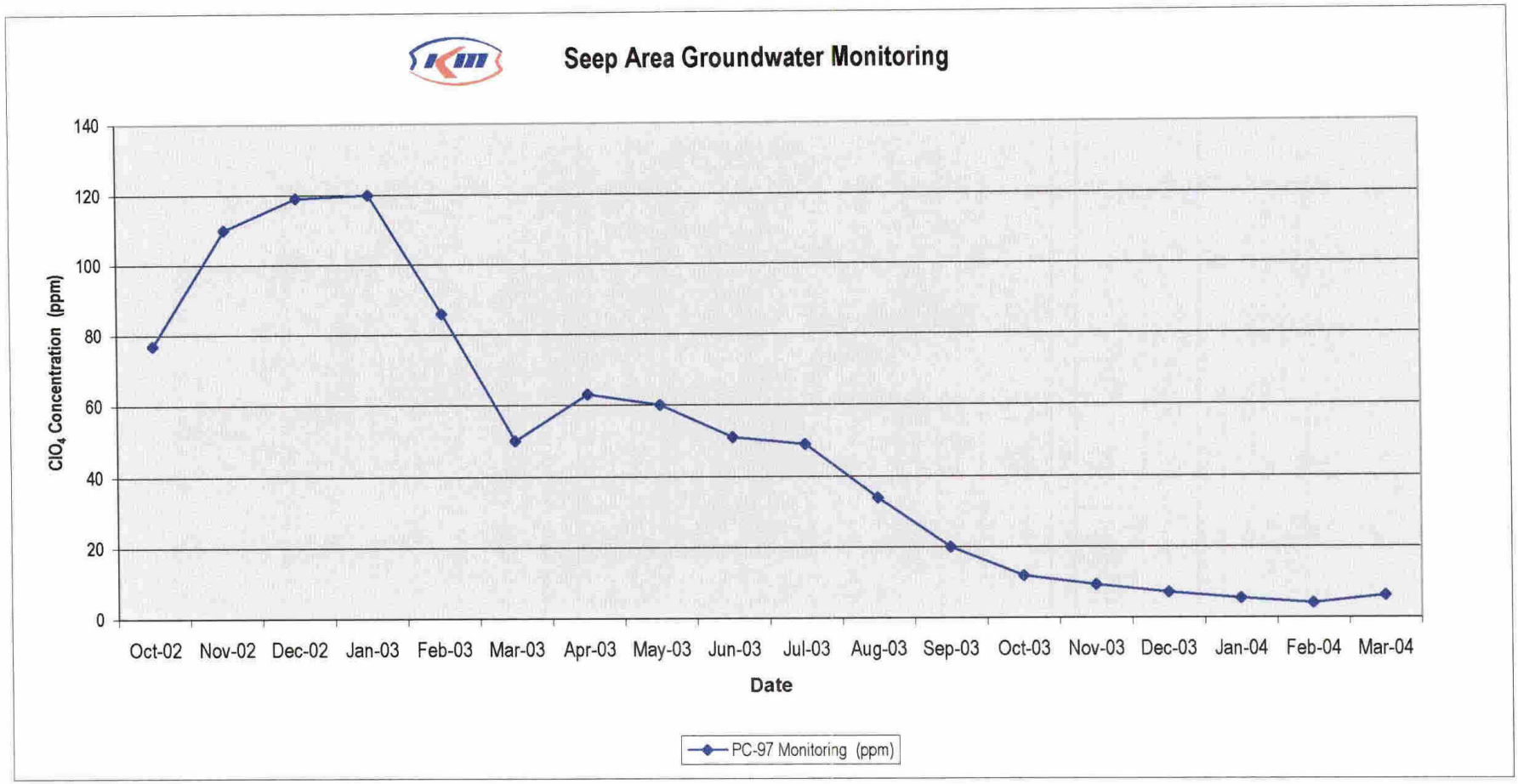
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Date
ClO4 Concentration Combined Seep Area
Mass ClO4 Removed


Seep Area Groundwater Monitoring
140
120
100
80
60
40
20
0
ClO4 Concentration (ppm)
Oct-02
Nov-02
Dec-02
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Date
PC-97 Monitoring (ppm)

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: April 20, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Remedial System Update.
   a. KM is still working on the installation of vents in their transmission line. It is expected that this will be completed this week.
   b. Discussed current operations of the FBR system.
      i. Approximately 800 gpm; 45 gpm from the plant site GW capture system.
      ii. Will be able to pump from GW-11 soon.
      iii. The current flow rate is 80% of the capacity and the mass load is 66% of the capacity.
   c. Discussed solids management. Noted that the milky color and sulfide smell still persist. KM noted that is because they are still using excess ethanol to meet the perchlorate effluent limits. KM is working with it's contractors to resolve this issue.
   d. 2nd DAF is still running.
   e. KM still anticipates being fully operational by the end of May.
   f. NDEP has received the FBR photograph from KM.
3. Discussed Tours.
   a. Friday, April 23, 2004 – MWD presentation at Hoover Dam. Brian will give presentation.
   b. 4/28/04 – USEPA Superfund Meeting in Las Vegas.
4. Other Discussions
   a. Noted that the USEPA was visited by a variety of environmental groups regarding the Colorado River's listing on the American Rivers organization's list of endangered rivers.
   b. Noted that NPR is trying to have a live panel discussion on the Colorado River. NDEP, CRC, CWC, Sierra Club, SNWA, KM and others have been invited. This will take place on 4/27/04 or 5/5/04.
5. Next meeting: telephone conference on 5/4/04 at 9:00 AM – call in number to be provided.

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

April 13, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to KM letter dated April 8, 2004 regarding the proposed schedule of deliverables

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the above-referenced letter and approves the schedule as proposed. The NDEP expects that this schedule will be periodically updated as new information becomes available. For example, as the Data Quality Objectives document is completed KM may find it necessary to perform additional site characterization work. As a point of clarification, please note that the document to be submitted on June 15, 2004 is a site-related chemicals document per our discussion on April 1, 2004. A simple chemical list will not be sufficient for this submittal.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

April 13, 2004

Mr. Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119

Dear Mr. Rakvica:

Subject: Kerr-McGee Environmental Conditions Investigation Quarterly Report – 1st Q 2004

Pursuant to Section XIII of the Consent Agreement, signed September 5, 1996, between Nevada Division of Environmental Protection (NDEP) and Kerr-McGee Chemical LLC (Kerr-McGee), formerly Kerr-McGee Chemical Corporation (KMCC), Kerr-McGee submits the following quarterly progress report for the Henderson facility's Environmental Conditions Investigation.

Activities Conducted 1/01/04 to 3/31/04

- Kerr-McGee received comments (authored by Brian Rakvica, dated February 11, 2004) from NDEP related to the April 25, 2001 "Supplemental Phase II Report". A meeting was arranged for April 1st to address the issues raised in these comments.
- Kerr-McGee continued participation in the review of the draft BRC Common Areas Administrative Order on Consent.

Please feel free to call me at (702) 651-2234, if you have any questions. Thank you.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

Certified Mail

cc: Jennifer Carr, NDEP
Todd Croft, NDEP
Jeff Johnson, NDEP
RLWaters
RHJones
FRStater
RGAddison
PSCorbett
JTSmith, Covington & Burling
TWReed
RSimon, ENSR
D Gerry, ENSR

smc\Quarterly (1st Q 04) Progress Report to Rakvica.doc

Brian Rakvica

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Thursday, April 08, 2004 3:11 PM
To: Brian Rakvica
Subject: Kerr-McGee Schedule of Deliverables


KM Resposne to Rakvica re Feb ...


ECA Deliverable Schedule 04080...

Brian,
This correspondence will be forwarded via certified mail - but I though you might want an advance review. Let me know if you have questions. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
office (702) 651-2234
cell (702) 592-7727
faz (405) 228-6882

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

April 8, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV

Dear Mr. Rakvica:

Subject: NDEP Facility ID H-000539 – Kerr-McGee Response to NDEP Comments of February 11, 2004 – Schedule of Deliverables

Kerr-McGee Chemical LLC (Kerr-McGee) has received your correspondence of February 11, 2004. We have also met with your office, on April 1, 2004, to discuss the deliverables which would respond to the issues outlined. Please find attached a schedule laying out Kerr-McGee's expectation for supplying the listed deliverables.

Feel free to call me at (702) 651-2234 if you have any questions regarding this correspondence. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist, CEM 1428

Attachment
Certified Mail

Cc: Tom Reed
Ed Krish
Rick Stater
Richard Waters
Dave Gerry, ENSR
Rick Simon, ENSR
Jim Najima, NDEP
Jon Palm, NDEP
Todd Croft, NDEP
Jennifer Carr, NDEP
Jeff Johnson, NDEP
Valerie King, NDEP
Tamara Pelham, NDEP
Barry Conaty
Brenda Pohlmann, COH
Mitch Kaplan, US EPA
Carrie Stowers, CCCP

C:\Documents and Settings\bigdaddy\M

Attachment A

Kerr-McGee Chemical LLC
Response to NDEP Comments of February 11, 2004

Deliverable Schedule

Deliverable	Date
Project Organizational Chart / Resumes	May 15, 2004
KM Response to NDEP Comments (2/11 Letter)	June 1, 2004
Chemical List	June 15, 2004
Data Quality Objectives	July 31, 2004
Background Study	
• Work Plan submittal to NDEP	June 30, 2004
• Field Sampling	120 days following NDEP approval
• Report	120 days following sampling
Conceptual Site Model	August 31, 2004
Response to NDEP Comments re the Semi-Annual Chromium Mitigation Performance Report	July 28, 2004

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: April 6, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Attendance:
   a. NDEP: Todd Croft, Brian Rakvica
   b. KM: Keith Bailey, Susan Crowley
2. Remedial System Update.
   a. KM noted that they had a power outage this weekend. A generator was brought in to keep the beds fluidized and run the IX system. For contingency, Km is planning on drawing down the level of the pond and maintaining the IX systems for a few months until the pond level is decreased.
   b. The flow rate to the FBR system is currently at 200 gpm and will be ramped up slowly. KM hopes to be up to 800 gpm by Thursday this week. After they reach 800 gpm, on-site groundwater (GW) will be added (up to approximately 53 gpm) and then pond water will be added (up to approximately 15 gpm).
   c. KM is currently experiencing some air binding in their NPDES discharge line. Over the next week or so KM will be installing additional air vents in the pipe.
   d. KM noted that the sulfide odor last week was due to an operator error and excess ethanol being added.
   e. Discussed solids management.
      i. The 2nd DAF unit has been started.
      ii. KM noted that as the system matures it is anticipated that the solids removal efficiency will increase.
      iii. KM noted that TSS is running at approximately 10-13 mg/L.
      iv. KM noted that bio-solids have begun moving from reactors 1-3 in to reactors 5-7.
      v. KM noted that they are investigating the use of ferric chloride in the filtration step.
   f. KM noted that the 30-day test has not begun and therefore will not be complete in April.
   g. Discussed flow rates.

i. In order to maintain a 1,000 gpm or less flow rate, KM will be backing off Seep area well PC-121. It has relatively low concentrations (~10 ppm). This will allow them to take higher concentration water from the plant site and GW-11. The net mass change to the Wash will be near zero once you factor in the change in mass discharged from the treatment system.

h. It was noted that KM will have a flow measuring device in the pipeline for the water from GW-11 to the FBR. This will be used to insure that mass removed from the environment is not double counted.

3. Discussed Tours.
   a. 3/29/04 (AM)- Mr. James Peterson and Dr. Darrel Pepper representing Senator Feinstein visited KM and NDEP. They had concerns over reducing the long-term mass load in the Wash below 100 lbs/day.

4. Other Discussions
   a. Noted that NDEP is still negotiating an AOC with Ampac. Discussed Ampac's recent report submitted to NDEP. Km may wish to copy.
   b. Discussed the current MWD RFP.
   c. Discussed a recent news article in Arizona on perchlorate. Todd to forward to KM.
   d. Noted AGWT meeting in Las Vegas on May 3, 2004.
   e. Noted NGWA meeting in California on June 3 and 4, 2004.

5. Next meeting: telephone conference on 4/20/04 at 1:00 PM – call in number is 405-270-2683.

Todd Croft

From: Brian Rakvica
Sent: Tuesday, April 06, 2004 4:42 PM
To: Todd Croft; Jeff Johnson; Jennifer Carr; Jon Palm; Alan Tinney; Tamara Pelham; Leo Drozdoff
Subject: KerrMcGee conf call notes

All,

attached for your use are the notes from today's call.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

April 5, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, NV 89119-0837

Dear Mr. Rakvica:

Subject: NDEP Facility ID #H-000539

Kerr-McGee Chemical LLC (Kerr-McGee) appreciates your time at our meeting last week, on April 1, 2004. Our discussion related to the on-going Environmental Conditions Assessment of the Kerr-McGee Henderson facility has assisted in determining deliverables which will be generated for addressing issues associated with your correspondence of February 11, 2004. Based upon information discussed at the meeting, Kerr-McGee will forward a schedule for deliverable submittal by April 9, 2004.

Please call me if you have any questions regarding this request. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist

By Certified Mail

Cc: Dave Gerry, ENSR
TLReed
E Krish
FRStater
RLWaters

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

April 1, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
KM letter dated March 30, 2004 regarding modifications to existing chromium treatment system

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the above-referenced letter. As discussed on March 24, 2004 by telephone and on March 31, 2004 by electronic mail, NDEP concurs with KM's proposed modifications to the chromium treatment system and requests that KM proceed with these revisions.

Per the existing groundwater permit NEV2001515 (governing the use of pond GW-11), condition I.A.16, all groundwater remediation activities at this site shall be addressed in accordance with the Bureau of Corrective Actions (BCA). BCA is therefore authorized to review the modifications to the existing chromium treatment system. Per the existing NPDES permit NV0023060 (governing discharges to the Las Vegas Wash), condition I.A.9, the collection and treatment facilities shall be constructed and operated in accordance with plans approved by the Administrator. BCA (acting on behalf of the

Administrator) is therefore authorized to approve the modifications to the existing chromium treatment system.

To summarize, BCA is duly authorized to review and approve the proposed changes to the existing chromium treatment system. BCA has reviewed the proposed changes and concurs with KM's plans to enhance the existing chromium treatment system through the metering of a ferrous sulfate solution. This solution will supplement the electrolytic generation of iron in the existing system and will allow KM to meet the discharge limitations of the NPDES permit referenced above.

Please contact me if there are any questions or comments.

Sincerely,

Todd J. Croft
Supervisor
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

TJC/tjc

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Brian Rakvica, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Alan Tinney, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlmann, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

04/06/04
Reeds file

ECI related meeting

Meeting Minutes

Project:	Kerr-McGee
Location:	NDEP Las Vegas Conference Room
Time and Date:	1:00 PM, Thursday, April 1, 2004
Meeting Number:	---
In Attendance:	NDEP-BCA – Las Vegas – Brian Rakvica, Todd Croft NDEP-BCA – Carson City –Jeff Johnson (by phone) Kerr-McGee (KM) Susan Crowley, Ed Krish, Tom Reed ENSR- David Gerry

CC: Jennifer Carr

1. Meeting was held in order to clarify expectations of the 2/11/04 NDEP letter to KM.
2. Reviewed the concept of a site-related chemicals list.
    a. Brian distributed the current version of the BMI site-related chemicals (SRC) list, the TIMET SRC list and the NDEP comments to the TIMET document. Brian also distributed his draft review of site-related chemicals at the KM site. Noted that this list is not likely to be comprehensive, is not formatted like a list of site-related chemicals and is a working copy.
    b. NDEP noted that the current format of the BMI list is acceptable, however, other formats would be acceptable as well.
    c. NDEP noted that it is important that everything is documented so that a casual reader can understand why certain chemicals were eliminated from consideration.
    d. NDEP noted the difference in terminology between site-related chemicals and chemical of potential concern.
3. KM noted that they have no plans of closing the site. The site will remain an active industrial site. NDEP's concern is that KM must characterize the extent of off-site impacts and remediate the off-site areas to residential standards. The plant site can be dealt with as an industrial scenario.
4. Discussed the conceptual site model (CSM).
    a. NDEP noted that the BMI CSM that was submitted was not approved and is still in development. It is believed that a majority of the topics were included in this report but there were deficiencies in format.
    b. KM noted that they do have some existing deep wells that could be sampled. These are the TR series wells.
5. Discussed background.
    a. Discussed the difference between background conditions and upgradient conditions.
    b. Noted that this may be an issue that can be worked out with the other companies, however, each company must evaluate the site-specific geology and the potential to obtain upgradient samples. If there are not

upgradient areas that have not been impacted, it may be necessary to go to another geologically similar area to get background samples.

6. Discussed Data Quality Objectives (DQOs)
    a. NDEP agreed that KM could develop DQOs prior to developing a CSM if desired. KM could also perform additional characterization prior to developing a CSM (if desired).
    b. NDEP noted that it may not be necessary to perform steps 6 and 7 of the DQO process for the plant site area. It may only be necessary to perform these steps for the off-site impacts. At this time it may only be necessary to perform steps 1-5.
7. Discussed major deliverables.
    a. SRC list
    b. CSM
    c. DQOs (CERCLA –style)
    d. Personnel memo and organizational chart
    e. Background analysis
    f. Other items as outlined in the NDEP letter.
    g. Still need to determine when KM will submit a schedule to NDEP to respond to the 2/11/04 letter. Brian followed up on this item via email after the meeting with Susan.. Susan to reply by 4/5/04.
8. Discussed other topics.
    a. In response to an NDEP question, KM noted that they had not sampled for platinum in groundwater. NDEP noted that there had been some sampling in the Western Ditch area recently and platinum had been found.
    b. KM requested e-copies of several documents. Brian to email.
    c. KM may desire to review NDEP's files in the future. Discussed procedures for copying of documents.

Todd Croft

From: Brian Rakvica
Sent: Tuesday, April 06, 2004 7:50 AM
To: Jeff Johnson; Todd Croft; R. G. C. E. G. C. H. CEM David L. Gerry (E-mail)
Cc: Jennifer Carr; Susan Crowley (E-mail); Ed Krish (E-mail); Tom Reed (E-mail)
Subject: meeting minutes

All,

Attached are the finalized meeting minutes from our 4/1/04 meeting.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

Brian Rakvica

From: Todd Croft
Sent: Wednesday, March 31, 2004 4:51 PM
To: Brian Rakvica
Subject: FW: Kerr McGee

BAR:

FYI.

BYE TJC

-----Original Message-----
From: Tamara Pelham
Sent: Monday, March 29, 2004 8:47 AM
To: Todd Croft
Subject: Kerr McGee

Todd:

Modification of the hexavalent chromium treatment system is compliant with the existing permits per:

Condition I.A.16 of NEV2001515 (permits the use of GW-11 as a zero-discharge holding pond), which states that groundwater remediation activities shall be addressed in accordance with NDEP-BCA, and

Condition I.A.9 of NV0023060 (authorizing discharge to the Wash), which requires collection and treatment facilities to be constructed and operated in accordance with plans approved by the Administrator. BCA, acting on behalf of the Administrator, therefore, governs construction and operation of the treatment facilities.

If you should feel it appropriate, either or both of these references may be cited in your conceived concurrence letter.

Also, attached, as promised, is the fact sheet and permit for NEV2001515. Signature is not included, but it is signed. If you need a signed copy, let me know and I'll fax the first page.

Thanks, Tamara

Bureau of Water Pollution Control
775.687.9434
tpelham@ndep.nv.gov


NEV2001515-6_factsheet.doc


KM-NEV2001515_permit.doc

Brian Rakvica

From: Todd Croft
Sent: Wednesday, March 31, 2004 5:34 PM
To: 'kbailey@kmg.com'; 'scrowley@kmg.com'
Cc: Brian Rakvica
Subject: 03/30/04 Letter Re: Modification to Chromium Treatment System

Keith & Susan:

I received the referenced letter today. The content looks fine.

Please proceed w/ your proposed modifications based upon the oral concurrence provided during our 03/24/04 tele-conference. NDEP-BCA will likely issue a written concurrence letter this week and may reference the applicable portions of the NPDES & Groundwater permits to document this modification and our concurrence.

THX BYE

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

c 5/ 5/ 04
/ [illegible]

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

2004 MAR 31 AM 9: 5[illegible]

DC [illegible]
LAS VEGAS

March 30, 2004

Mr. Todd Croft
Supervisor
Remediation and LUST Branch
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119

Dear Mr. Croft,

As we discussed by telephone last Wednesday, Kerr-McGee Chemical LLC (Kerr-McGee) is planning to continue start-up of the perchlorate biological treatment system by introducing water from the GW-11 pond in the next few weeks. The pond water contains small quantities of hexa-valent chromium, in excess of NPDES discharge limits, which will require treatment before the water can be fed to the bio-plant and subsequently discharged. We plan to remove the chromium from 15-30 gpm of pond water by upgrading the existing Groundwater Treatment Plant (GWTP). Since the GWTP, which is treating groundwater collected from the interceptor well line, is already operating at the capacity of the electrolytic cells which generate ferrous iron for chromium reduction, augmentation by another iron source is needed. We propose to augment the electrolytic system by metering in small quantities of ferrous sulfate ($FeSO_4$) solution. The chemical reactions for chromium reduction would remain the same as those currently employed and the existing precipitation, thickening and solids filtration systems would be unchanged.

The GWTP system was constructed under terms of a Consent Order, dated Sept. 9, 1986, between Kerr-McGee Chemical Corporation and the State of Nevada, Department of Conservation and Natural Resources, Division of Environmental Protection. Accordingly, Kerr-McGee is providing notice of our proposed change, though the net impact of the change will be negligible. Only the source of part of the ferrous iron used to reduce the hexa-valent chromium will be modified. In fact, augmenting the ferrous iron generating electrolytic cells with additions of ferrous sulfate solution may actually reduce the quantity of iron needed and the associated iron hydroxide sludge generated.

The existing electrolytic system is operating near capacity of the electrolytic portion of the process and in order to ensure consistent destruction of hexa-valent chromium, an excess of iron is currently needed to compensate for variability in daily cell operation. Augmenting electrolytic generation of ferrous iron by metering small quantities of ferrous sulfate solution into the reaction system may allow a reduction in the excess of

iron currently needed. Optimization of the most efficient iron usage can be achieved as a secondary benefit, along with the primary goal of pre-treating GW-11 pond water as feed to the bio-plant.

Kerr-McGee sees the proposed GWTP change as minor, since only the source of part of the iron would be changed. The overall chemistry, precipitation, thickening and sludge handling portions of the process will remain the same. As indicated in our conference call, Kerr-McGee is proceeding with ordering the necessary equipment and ferrous sulfate solution to make the GWTP modifications and we plan to continue ramping up operation of the bio-plant with GW-11 pond water. Our understanding is that you concur with that decision and that unless we receive notice from you, this letter will serve as sufficient basis for Kerr-McGee to implement the change.

We appreciate our open working relationship and anticipate continued success in removing perchlorate from the environment. If you have any questions, please contact me by telephone at (702) 651-2234.

Sincerely,

Susan Crowley
Staff Environmental Specialist

CERTIFIED

cc: L.K. Bailey
P.S. Corbett
F.R. Stater
R.L. Waters

Smc:Treatment of Pond Cr.doc

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

March 30, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Semi-Annual Performance Report
Chromium Mitigation Program
July – December 2003

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the above-referenced report. NDEP's comments to the report are included as Attachment A to this letter.

The NDEP has additional comments regarding the chromium mitigation system which were presented in NDEP's February 11, 2004 letter to KM. In general, these comments will not be repeated here.

By **May 7, 2004** KM should provide a response to the NDEP's concerns. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar
Encl: Attachment A

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlman, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

Attachment A

NDEP Comments on the *Semi-Annual Performance Report; Chromium Mitigation Program; July – December 2003*

1. Plant Site Chromium Capture
   a. The NDEP requests that KM complete a quantitative evaluation of the efficiency of the capture system on the plant site area at a concentration of 0.1 mg/L total chromium. Unrelated to the Chromium Consent Agreement, it is also requested that a quantitative evaluation of the efficiency of this capture system be completed for perchlorate at 1 mg/L. These evaluations should be similar in scope to the evaluation presented in the January 28, 2004 Quarterly Performance Report for the Perchlorate Recovery System submittal by KM for the Athens Road well field area.
   b. Figures 2 and 3 appear to indicate incomplete capture in the on-site capture system. This is especially noticeable in the eastern portion of the system, east of well I-U.
   c. Tables 1 and 3 indicate elevated levels of chromium in downgradient wells M-23, M-72, M-84, M-86 and M-88 (as high as 11.0 mg/L). Plate 1 generated in July 2003 also indicates elevated levels of chromium in a number of additional wells such as: M-44, M-48, M-87, M-94, M-95, M-96, M-100, M-101, M-102 and PC-54. The current remedial system has been in place for nearly 20 years and concentrations downgradient of the plant site are still over 100 times higher than the USEPA MCL. Please explain KM's long-term plans to control and remediate the chromium source areas upgradient of the plant site slurry wall and elevated concentrations downgradient of this slurry wall.
   d. The on-site chromium treatment system was originally designed for an operational flow of 100 gallons per minute (gpm). Flow rates to this system have typically been much less than 100 gpm. It appears that the system may be mass limited based on the information provided by Andco Environmental Processes. Please explain the limitations of this system and describe any plans that KM has to expand or replace this system in the future.
2. Off-site Chromium Capture
   a. Please include a description of the activities for the remediation of chromium at the Athens Road well field in future reports. It is the opinion of NDEP that this work should be included in the reporting as it relates to Appendix E (GW Interception Contingency Plan) of the September 9, 1986 Chromium Mitigation Consent Agreement.
   b. Elevated levels of chromium have been reported to the east of the on-site capture system in well CLD4-R by Titanium Metals Corporation (TIMET). The NDEP has requested that TIMET investigate the source of this elevated concentration of chromium and this investigation is on going. For your information, TIMET has indicated that only trivalent chromium is produced as a waste on their site.

3. Source Areas
   a. Please provide an update describing the current and future uses of Units 4 and 5 on the plant site. Please explain if KM anticipates reactivation of any of the chlorate production processes.
   b. Please summarize the historic and continuing source areas to the chromium groundwater plume.
   c. The NDEP requests that KM investigate the feasibility of source area removal. For example, old Ponds P-2 and P-3 have concentrations of chromium in soil (greater than 100 mg/Kg) in excess of USEPA Region IX Soil Screening Levels (SSLs DAF1). Some of these elevated concentrations were taken at over 40' below ground surface (bgs). It is expected that these areas are impacting site groundwater.

Todd Croft

From: Brian Rakvica
Sent: Friday, March 26, 2004 9:46 AM
To: Todd Croft
Subject: KM Cr Consent Order

Todd,

In my review of the CO I have found the following...

KM is proposing to add a source of hex chrome to the treatment system from the on-site pond (this scenario was never addressed in the CO as the CO intended for UIC to occur). The problem being that the CO and its appendices are very outdated and need revision or replacement.

In theory, there is a process that should have been undertaken when the UIC program was abandoned for hexavalent chromium (per Appendix I, Appendix J, paragraph 16 and paragraph 18 of the CO).

Also, the process that was undertaken at Athens Road Well Field should have been completed in accordance with Appendix H, paragraph 8, and paragraph 14 of the CO)

In accordance with the CO....if the existing system cannot effectively remove the contaminant they should follow the steps in Appendix H of the CO.
From the data I have seen on the existing treatment system (per Table 4 of the latest semi-annual Cr report) - - - the system is occasionally meeting the NPDES discharge limitations with the existing mass flow rate. However, they ARE meeting the limits set forth in the CO. So...whether or not Appendix H would apply is questionable at best.

Appendix H would require they to increase the amperage of the cells and if this doesn't work it would require them to add an additional treatment cell.

Since they have found that the addition of the ferrous solution works well it is probably is no one's best interest to require them to add an additional cell.

Lets discuss if you like.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: March 24, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. Remedial System Update.
   a. Currently, KM is treating 860 gpm which includes ~10 gpm from the on-site wells after treatment through the chromium treatment system. Due to the elevated concentrations of perchlorate, this 10 gpm equates to a ~20% increase in treatment plant capacity.
   b. KM is working out some fine tuning in the system as follows:
      i. Air bubble issues in their discharge line.
      ii. KM has been operating in an "overly protective mode" with respect to not having perchlorate in their discharge. They have been adding excess ethanol to ensure perchlorate destruction. This has led to a sulfide odor. They are backing down the amount of ethanol used starting today.
      iii. KM has received two flocculants. Another pump is expected tomorrow to help deploy this flocculent. The effluent is not yet clear and KM is working with US Filter to resolve this issue.
   c. It was noted that KM has not yet used the filter press as KM has not yet generated enough solids. Solids are currently accumulating in the thickener.
   d. The lime silo has been loaded and is ready for use when needed.
   e. Turbine pumps have been installed and are operational in Lift Station #1.
   f. Km is working on evaluating the GW-11 pond. KM desires to route pond water back through the chromium treatment system prior to routing to the FBR as a means to remove hexavalent chromium that has evapo-concentrated. In order to do this, KM needs to increase the generation of iron in the treatment system. KM proposes to inject ferrous sulfate (via totes and metering pumps) into the first portion of the chromium treatment system as a means to augment iron generation for chromium reduction. KM will send a brief letter to Todd Croft next week outlining this minor system modification.
2. Discussed NPDES permit issues.
   a. KM inquired if NDEP had received any appeals or additional comments to their NPDES permit.

3. Discussed Tours.
   a. 3/29/04 (AM)- Mr. James Peterson and Dr. Darrel Pepper representing Senator Feinstein will visit KM.
   b. 3/31/04 – Western States Water Council will tour the Pabco Road Erosion Control Structure site and will obtain a short briefing from Todd Croft (regarding the perchlorate remediation efforts) and SNWA (regarding LV Wash restoration activities).
4. Other Discussions
   a. US Filter has been renamed "Viola Water".
   b. Noted that USEPA (Larry Bowerman) had left a message for Susan stating that she could hold off until early April for submittal of mass removal numbers for inclusion in the next EPA-generated quarterly report.
5. Next meeting: telephone conference on 4/6/04 at 1:00 PM – call in number to be provided.

Todd Croft

From: Brian Rakvica

Sent: Thursday, March 25, 2004 2:24 PM

To: Brian Rakvica; Todd Croft; Jennifer Carr; Jeff Johnson; Jon Palm; Tamara Pelham; Alan Tinney; Leo Drozdoff

Subject: RE: KM Conf Call Mtg Notes

please disregard the last one.

Sorry.

Brian

-----Original Message-----
From: Brian Rakvica
Sent: Thursday, March 25, 2004 2:23 PM
To: Todd Croft; Jennifer Carr; Jeff Johnson; Jon Palm; Tamara Pelham; Alan Tinney; Leo Drozdoff
Subject: KM Conf Call Mtg Notes

FYI - -Please see attached from 3/24/04 meeting.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

Todd Croft

From: Todd Croft
Sent: Wednesday, March 24, 2004 3:05 PM
To: Tamara Pelham
Cc: Brian Rakvica
Subject: Kerr-McGee Perchlorate Remediation; 03/24/04 Tele-conf Notes

Tamara:

Following are notes from today's tele-conference w/ Kerr-McGee Re: perchlorate remediation:

1) Susan Crowley indicated that Larry Bowerman left a message ~one week ago suggesting Susan could hold off until early April for submittal of mass removal numbers for inclusion in the next EPA generated Quarterly Report.

2) Keith Bailey asked if NDEP had received any appeals or additional comments to their NPDES permit. I indicated I had not heard of any. Tamara, any news to report??

3) FBR Treatment System Status:

* Doing fairly well. Keith Bailey is pleased w/ how the FBR is performing. They still have a fair amount of fine tuning to do.

* Treating ~860 gpm; this includes ~10 gpm from the on-site wells after treatment through the Chromium Treatment System. Because this on-site groundwater has elevated concentrations of perchlorate, this 10 gpm equates to an ~ 20% increase in treatment plant capacity.

* They are working out some air bubble issues in their discharge line.

* Turbine pumps are installed and operational at Lift Station #1.

* The flocculent people were in and set them up w/ two flocculants. Another pump is due in tomorrow to help deploy flocculent. The effluent is not yet clean. Kerr-McGee/US Filters is working on this.

* They have not yet used the filter press as they have not yet generated enough solids. Solids are accumulating in the thickener.

* They loaded the lime silo this morning to be ready when it is needed.

* They have been operating in an "overly protective mode" w/ respect to not having perchlorate in their discharge. They have been adding excess ethanol to ensure perchlorate destruction. This has led to a sulfide odor. They are backing down the amount of ethanol used (today).

4) Kerr-McGee is still working on evaluating the GW-11 pond. They desire to route pond water back through the Chromium Treatment System prior to routing to the FBR as a means to remove Chromium 6 that has evapo-concentrated. In order to do this, they will need to increase the iron generation. They are proposing to inject ferrous sulfate (via totes & metering pumps) into the first portion of the Chromium treatment System as a means to augment iron generation for chromium reduction. They will send a brief letter to Todd Croft next week outlining this minor system modification.

5) We discussed upcoming site visits:

* 03/29/04 (Monday) morning Mr. James Peterson & DR. Darrel Pepper representing Senator Feinstein to visit Kerr-McGee.

* 03/31/04 Western States Water Council to tour the Pabco Road Erosion Control Structure Site and obtain a short briefing from Todd Croft (perchlorate remediation efforts) & SNWA (LV Wash restoration Activities).

6) US Filters has been renamed "Viola Water".

7) 04/06/04 @1:00 pm is our next tele-conference. Expect a call in number to be provided by Susan Crowley.

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

Todd Croft

From: Todd Croft
Sent: Wednesday, March 24, 2004 2:17 PM
To: Jim Najima; Tamara Pelham
Cc: Jennifer Carr; Brian Rakvica; Alan Tinney; Jon Palm
Subject: Perchlorate Remediation; Kerr-McGee; Change to Chromium Treatment System

Jim:

Kerr-McGee will be sending us a letter early next week documenting changes they will be making to the existing Chromium Treatment System. This system is covered under a 1986/1987 Consent Agreement. The changes Kerr-McGee proposed today are small; seemed reasonable to address via a letter that references the consent agreement; and are designed to facilitate hexavalent chromium removal from water stored in the GW-11 pond that will soon be directed to the new FBR Perchlorate Treatment System. Please let me know if you have any concerns in addressing these changes via a letter from Kerr-McGee to NDEP and a likely concurrence letter back to Kerr-McGee from NDEP. I plan on approving this proposed change unless I learn of a concern from you or others.

The current Chromium Treatment system is an electrolytic plant. Steel is electrolyzed to form iron. The iron is available for reduction of Chromium 6 to Chromium 3. A second stage of this treatment system then removes the solids via a thickener and filter press.

Currently, ~50-60 gpm of pumped groundwater travels through the Chromium Treatment System; the Chromium 6 is reduced to Chromium 3, and the water is discharged to the GW-11 pond. The electrolytic portion of this system apparently is maxed out w/ regard to generation of iron.

In order to continue to pump & treat groundwater (~50-60 gpm) and reprocess existing evapo-concentrated pond water (` 10-20 gpm) through this Chromium Treatment System, Kerr-McGee desires to augment the iron generation portion via the addition of metering pumps and totes of ferrous sulfate. The ferrous sulfate would be injected into the first portion of the existing Chromium Treatment System to provide adequate iron to facilitate Chromium 6 reduction. The treated water will then be routed to the new FBR system for destruction of nitrate, chlorate, & perchlorate after traveling through the second portion of the Chromium Treatment System where the solids are removed. This change will allow for optimization of the FBR system and will permit the GW-11 pond to be drawn down from its currently full state. Pond space is needed to accommodate potential future upset conditions where the FBR effluent/discharge should be redirected to the GW-11 pond rather than to the LV Wash.

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

03/23/04
Tcrob

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: March 11, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Quarterly Meeting

1. Attendance list attached.
2. Discussed new FBR system.
   a. Currently operating at 770 gpm (but only at 30% of design perchlorate load). Discharge is ND(<20).
   b. Analytical method development is still in progress.
   c. Reviewed history of FBR.
      i. Original source of inoculants backed out. KM ended up inoculating system with microbes from several sources.
      ii. Air permit was not executed until 3/1/04. To get the system working jugs of ethanol and later totes of acetic acid were used. The eventual switch back to ethanol did cause a slight slow down with the microbes until they acclimated.
   d. KM is still fine tuning the system. Currently, the DAF system is being adjusted. KM has been trying different flocculants.
   e. Noted that the BOD is still running at ND.
   f. The on-site IX system is currently off. KM anticipates that the IX systems will remain in place until (at least) the system has completed it's 30-day test.
   g. KM anticipates being up to a flow of 950 gpm some time next week. After this they will start adding pond water to increase the concentration of the influent.
   h. Noted that the new NPDES permit has been received with a flow rate of 1000 gpm and an effluent concentration of 18 ppb.
   i. Discussed GW-11 pond water. Concentrations are 2200 ppm perchlorate and 7,000 ppm chlorate. KM is reviewing treatment options as they need to make sure that no hexavalent chromium is in the influent to the FBR. Noted that GW-11 is quite full. Estimate 30 gpm evaporation rate on average and 60 gpm evaporation rate during the summer. This evaporation should give KM some cushion in the pond in case of upset conditions in the future.
   j. Discussed if KM had considered pretreatment options for the pond water with the IX systems. KM noted that they determined this would not be

worthwhile because it would be very expensive and would not serve to reduce the chlorate load.

3. Discussed Surface Water Data and Trends.
   a. Lake Mead is currently fully mixed and is at 6 ppb.
   b. Las Vegas Wash average concentrations
      i. Seep ~80 ppb
      ii. LM-6 ~47 ppb
      iii. LM-8 ~125 ppb
      iv. Northshore Road ~180 ppb
      v. SNWA suspects that there is a reservoir of perchlorate below the fault zone.
   c. A number of spreadsheets and graphs were reviewed which presented perchlorate concentrations at various points in the Las Vegas Wash, Lake Mead and in the Colorado River.
   d. KM noted that they feel a linear scale is more appropriate on the McGinley breakthrough curves. NDEP to review. KM also wanted to noted that the words "90% efficiency" do not portray the fact that the Athens Road Well Field may be more than 90% efficient, however, there are other sources of perchlorate. Other sources may include: wastewater treatment plants, the BMI ponds, the reservoir of wash gravels, AmPac, and the alluvial units at the fault zone. Noted that at some point the load may diverge from the McGinley graph due to these differences.
   e. SNWA noted that it can theorized that there is a ~50 ppb gain in the concentration in the wash between Bostick and the Demo weir. There is a ~30 ppb gain between the Demo weir and LM-8.
   f. Noted that MWD's model predicts 4 ppb in their intake by mid-2004 and 2 ppb by mid to late 2005 if the 90% curve holds true.
   g. Colorado River at the California aqueduct
      i. November 2003 – February 2004 = ND (4 ppb)
      ii. September and October 2003 < 4.5 ppb
      iii. Noted that the concentrations tend to increase from March through August.
      iv. Noted that there is approximately a 3 month delay between Willow Beach and the intake to California.
      v. Noted that the next EPA report will include the data through March 2004.

4. Status of Proposed Additional Monitoring Wells
   a. KM had proposed to drill two wells upgradient of the Athens Road Well Field (ARW) and a line of wells along Sunset Road to better estimate mass flux at the ARW. 4 wells have been drilled thus far.
   b. KM has installed a well 100' east of ART-7 and the perchlorate concentration was 6 ppm and the drawdown was approximately 5.5'. This well is called PC-122. Between the new well PC-122 and the existing well PC-10 it is believed that no additional wells are needed to the east of ART-7.

c. KM has rehabilitated wells ART-3, -4, -6 and these are ready to go back on line.
d. Sampling in the new wells is likely to be monthly or quarterly.

5. Discussed 4th Quarter 2003 Report
   a. NDEP to forward a copy to McGinley.
   b. Discussed drawdown figure.
   c. Reviewed new data collected to supplement figures in the report.
   d. Noted that the 25 ppm contour has shrunk away from the Seep Area.
6. Discussed Seep Area Well Shut-off Criteria
   a. Noted that the Seep has already been throttled back due to the flow rate in the new NPDES permit.
   b. The Seep concentration has been steady at 14 ppm for the past 6 months.
   c. KM does not feel that it is valuable to back off on other wells at this point.
7. Discussed Contingency Plans for the FBR system
   a. Noted that any 3 of the 4 reactors can handle the full system load.
   b. The IX system will be maintained on site until KM is confident that the FBR system can be maintained and operated consistently.
8. Discussed Tours.
   a. The tour scheduled for 4/1/04 has been revised to 3/31/04 and will not include a tour of the FBR.
   b. The tour tentatively scheduled for 4/27/04 – 4/30/04 has been confirmed for 4/28/04 and may include an FBR tour.
   c. After 4/30/04 a tour will be requested by SNWA and AZ CAP.
9. Other Discussions
   a. Discussed possibly having a media event after the system is up and running. KM would prefer that it is just noted in the EPA report.
   b. Noted that Dr. Pepper (formerly of UNLV) is now working for Senator Feinstein's office on the perchlorate issue. He is likely to tour the FBR shortly.
10. Next meeting: telephone conference on 3/23/04 at 1:00 PM.

Todd Croft

From: Brian Rakvica
Sent: Thursday, March 18, 2004 7:35 AM
To: Todd Croft; Jennifer Carr; Jeff Johnson; Jon Palm; Alan Tinney; Leo Drozdoff; Tamara Pelham
Subject: KM Quarterly Meeting notes

All,

Attached are the finalized notes from last week's meeting.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

CALCULATIONS AND DESIGN DATA

PREPARED BY

SUBJECT: KM / NDEP / EPA / SNWA
Perchlorate Update

DATE: March 11, 04

SHEET 1 OF 1

Name	Organization	Phone
Susan Crowley	Kerr-McGee	(702) 651-2234
Tamara Pelham	NDEP-BWPC	775.687.9434
J. F. Leising	SNWA	702-822-3373
Todd Croft	NDEP-LV	702-486-2871
Larry Bowerman	US EPA	415 972-3339
ED KRISH	KMG	405-270-3752
MITCH KAPLAN	EPA REGION 9	415-972-3359
BRIAN RAKVICA	NDEP-LV	702 486 2870
Rick Stater	KM	702-651-2233
Keith Bailey	Kerr McGee	(405) 270-3651
Brad Dowerdty	AIG	(908)479 6654

AGENDA
March 11, 2004
Perchlorate Project Status Meeting

1) New FBR Biological Treatment System Discussion (and site visit towards the end of the meeting):
- System start up status – Keith Bailey
- Air Quality permit status – Susan Crowley
- NPDES & Temporary discharge permit status/schedule/components – Tamara Pelham / Jon Palm / John Tinger
- Analytical Methods for Discharge Monitoring – Keith Bailey

2) Current Surface Water Data & Trends:
- Las Vegas Wash – Peggy Roefer / Joe Leising /Todd Croft
  * (Are the wash gravels clearing consistent w/ the McGinley & Assoc. Model?)
- Lake Mead – Peggy Roefer
- Colorado River – Todd Croft / Larry Bowerman
- Northshore Road Perchlorate Mass Data – Todd Croft / Larry Bowerman

3) Status of Proposed Additional Monitoring Wells in the Vicinity of Athens Road / Sunset Road:
- Construction Schedule & Status – Ed Krish / Susan Crowley
- Is There a Need for More Than One Monitoring Well East of ART-7 – Larry Bowerman / Todd Croft / Ed Krish

4) Ground Water Monitoring Data & Reporting Results– Ed Krish / Susan Crowley

5) 4th Quarter 2003 Performance Report – Perchlorate Remediation:
- Performance of the Various Extraction Systems – Ed Krish / Susan Crowley
- Athens Road Capture Efficiency & Draw Down – Ed Krish / Susan Crowley
- ARP & Down Gradient Monitoring Well data - Ed Krish / Susan Crowley

6) Seep Area Well Shut-off Criteria (Third discussion):
- Throttling back of Exterior Wells & Impacts to Las Vegas Wash Mass Loading– Keith Bailey / Larry Bowerman
- Future Considerations for the Seep Area Well Field – Keith Bailey / Todd Croft
- Can Wash IX Units be Operated to Supplement the FBR System – Larry Bowerman / Keith Bailey

7) Future Tours of the FBR Treatment System:
- ~~04/01/04~~ 03/31/04 R. Michael Turnipseed, P.E. (Director, DCNR) & Western States Water Council . OFF-SITE Tour only ... 15 minutes By NDEP AT Pasco well
- ~04/27~~28~~/30/04 US EPA Region 9 (~~Wayne Nastri~~ & Keith Takata) ... Possible (known more ~03/22)
- >04/30/04 Tom Harbour (AZ CAP)
- >04/30/04 SNWA

8) Other

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

2004 MAR -8 PM 12:50

March 5, 2004

DCNR/NDEP
LAS VEGAS

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, NV 89119-0837

Dear Mr. Rakvica:

Subject: NDEP Facility ID #H-000539

Kerr-McGee Chemical LLC (Kerr-McGee) is in receipt of your correspondence of February 11, 2004, requesting a schedule for addressing issues associated with the on-going Environmental Conditions Assessment. We request the schedule's submission date be extended to March 30, 2004.

Please call me if you have any questions regarding this request. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist

By Certified Mail

CERTIFIED MAIL

7000 1670 0002 1245 9060

Brian Rakvica

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Friday, March 05, 2004 3:28 PM
To: Brian Rakvica
Subject: Request to Extend the Schedule Submission Date

Brian,
The attached is being forwarded by mail - but I thought I'd pass this along electronically as well. It is our request to extend the date within which we need to submit a schedule to address the issues associated with your letter of February 11th. Please let me know if this is acceptable? Thanks very much for your consideration.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(702) 651-2310 fax

KERR-McGEE CHEMICAL LLC
POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

March 5, 2004

Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, NV 89119-0837

Dear Mr. Rakvica:

Subject: NDEP Facility ID #H-000539

Kerr-McGee Chemical LLC (Kerr-McGee) is in receipt of your correspondence of February 11, 2004, requesting a schedule for addressing issues associated with the on-going Environmental Conditions Assessment. We request the schedule's submission date be extended to March 30, 2004.

Please call me if you have any questions regarding this request. Thank you.

Sincerely,

Susan Crowley
Staff Environmental Specialist

By Certified Mail

03/04/04
Rec'd

Todd Croft

From: Kingsbury, Stacey [Stacey_Kingsbury@wpi.org]
Sent: Thursday, March 04, 2004 9:52 AM
To: A. Cusher; A. MacDonald; B. Call; B. Harre; B. Packer; Brian Rakvica; C. Baier-Anderson; C. Coyle; C. Trumpolt; D. Beal; D. Coons; D. Easley; D. Smith; D. Walker; E. Becvar; E. Nuttall; F. Zhou; G. Pringle; H. Amini; I. Osgerby; J. Balent; J. Liu; J. Ussery; K. Gates; K. Limesand; K. Mauricio; L. Chen; L. Harvey; L. Lippincott; L. Papelis; L. Siegel; L. Stokes; M. Crain; M. Harding; M. Kukuk; M. Leeper; M. Losi; M. Malinowski; M. Mobley; M. Siegel; P. Hadley; P. Hatzinger; R. Campbell; R. Knox; R. Payne; Sara Arav Piper; S. Flanagan; S. Lathrop; S. McKillip; Todd Croft; T. Henry; T. Lieberman; T.R. Hathaway; V. Hosangadi; V. Puranapanda; W. Guarini
Subject: FW: Status 3 New EPA Perchlorate Sample Methods

-----Original Message-----
From: Berrey.Charles@epamail.epa.gov
[mailto:Berrey.Charles@epamail.epa.gov]
Sent: Wednesday, March 03, 2004 11:47 AM

Status of EPA's development of three new analytical methods for the analysis for perchlorate. All should have preliminary lab work completed in April and then the methods go to a second laboratory for validation, get peer reviewed and then go for EPA management clearance before release which is why available dates are listed an anticipated.

1. EPA Method 314.1 (Improved version of current 314.0. Adds increased sensitivity, better tolerance of TDSs, and better selectivity through use of a confirmational column.)

Method 314.1 uses ion chromatography with a conductivity detector. This is the most common type of instrumentation available in environmental laboratories for the analysis of perchlorate. This method will be the cheapest and easiest method for laboratories currently using method 314.0 to use. It is also the least sensitive of the three new methods with a Minimum Reporting Level (MRL) of 0.5 ug/L. In addition to increased sensitivity over 314.0 (MRL 4.0 ug/L) it is also capable of measuring perchlorate in samples with higher Total Dissolved Solids (TDSs). Anticipated availability Aug. 2004.

2. EPA Method 330.0 (Adds increased sensitivity, better tolerance of TDSs, and better selectivity through use of a mass spectrometer over current 314.0.)

Method 330.0 uses an ion chromatograph, similar to the chromatographic instrumentation used in Methods 314.0 and 314.1, but uses a mass spectrometer (MS) for detection. The use of a mass spectrometer provides better sensitivity (MRL 0.2 ug/L) as well as more positive identification of perchlorate. However, the interface that is needed to permit an MS to be used with an IC can cause problems with samples with high TDS levels. EPA has developed procedures to minimize these problems. Method 330.0 is more expensive then Method 314.1, however, if confirmational column analysis is required in the 314.1 analysis, then the costs are similar. Anticipated availability Aug. 2004.

3. EPA Method 331.0 (Adds much more increased sensitivity, much better tolerance of TDSs, and much better selectivity through use of a mass spectrometer over current 314.0 or single MS in method 330.0.)

Method 331.0 uses a liquid chromatograph (LC) for analyte

separation followed by detection using tandem mass spectrometry (MS/MS). This method is considerably more sensitive then the other two methods with an MRL of approximately 0.01 ug/L. This method uses the same type of interface between the LC and the MS/MS detector and therefore, is subject to the same interferences as the LC/MS method. However, due to the greater separation power of the LC and the greater selectivity of the MS/MS detector, ion suppression is less of a problem. Therefore, this method can be used in higher TDS levels. In addition, the MS/MS is more selective then a single MS and therefore, the method is more selective. Anticipated availability July 2004.

Permit No. NV0023060

Nevada Division of Environmental Protection

AUTHORIZATION TO DISCHARGE

In compliance with the provisions of the Clean Water Act as amended, (33 U.S.C. 1251 et. seq; the "Act"), and Chapter 445A of the Nevada Revised Statutes,

Kerr-McGee Chemical, LLC
P.O. Box 55
Henderson, NV 89009

is authorized to discharge from a facility located at

8000 Lake Mead Drive
Henderson, Nevada
Latitude 36° 5" 15'
Longitude 114° 59" 30'

to receiving waters named

Las Vegas Wash from Telephone Line Road to the confluence of discharges from City of Las Vegas and Clark County wastewater treatment plants (NAC 445A.199)

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Part I, II and III hereof.

This permit shall become effective on August 7, 2000.

This major modification (flow rate change) is effective March 4, 2004.

This permit and the authorization to discharge shall expire at midnight, August 7, 2005.

Signed this 3rd day of March, 2004.

Tamara Pelham
Staff II Engineer
Bureau of Water Pollution Control
Nevada Division of Environmental Protection

March 3, 2004
Modified

PART I

I.A. EFFLUENT LIMITATIONS, MONITORING REQUIREMENTS AND CONDITIONS

I.A.1. During the period beginning on the effective date of this permit, and lasting until the permit expires, the permittee is authorized to discharge treated "seep" water, treated groundwater from the on-site chromium treatment system and upon approval from the Division, other sources of treated groundwater (e.g. Athens Road well field and Seep Area well field) from **Outfall 001.**

Effluent samples taken in compliance with the monitoring requirements specified below shall be taken after treatment and prior to confluence with the receiving waters. Effluent samples are designated as **EFF**. Influent samples shall be collected at the intake of the treatment, designated as **INF**. LW6.05, LW0.55, LW5.5 (previously LVW-2, LVW-5, and LM-6) are located at designated sampling locations in the Las Vegas Wash.

The discharge shall be limited and monitored by the Permittee as specified below:

TABLE I.1

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	30-Day Average	Daily Maximum	30 Day Average lb/day	Sample Location(s)	Measurement Frequency	Sample Type
Permitted Flow	1.45 MGD	1.75 MGD	NA	EFF	Continuous	Flow meter

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	30 Day Ave. mg/l	7 Day Ave. mg/l	30 Day Ave. lb/day	Sample Location(s)	Measurement Frequency	Sample Type
BOD_5 (inhibited)	25 mg/L	40 mg/L	254 lb/day	INF, EFF	Weekly	Discrete
Perchlorate-Ion Exchange	97%* removal	Monitor and Report	Monitor & Report	INF, EFF	Weekly	Daily discrete samples, composited weekly
	*or 3 mg/l whichever is greater					
Perchlorate-Fluidized Bed Biological Reactor	18[1] µg/L	Monitor and Report	-----	INF, EFF	Weekly	Daily discrete samples, composited weekly
pH	Between 6.5 and 9 standard units			EFF	Weekly	Discrete
Hexavalent Chromium	Monitor & Report	0.010 mg/l	Monitor & Report	INF, EFF	Weekly	Discrete
Total Chromium	Monitor & Report	0.1 mg/l	Monitor & Report	INF, EFF	Weekly	Discrete

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	30 Day Ave. mg/l	7 Day Ave. mg/l	30 Day Ave. lb/day	Sample Location(s)	Measurement Frequency	Sample Type
Total Suspended Solids	135 mg/L	Monitor & Report	Monitor & Report	EFF	Weekly	Discrete
Iron, Total	10 mg/L	Monitor & Report	Monitor & Report	EFF	Weekly	Discrete
Manganese	5 mg/L	NA	Monitor and Report	EFF	Weekly	Discrete
Total Phosphorus as P	Monitor & Report	Monitor & Report	20 lb/day*	INF, EFF	Weekly	Discrete
	*If the load of Total Phosphorous in the Las Vegas Wash exceeds 434 lb/day March 1 - October 31st, the Permittee shall negotiate an Individual Waste Load Allocation or another approved mechanism which ensures the WQS will be met.			LW0.55	Twice/month	Discrete
Ammonia as N	Monitor & Report	Monitor & Report	40 lb/day*	EFF	Weekly	Discrete
	*If the load of Total Ammonia in the Las Vegas Wash exceeds 970 lb/day April 1- September 30, the Permittee shall negotiate an Individual Waste Load Allocation or another approved mechanism which ensures the WQS will be met.			LW0.55	Twice/month	Discrete
Attachment A	The permittee shall demonstrate that there is no increase in the concentration or loading of the "other" constituents as a result of the discharge. The permittee shall only be responsible for utilizing results which are greater than the PQL, however, all data above the MDL shall be reported.			EFF	Quarterly	Discrete
Color	Monitor & Report			INF, EFF	Weekly	Discrete
Total Inorganic Nitrogen as N	Monitor & Report			INF, EFF	Weekly	Discrete
Un-Ionized Ammonia as N	Monitor & Report			INF, EFF	Weekly	Calculated
Total Dissolved Solids	Monitor & Report			INF, EFF	Weekly	Discrete
Sulfide	Monitor & Report			INF, EFF	Weekly	Discrete
Oil and Grease	Monitor & Report			INF, EFF	Weekly	Discrete

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	30 Day Ave. mg/l	7 Day Ave. mg/l	30 Day Ave. lb/day	Sample Location(s)	Measurement Frequency	Sample Type
Boron	Monitor & Report			EFF	Weekly	Discrete
Dissolved Oxygen	Monitor & Report			EFF	Weekly	Discrete
Nitrate as N	Monitor & Report			EFF	Weekly	Discrete
Kjeldahl Nitrogen as N	Monitor & Report			INF, EFF	Weekly	Discrete
Chloride	Monitor & Report			INF, EFF	Weekly	Discrete
Radium 226 + 228	Monitor & Report			EFF	Weekly	Discrete
Gross Alpha	Monitor & Report			EFF	Weekly	Discrete
Chlorate (ClO3)	Monitor & Report			INF, EFF	Weekly	Discrete
Acute WET	See permit condition I.A.15.			EFF	Monthly	Discrete

[1] Assigned effluent limitations are 'process capability driven', and assume attainability in the absence of definitive demonstration. Reference the schedule of compliance under Part I.A.16.c.

MGD: Million gallons per day
as N: As nitrogen
as P: As phosphorus
SU: Standard units
mg/L: Milligrams per liter
µg/L: Micrograms per liter
lb/day: Pounds per day
WET: Whole Effluent Toxicity test

I.A.1.a. Perchlorate is considered a toxic pollutant and the application of perchlorate effluent discharge limitations is therefore regulated under Nevada Administrative Code (NAC) 445A.144. Laboratory methods acceptable to illustrate compliance with the designated effluent limitations shall be either: (1) approved per 40 Code of Federal Regulations (CFR) Part 136, (2) an alternative, standard analytical test procedure approved by the Environmental Protection Agency, and/or (3) an equivalent method approved by the Nevada Division of Environmental Protection. EPA Method 314.0 shall be used to determine compliance with effluent limitations until otherwise specified by the Nevada Division of Environmental Protection.

I.A.1.b. The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities, collection systems or pump stations installed or used by the permittee in association with, or relative to, this permit or to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes optimum performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures.

I.A.2. **Mixing Zone** The permit allows the following mixing zone in the Las Vegas Wash: from Outfall 001 to the end of the mixing zone defined as the Las Vegas Wash control point identified as LW5.5 (previously LM-6) located approximately one mile downstream of where Telephone Line road crosses Las Vegas Wash. The

discharge is to be limited to maintain compliance with the downstream limits listed below. Samples are to be taken at the following locations: upstream samples are to be taken 150 feet upstream of the discharge in the Las Vegas Wash, downstream samples are to be taken at LW5.5, and the upgradient groundwater monitoring well (UPMW) at the Kerr McGee facility, at the frequencies defined in Table I.2.

Table I.2

PARAMETERS	DOWNSTREAM ACTION THRESHOLDS apply at LW5.5		MONITORING REQUIREMENTS		
	30 day average	Daily Max	Sample Locations	Measurement Frequency	Sample type*
Total Dissolved Solids	2400 mg/L	Monitor & Report	Upstream, LW6.05, LW5.5	Twice/month	Discrete
			UPMW	Quarterly	
Total Inorganic Nitrogen	17 mg/l	Monitor & Report	Upstream, LW6.05, LW5.5	Twice/month	Discrete
			UPMW	Quarterly	
Color	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
Radium 226 + 228	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
Gross Alpha	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
Iron	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
			UPMW	Quarterly	
Manganese	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
Manganese	Monitor & Report		UPMW	Quarterly	Discrete
Molybdenum	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
			UPMW	Quarterly	
Copper	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
			UPMW	Quarterly	
Chromium	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
			UPMW	Quarterly	
Boron	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
			UPMW	Quarterly	
Fluoride	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
			UPMW	Quarterly	
Chloride	Monitor & Report		Upstream, LW6.05, LW5.5	Twice/month	Discrete
			UPMW	Quarterly	
Attachment A	Monitor & Report		Upstream, LW6.05, LW5.5	Annually	Discrete

* The Permittee may composite LV Wash samples upon receiving Division approval of a sampling plan.

I.A.2.a. On a quarterly basis, the permittee shall submit an evaluation of the data collected pursuant to Table 1.2 at Telephone Line Road in the Las Vegas Wash (LW6.05, previously LW-2).

b. Within 30 days after the submission of the first quarterly analysis under subsection a. which shows that the 95th percentile of the data collected at Telephone Line Road for a pollutant in Table 1.2 exceeds an applicable water quality standard for that pollutant and the data show that the discharge authorized by this permit was a significant contributor to such exceedance, the permittee shall submit a plan to investigate such exceedance. The plan may include a monitoring strategy, an evaluation of the standard and/or the location of the control point, and such other measures as the permittee deems appropriate. The plan shall include a schedule for the investigation. In developing the plan, the permittee will seek to work cooperatively with other dischargers to the Las Vegas Wash. The investigation plan must be approved by the Division.

c. Upon approval of the investigation plan, the permittee shall implement the plan, working with other Las Vegas Wash dischargers to the extent reasonably possible. Upon completion of the investigation, the permittee shall submit a report to the Division with recommendations for future actions.

I.A.3. **Narrative Standards** *NAC 445A.121* Discharges shall not cause the following standards to be violated in any surface waters of the state. Waters must be free from:

a. substances that will settle to form sludge or bottom deposits in amounts sufficient to be unsightly, putrescent or odorous;

b. floating debri, oil, grease, scum, and other floating materials in amounts sufficient to be unsightly;

c. materials in amounts sufficient to produce taste or odor in the water or detectable off-flavor in the flesh of fish or in amounts sufficient to change the existing color, turbidity or other conditions in the receiving stream to such a degree as to create a public nuisance;

d. high temperature, biocides, organisms pathogenic to human beings, toxic, corrosive or other deleterious substances at levels or combinations sufficient to be toxic to human, animal, plant or aquatic life;

e. radioactive materials must not result in accumulations of radioactivity in plants or animals that result in a hazard to humans or harm to aquatic life;

f. untreated or uncontrolled wastes or effluents that are reasonably amenable to treatment or control;

g. substances or conditions which interfere with the beneficial use of the receiving waters.

h. The narrative standards are not considered violated when the natural conditions of the receiving water are outside the established limits, including periods of high or low flow. Where effluents are discharged to such waters, the discharges are not considered a contributor to substandard conditions provided maximum treatment in compliance with permit requirements is maintained.

I.A.4 Upon obtaining one year of data, the permittee may request a reduction in monitoring frequency and analytical parameters. The request shall include a demonstration that the reduction is justified due to the consistent nature of the discharge and the ability of the discharge to meet the permit limits.

I.A.5. There shall be no objectionable odors from the collection system, treatment facility or disposal area, or sludge treatment, use, storage or disposal area.

I.A.6. There shall be no discharge of substances, which are associated with the Permittee's operation, that would cause a violation of water quality standards of the State of Nevada.

I.A.7. There shall be no discharge from the collection, treatment and disposal facilities except as authorized by this permit.

I.A.8. The treatment and disposal facility shall be fenced and posted.

I.A.9. The collection, treatment and disposal facilities shall be constructed in conformance with plans approved by the Administrator. The plans must be approved by the Administrator prior to the start of construction. All changes to the approved plans must be approved by the Administrator.

I.A.10. The facility shall be operated in accordance with the Operations and Maintenance (O&M) Manual which must be approved by the Administrator.

I.A.11. There shall be no discharge of floating solids or visible foam in other than trace amounts.

I.A.12. Facilities that generate and dispose of sludge shall monitor the concentrations of arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, and pesticides and report in mg/dry Kg of sludge.

Dry Sludge Disposal rate in metric tons/yr.	Frequency
>0 - <290	Each year
≥290 -<1500	Once a quarter
≥1500 -<15000	Once every 2 months
≥15000	Once a month

I.A.13. **Annual Fee** The permittee shall remit an annual review and services fee in accordance with NAC 445A.232 starting **July 1, 2000** and every year thereafter until the permit is terminated.

I.A.14. The treatment facility shall be operated by a Nevada Certified Environmental Manager (CEM). The Discharge Monitoring Reports (DMRs) must be signed by the CEM. The first DMR submitted under this permit must include the written designation of the CEM (required by Part III A.2) as the authorized representative to sign the DMRs. If the CEM changes, a new designation letter must be submitted.

I.A.15. **Whole Effluent Toxicity Testing** Upon written notification by the Division, the permittee shall conduct monthly toxicity tests on 24-hour composite effluent samples as described below on the discharge from Outfall 001. (The Division will require this testing after the issues with constituents not associated with the operations of the permittee are resolved.)

a. **Acute Toxicity**
The effluent shall be deemed acutely toxic when there is a statistically significant difference at the 95th% confidence interval between the survival of the control (0% effluent) test organisms and the survival of the test organisms in the 100% effluent at the following limits:

i. The survival of test organisms in the undiluted effluent sample is less than 90 percent in six (6) out of eleven (11) consecutive samples; or
ii. The survival rate of test organisms in the undiluted effluent sample is less than 70 percent in any two of eleven consecutive samples.

b. **Test Methods**

i. The acute flow through or static replacement tests shall be conducted in general accordance with the procedures set out in the latest revision of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms," EPA/600/4-90/027. The permittee shall conduct an acute 48-hour flow through or static replacement toxicity test using any Daphnid approved by the Division and an acute 96-hour flow through or static replacement toxicity test using fathead minnows, Pimephales promelas. After each 24-hours of the test period the dilutions shall be replaced with freshly prepared dilutions of the original effluent sample.

1. If more than 10 percent control mortality occurs, the test shall be repeated until satisfactory control survival is achieved.
2. The source of the dilution water shall be reported with the test results. The tests shall be run using 4 replicate chambers, with a minimum of 5 organisms per test chamber

for the Daphnid and 2 organisms per test chamber for the P. Promelas.

ii. **Alternative Species and Protocols** The permittee may undertake an investigation of alternative site specific toxicity test species and alternative site specific toxicity protocols. If alternative, site-specific toxicity test species or protocols are developed as a result of work by the permittee, such species or protocols may be substituted for those specified in this permit on approval by NDEP and EPA under 40 CFR Part 136. Alternative protocols must be compared to EPA protocols to demonstrate appropriateness and reliability.

c. **Testing Schedule**

i. *Routine Schedule*: The Permittee shall conduct an acute toxicity test during the first week of the calendar month.

ii. *Accelerated schedule*: Whenever the effluent has been determined to be acutely toxic per I.A.15.a., the Permittee shall increase the frequency of acute toxicity testing to every other week. The accelerated testing shall also be conducted to determine an endpoint of either the LC50 or the No Observed Effects Concentration (NOEC) as defined in the above referenced method. When 4 (four) consecutive tests show greater than 70 percent survival of undiluted effluent, the Permittee may resume its routine test schedule.

d. **Follow-up Responses** Whenever the acute toxicity effluent limitation as defined under either paragraph I.A.15.a.i or ii has been exceeded, **and** one or more of the tests conducted under I.A.15.c.ii. fails, the permittee shall:

i. In general accordance with EPA manuals and EPA/600/6-91/003, EPA/600/3-88/035, or any subsequent revisions and/or methods approved by NDEP, initiate an identification investigation within 24 hours of the exceedance to identify the cause(s) of the toxicity,

1. After the initiation of the investigation phase pursuant to this condition, the permittee may suspend the accelerated testing required by I.A.15.c.ii. as long as the routine testing required by I.A.15.c.i. is resumed.

ii. In general accordance with EPA manuals and EPA/600/R-92/081, or any subsequent revisions and/or methods approved by NDEP, conduct an evaluation of findings where appropriate; and

iii. Notify EPA and NDEP within fifteen (15) days of becoming aware of the exceedance and provide the following:

1. times and dates when the limitation was exceeded;
2. the findings of the identification investigation or other investigation to identify the cause(s) of the toxicity and a plan for continuing the identification investigation if it was not conclusive;
3. the actions the permittee has taken or will take to mitigate the impact of the discharge, to correct the noncompliance and prevent the recurrence of toxicity; and
4. where corrective actions have not been completed, an expeditious schedule under which the corrective actions will be implemented.

e. In no event shall the discharger cause any impairment of the receiving water or of the beneficial uses, nor cause a violation of any other provision of this permit, Clean Water Act and State or local regulation or law by discharging constituents which are the responsibility of the Permittee.

f. **Toxicity Testing Reopener** This permit may be reopened and modified by the permitting authority to include effluent limits, additional testing and/or other appropriate actions to address demonstrated effluent toxicity. This permit may also be reopened and modified by the permitting authority to incorporate alternative permit conditions reflecting State Water Quality Standards revisions related to effluent toxicity.

g. In addition to the quarterly DMR submittals, the Permittee shall submit an **annual report** prepared by the laboratory which provides an evaluation of the survival rates of both the control and the 100% effluent. This report shall be submitted with the **fourth quarter report every year** as applicable.

I.A.16. **Schedule of Compliance** The permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications which the Administrator may make in approving the schedule of compliance.

a. **Upon issuance of the permit,** the Permittee shall achieve compliance with discharge limitations as described under Table I.1 and in observance of prescribed schedules of compliance;

b. **Within 7 days of operating at 1,000 gpm,** the Permittee shall submit written correspondence memorializing the date of system operation at the 1,000 gpm, design flow rate.

c. **Within 9 months of permit issuance,** the Permittee shall achieve compliance with the 18 µg/L perchlorate effluent limitation for the operation of the fluidized bed reactor biological treatment system.

d. **Total Dissolved Solids(TDS)** NAC 445A.143 Nothing in this permit condition shall alleviate the responsibility of other parties under consent agreement to the Bureau of Corrective Action for the groundwater issues at the BMI complex. Any work pertaining to TDS must recognize that the water quality standard for TDS (NAC 445A.199) must be maintained. **Prior to treating and discharging groundwater other than groundwater from the chromium treatment system,** the permittee shall submit the following information and obtain approval from the Division:

i. The permittee shall submit supporting documentation for the "Conceptual Study TDS Removal" Parsons Engineering, April 30, 1999. The supporting documentation should include equipment sizing for each piece of equipment in the cost analysis.

ii. The permittee shall submit an evaluation of alternative plans that could substantially reduce salt discharge within 270 days of the effective date of the permit. The evaluation shall include a detailed evaluation of re-use options, including the use of treated water in the plant process (and any associated cost savings), the use of treated water in a wetlands, dust control or other reuse sites determined by the permittee, precipitation of sulfate, calcium, manganese. The evaluation shall also include an analysis of the cost of discharging treated water to infiltration basins. The technical feasibility of each alternatives; total construction, operation and maintenance costs; and costs in dollars per ton of salt removed from the discharge shall be included. This work may be completed by Henderson Industrial Site Steering Committee (HISSC), Basic Remediation Company (BRC), and/or the permittee as appropriate pursuant to direction by NDEP's Bureau of Corrective Action.

iii. The permittee shall continue to participate in regional solutions to the TDS issues in the Las Vegas Wash. The permittee shall submit a quarterly report in accordance with I.B.1. which includes any progress made on reducing the TDS loading to the Wash either in directly reducing the loading to the wash from the discharge or regional projects the permittee has participated in which reduce the loading off-site in the same watershed.

e. The Permittee shall submit a plan within 90 days of the effective date of the permit to conduct a tracer study in the Las Vegas Wash to better define the end of the mixing zone. Upon Division approval of the tracer study plan, the permittee shall conduct the study. Should the results indicate that the end of the mixing zone should be moved, the permit shall be modified as a minor modification.

f. The permittee shall fully cooperate in good faith with any persons required by NDEP to treat the discharge subsequent to treatment by the permittee.

g. The Permittee shall submit an Operation and Maintenance manual for the bioreactor plant within 6 months of the plant coming on-line. The O/M manual shall also include a sampling plan for all

monitoring activities.

I.B. MONITORING AND REPORTING

I.B.1. Reporting

a. **Annual Reports**

i. The fourth quarter report shall contain a plot of date (x-axis) versus concentration (y-axis) for each analyzed constituent with results detected at a frequency of 25 % of the samples analyzed. The plot shall include data from the preceding five years, if available. Any data point from the current year that is greater than the limits in Part I.A.1 must be explained by a narrative.

b. **Quarterly Reporting** Monitoring results obtained pursuant to Section I.A of the permit for the previous three (3) month period shall be summarized for each month and reported on a Discharge Monitoring Report (DMR) form. Quarterly updates of system operation, corresponding to those submitted as a function of requirements from the Bureau of Corrective Actions, and updates regarding identified analytical methods capable of achieving reduced practical quantitation limits (PQLs) for site-specific samples shall be included. The DMR is to be received in this office no later than the 28th day of the month following the completed reporting period. The Permittee shall also submit the data in electronic format compatible with the Storet database. The first report is due on April 28, 2004. Laboratory results for analyses conducted by outside laboratories must accompany the DMR.

c. **Compliance Report** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

d. **Other information** Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Administrator, it shall promptly submit such facts or information.

e. **Planned changes** The Permittee shall give notice to the Administrator as soon as possible of any planned physical alterations of additions to the permitted facility. Notice is required only when the alteration or addition to a permitted facility;

i. may meet one of the criteria for determining whether a facility is a new source (40 CFR 122.29(b)); or
ii. could significantly change the nature or increase the quantity of pollutants discharged; or
iii. results in a significant change to the permittee's sludge management practice or disposal sites.

f. **Anticipated non-compliance** The Permittee shall give advance notice to the Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

g. An original signed copy of these, and all other reports required herein, shall be submitted to the State at the following address:

Division of Environmental Protection
Bureau of Water Pollution Control
ATTN: Compliance Coordinator
333 West Nye Lane
Carson City, Nevada 89706-0851

h. A signed copy of all Discharge Monitoring Reports and any other reports shall be submitted to the Regional Administrator at the following address:

U.S. Environmental Protection Agency, Region IX
NPDES/DMR WTR-7-1
75 Hawthorne Street
San Francisco, CA 94105

I.B.2 **Monitoring**

a. **Representative Samples** Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

b. **Test Procedures** Monitoring for the analysis of pollutants shall be conducted according to test procedures approved under 40 CFR 136 published pursuant to Section 304(h) of the Act, or SW-846, or in the case of sludge disposal, approved under 40 CFR 503, or other procedures as approved by the Administrator in the permit. Analysis shall be performed by a State of Nevada certified laboratory.

c. **Recording the Results** For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

i. the exact place, date, and time of sampling;
ii. the dates the analyses were performed;
iii. the person(s) who performed the analyses;
iv. the analytical techniques or methods used; and
v. the results of all required analyses.

d. **Additional Monitoring by Permittee** If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form. Such increased frequency shall also be indicated on the DMR.

e. **Records Retention** All records and information resulting from the monitoring activities, permit application, reporting required by this permit, including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation, shall be retained for a minimum of three (3) years, or longer if required by the Administrator. Records of monitoring information required by this permit related to the permittee's sewage sludge use and/or disposal activities shall be retained for a period of at least 5 years or longer as required by 40 CFR 503.

f. **Detection Limits** All laboratory analysis conducted in accordance with this discharge permit must meet the following criteria:

i. The most sensitive analytical method specified or approved in either 40 CFR 136 or SW-846 shall be used which is required or approved by the Nevada state laboratory certification program; and
ii. Each parameter shall have detection at or below the permit limits or the method detection limit as defined in the analytical method; or
iii. The Permittee is considered in compliance if the reported results are less than the established permit limit or laboratory reporting limit.

g. **Modification of Monitoring Frequency and Sample Type** After considering monitoring data, stream flow, discharge flow and receiving water conditions, the Administrator, may for just cause, modify the monitoring frequency and/or sample type by issuing an order to the permittee.

I.B.3. **Definitions**

a. The "30-day average discharge" means the total discharge during a month divided by the number of

samples in the period that the facility was discharging. Where less than daily sampling is required by this permit, the 30-day average discharge shall be determined by the summation of all the measured discharges divided by the number of samples during the period when the measurements were made.

b. The "daily maximum" is the highest measurement recorded during the monitoring period.

c. The "30-day average concentration", other than for fecal coliform bacteria, means the arithmetic mean of measurements made during a month. The "30-day average concentration" for fecal coliform bacteria means the geometric mean of measurements made during a month. The geometric mean is the "n^{th}" root of the product of "n" numbers. Geometric mean calculations and arithmetic mean calculations where there are non-detect results shall use one half the detection limit as the value for the non-detect results.

d. A "discrete" sample means any individual sample collected in less than 15 minutes.

e. For flow-rate measurements a "composite" sample means the arithmetic mean of no fewer than six individual measurements taken at equal time intervals for 24 hours, or for the duration of discharge, whichever is shorter.

For other than flow-rate a "composite" sample means a combination of no fewer than six individual flow-weighted samples obtained at equal time intervals for 24 hours, or for the duration of discharge, whichever is shorter. Flow-weighted sample means that the volume of each individual sample shall be proportional to the discharge flow rate at the time of sampling.

f. Acute toxicity is defined in the whole effluent testing procedures presented in this permit in I.A.15.

g. Biosolids are non-hazardous sewage sludge or domestic septage as these terms are defined in 40 CFR 503.9.

h. PQL is the Practical Quantitation Limit as defined in SW-846. MDL is the Method Detection Limit as defined in SW-846.

PART II

II.A. MANAGEMENT REQUIREMENTS

II.A.1. **Change in Discharge** All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, or treatment modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Any changes to the permitted treatment facility must comply with Nevada Administrative Code (NAC) 445A.283 to 445A.285. Pursuant to NAC 445A.263, the permit may be modified to specify and limit any pollutants not previously limited.

II.A.2. **Adverse Impact-Duty to Mitigate** The permittee shall take all reasonable steps to minimize releases to the environment resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. The Permittee shall carry out such measures, as reasonable, to prevent significant adverse impacts on human health or the environment.

II.A.3. **Noncompliance, Unauthorized Discharge, Bypassing and Upset**

a. Any diversion, bypass, spill, overflow or discharge of treated or untreated wastewater from wastewater treatment or conveyance facilities under the control of the permittee is prohibited except as authorized

by this permit. In the event the permittee has knowledge that a diversion, bypass, spill, overflow or discharge not authorized by this permit is probable, the permittee shall notify the Administrator immediately.

b. The permittee shall notify the Administrator within twenty-four (24) hours of any diversion, bypass, spill, upset, overflow or release of treated or untreated discharge other than that which is authorized by the permit. A written report shall be submitted to the Administrator within five (5) days of diversion, bypass, spill, overflow, upset or discharge, detailing the entire incident including:

i. time and date of discharge;
ii. exact location and estimated amount of discharge;
iii. flow path and any bodies of water which the discharge reached;
iv. the specific cause of the discharge; and
v. the preventive and/or corrective actions taken.

c. The following shall be included as information which must be reported within 24 hours:

i. any unanticipated bypass which exceeds any effluent limitation in the permit;
ii. any upset which exceeds any effluent limitation in the permit;
iii. violation of a limitation for any toxic pollutant or any pollutant identified as the method to control a toxic pollutant.

d. The permittee shall report all instances of noncompliance not reported under Part II.A.4.b. at the time monitoring reports are submitted. The reports shall contain the information listed in Part II.A.4.b.

e. A "**bypass**" means the intentional diversion of waste streams from any portion of a treatment facility.

i. **Bypass not exceeding limitations** The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs a and b of this section.
ii. **Anticipated bypass** If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of bypass.

f. **Prohibition of Bypass.** Bypass is prohibited, and the Administrator may take enforcement action against a Permittee for bypass, unless:

i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage.
ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment down time. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
iii. The Permittee submitted notices as required under paragraph e of this section.

g. The Administrator may approve an anticipated bypass, after considering its adverse effects, if the Administrator determines that it will meet the three conditions listed in paragraph f of this section.

h. An "**upset**" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

i. **Effect of an upset** An upset constitutes an affirmative defense to an action brought for non-compliance with such technology-based permit effluent limitations if the requirements of paragraph j

of this section are met.

j. **Conditions necessary for a demonstration of an upset** A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

i. An upset occurred and that the Permittee can identify the cause(s) of the upset;
ii. The permitted facility was at the time being properly operated; and
iii. The permittee submitted notice of the upset as required under paragraph c of this section; and
iv. The Permittee complied with any remedial measures required under II.A.3.

k. In selecting the appropriate enforcement option, the Administrator shall consider whether or not the noncompliance was the result of an upset. The burden of proof is on the permittee to establish that an upset occurred.

II.A.4. **Removed Substances** Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of waste waters shall be disposed of in a manner such as to prevent any pollution from such materials from entering any navigable waters.

II.A.5. **Safeguards to Electric Power Failure** In order to maintain compliance with the effluent limitations and prohibitions of this permit the permittee shall either:

a. provide at the time of discharge an alternative power source sufficient to operate the wastewater control facilities;

b. halt or reduce all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

II.B. RESPONSIBILITIES

II.B.1. **Right of Entry and Inspection** The permittee shall allow the Administrator and/or his authorized representatives, upon the presentation of credentials, to:

a. enter at reasonable times upon the Permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit;

b. have access to and copy any records required to be kept under the terms and conditions of this permit;

c. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations required in this permit;

d. perform any necessary sampling or monitoring to determine compliance with this permit at any location for any parameter.

II.B.2. **Transfer of Ownership or Control** In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the permittee shall notify the succeeding owner or controller of the existence of this permit, by letter, a copy of which shall be forwarded to the Administrator. The Administrator may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary. ALL transfer of permits shall be approved by the Administrator.

II.B.3. **Availability of Reports** Except for data determined to be confidential under NRS 445A.665, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of the Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in NRS 445A.710.

II.B.4. **Furnishing False Information and Tampering with Monitoring Devices** Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained by the provisions of NRS 445A.300 to 445A.730, inclusive, or by any permit, rule, regulation or order issued pursuant thereto, or who falsifies, tampers with or knowingly renders inaccurate any monitoring device or method required to be maintained under the provisions of NRS 445A.300 to 445A.730, inclusive, or by any permit, rule, regulation or order issued pursuant thereto, is guilty of a gross misdemeanor and shall be punished by a fine of not more than $10,000 or by imprisonment. This penalty is in addition to any other penalties, civil or criminal, provided pursuant to NRS 445A.300 to 445A.730, inclusive.

II.B.5. **Penalty for Violation of Permit Conditions** Nevada Revised Statutes NRS 445A.675 provides that any person who violates a permit condition is subject to administrative and judicial sanctions as outlined in NRS 445A.690 through 445A.705.

II.B.6. **Permit Modification, Suspension or Revocation**

a. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

i. violation of any terms or conditions of this permit; or
ii. obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
iv. a determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination; or
v. there are material and substantial alterations or additions to the permitted facility or activity; or.
vi. the Administrator has received new information; or
vii. the standards or regulations have changed; or
viii. the Administrator has received notification that the permit will be transferred.

b. **Minor Modifications** With the consent of the Permittee and without public notice, the Administrator may make minor modifications in a permit to:

i. Correct typographical errors;
ii. Clarify permit language;
iii. require more frequent monitoring or reporting;
iv. change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the permit and does not interfere with attainment of the final compliance date;
v. allow for change in ownership; change the construction schedule for a new discharger provided that all equipment is installed and operational prior to discharge;
vi. delete an outfall when the discharge from that outfall is terminated and does not result in discharge of pollutants from other outfalls except in accordance with permit limits.

II.B.7. **Toxic Pollutants** Notwithstanding Part II.B.6. above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

II.B.8. **Liability** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable Federal, State or local laws, regulations, or ordinances.

II.B.9. **Property Rights** The issuance of this permit does not convey any property rights, in either real or personal

property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

II.B.10. **Severability** The provisions of this permit are severable, and if any provision of this permit, or the application of any provisions of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

II.B.11. **Duty to Comply** The Permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination; revocation and re-issuance, or modification; or denial of a permit renewal application.

II.B.12. **Need to Halt or Reduce Activity Not a Defense** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this permit.

II.B.13. **Duty to Provide Information** The Permittee shall furnish to the Administrator, within a reasonable time, any relevant information which the Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this permit. The Permittee shall also furnish to the Administrator, upon request, copies of records required to be kept by this Permit.

PART III

III.A. OTHER REQUIREMENTS

III.A.1. **Reapplication** If the permittee desires to continue to discharge, he shall reapply not later than 180 days before this permit expires on the application forms then in use. POTW's with NPDES permits shall submit the sludge information listed at 40 CFR 501.15(a)(2) with the renewal application. The renewal application shall be accompanied by the fee required by NAC 445A.232.

III.A.2. **Signatures, certification required on application and reporting forms.**

a. All applications, reports, or information submitted to the Administrator shall be signed and certified by making the following certification.

"I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

b. All applications, reports or other information submitted to the Administrator shall be signed by one of the following:

i. A principal executive officer of the corporation (of at least the level of vice president) or his authorized representative who is responsible for the overall operation of the facility from which the discharge described in the application or reporting form originates; or
ii. A general partner of the partnership; or
iii. The proprietor of the sole proprietorship; or
iv. A principal executive officer, ranking elected official or other authorized employee of the municipal, state or other public facility.

c. **Changes to Authorization.** If an authorization under paragraph b. of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph b. of this section must be

submitted to the Administrator prior to or together with any reports, information, or applications to be signed by an authorized representative.

III.A.3. **Holding Pond Conditions** If any wastewater from the permittee's facility is placed in ponds, such ponds shall be located and constructed so as to:

a. contain with no discharge the once-in-the twenty-five year 24 hour storm at said location;

b. withstand with no discharge the once-in-one-hundred year flood of said location; and

c. prevent escape of wastewater by leakage other than as authorized by this permit.

III.A.4. The permittee shall notify the Administrator as soon as they know or have reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

i. One hundred micrograms per liter (100 μg/l);
ii. Two hundred micrograms per liter (200 μg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 μg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
iii. Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
iv. The level established by the Administrator in accordance with 40 CFR 122.44(f).

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

i. Five hundred micrograms per liter (500 μg/l);
ii. One milligram per liter (1 mg/l) for antimony;
iii. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7);
iv. The level established by the Administrator in accordance with 40 CFR 122.44(f).

03/03/04
Read

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET
(Pursuant to NAC 445A.236)
March 2004

PERMITTEE NAME: Kerr-McGee Chemical, LLC

MAILING ADDRESS: Post Office Box 55
Henderson, Nevada 89009

PERMIT NUMBER: NV0023060 – Major Modification

DISCHARGE LOCATION: Kerr-McGee Chemical LLC, Henderson Facility
8000 West Lake Mead Drive
Henderson, Clark County, Nevada 89015

Latitude: 36° 02' 35.4" North
Longitude: -114° 59' 58.7" West

Township 22 South, Range 62 East, Section 12 MDB&M

FLOW: Outfall 001: Treated Groundwater Discharge to the Las Vegas Wash upstream of Telephone Line Road

Latitude: 36° 5' 15" North
Longitude: -114° 59' 30" West

Flow Rate: 1.45 Million Gallons per Day as a 30-day average
1.75 Million Gallons per Day as a daily maximum

GENERAL:
Kerr-McGee Chemical, LLC (Kerr-McGee) currently holds National Pollutant Discharge Elimination System (NPDES) Permit NV0023060 to discharge water treated through either an ion-exchange system or a biological treatment system to remove perchlorate from extracted groundwater. Since the permit was issued on August 7, 2000, groundwater has been treated using two ion exchange systems while a fluidized-bed reactor (FBR) biological treatment system was under design and construction.

The permit limits the discharge rate, and consequently the rate that either treatment system may be operated, to 1.22 million gallons per day (MGD) as a 30-day average and 1.4 MGD as a 7-day average (Outfall 001). However, design parameters for the FBR system exhaust opportunities to improve environmental return on accelerated remediation of groundwater containing perchlorate. As a consequence, the FBR system has a projected design flow rate of 1,000 gallons per minute (gpm), which has been approved by the Nevada Division of Environmental Protection Bureau of Water Pollution Control (Division), and subsequent operations may demonstrate sufficient treatment capability to support flow rates in excess of 1,000 gpm.

Kerr-McGee has applied for a major modification to NPDES Permit NV0023060 to increase the permitted flow rate from 1.22 and 1.4 MGD as 30-day and 7-day average flow rates, respectively to 1.45 and 1.75 MGD as 30-day average and daily maximum flow rates, respectively. The 7-day average flow rate is proposed for removal in favor of a daily maximum limitation. In order to expedite the subject remediation and facilitate maximum environmental return, it is the intent of the Division to limit this discharge as a function of treatment capability and conditional mass loading to the Las Vegas Wash rather than by flow rate. Therefore, the permitted discharge flow rates are proposed to be increased as requested, subject to Division approval of system design and adequate demonstration of treatment efficiency.

Effluent discharge limitations in the existing permit contemplated the installation and operation of a biological treatment system, and were instituted into the current permit after public comment and due process. However, the design, application, and operation of the FBR treatment system is considered an innovative application of currently available technology that has yet to be demonstrated under the matrix conditions inherent to this particular groundwater process flow. While the FBR technology is a proven treatment mechanism for perchlorate and much lower effluent discharge concentrations are anticipated, the Kerr-McGee project introduces groundwater with higher perchlorate concentrations (approximately 300 milligrams per liter [mg/L]), that also contains considerably elevated nitrate, chlorate, and total dissolved solids concentrations (TDS, up to approximately 12,000 mg/L), compared to other FBR pilot and full scale projects.

It is generally acknowledged that analytical detection compels innovative treatment technology. However, the fact that approved laboratory methods for low level analysis of perchlorate in the presence of elevated TDS have not been definitively identified illustrates how undeveloped available technology is, with or without difficult matrix conditions, and not only in the laboratory, but more importantly for perchlorate treatment in the field. In principle and in practice, the construction and installation of this FBR system is considered unprecedented, and until system operation can be equilibrated and optimized during both warm and cold seasons, ultimate treatment performance is speculative.

Therefore, the perchlorate effluent limitation is established at 18 micrograms per liter (µg/L) with a nine (9)-month schedule of compliance under the proposed permit modification. The proposed effluent limitation is considered to be 'process capability driven,' and assumes that the system and technology will demonstrate attainability at a maintainable level of performance.

It is the intent and purpose of the Division to limit this discharge as a function of discharge concentration as opposed to flow rate for current and prospective operating scenarios. Maximum operation flow is in the best interest of the public and the environment, and upon the institution of effluent limits demonstrated to be achievable at 1,000 gpm, if the system is capable of treating higher flow rates while meeting effluent limitations, then increased flow rates may be reconsidered. This major modification proposes limited changes, including flow and the revision of the perchlorate effluent limitation for biological treatment, and these select limitations are the only aspects of this permit subject to review and public comment[1].

DISCHARGE CHARACTERISTICS:

Perchlorate and Cr^{6+} are the compounds subject to remedial action in this project. Ancillary compounds that may be found in process water are considered credited toward effluent limitations because their contribution to discharge characteristics is "solely as a result of their presence in intake water"[2] and these constituents, or some fraction thereof, would likely otherwise drain to the wash under inherent hydrologic dynamics. Regulation of ancillary compounds, with either discrete limits or as monitor and report requirements, remain unchanged in permit conditions.

Listed effluent discharge characteristics limit: 5-day biochemical oxygen demand, perchlorate, pH, Cr^{6+}, total chromium, total suspended solids, total iron, manganese, total phosphorus, and ammonia. Characteristics such as color, total inorganic nitrogen, unionized ammonia, TDS, sulfide, oil and grease, boron, dissolved oxygen, nitrate, kjeldahl nitrogen, chloride, radium isotopes, gross alpha, and chlorate are required to be monitored and reported. A demonstration that ancillary compound concentrations present in the intake are not increased as a function of treatment is required quarterly. Since the permit was issued in August 2000, discharge characteristics have generally complied with required limitations.

The design of the FBR biological treatment system uses a two-phase series of reactors that contain sand and granular activated carbon as biological attachment media. Two sets of sand FBRs operate as primary treatment reactors while two sets of carbon FBRs provide secondary polish. Post polish process flow is aerated, clarified, and disinfected prior to discharge into the Las Vegas Wash west (upstream) of Telephone Line and Pabco Roads.

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[1] NAC 445A.263, 40 CFR Part 122.62.

[2] 40 Code of Federal Regulations (CFR) Part 122.45(g) and 40 CFR 122.21(h)(4)(iv)

Influent water is also treated with ferrous sulfate to reduce, precipitate, and remove hexavalent chromium (Cr^{6+}) before introduction into the FBR system.

RECEIVING WATER CHARACTERISTICS:

The receiving water for Outfall 001 is the Upper Las Vegas Wash defined as the wash from Telephone Line Road upstream to the confluence of discharges from City of Las Vegas and Clark County wastewater treatment plants. Water quality standards for the toxic constituents applicable to the Las Vegas Wash are contained in Nevada Administrative Codes (NAC) 445A.144 and 445A.199. Existing effluent limitations consider and protect these water quality criteria, and other than the change to the perchlorate effluent limitation, are not the subject of this modification.

PROPOSED LIMITATIONS:

The flow limitation proposed for modification is distinguished from the remaining effluent limitations to correct column headings to convey meaningful relevance and for easy reference. The only other modification reflects changes to the perchlorate effluent limitation. These are the only conditions considered or affected by this permit modification, and are the only conditions subject to public comment[3].

Effluent samples taken in compliance with the monitoring requirements specified below shall be taken after treatment and prior to confluence with the receiving waters. Effluent samples are designated as **EFF**. Influent samples shall be collected at the intake of the treatment, designated as **INF**. LW6.05, LW0.55, LW5.5 (previously LVW-2, LVW-5, and LM-6) are located at designated sampling locations in the Las Vegas Wash.

The discharge shall be limited and monitored by the Permittee as specified below:

TABLE I.1

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	30-Day Average	Daily Maximum	30 Day Average lb/day	Sample Location(s)	Measurement Frequency	Sample Type
Permitted Flow	**1.45 MGD**	**1.75 MGD**	NA	EFF	Continuous	Flow meter

TABLE I.1 (CONTINUED)

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	30 Day Ave. mg/l	7 Day Ave. mg/l	30 Day Ave. lb/day	Sample Location(s)	Measurement Frequency	Sample Type
BOD_5 (inhibited)	25 mg/L	40 mg/L	254 lb/day	INF, EFF	Weekly	Discrete
Perchlorate-Ion Exchange	97%* removal	Monitor and Report	Monitor & Report	INF, EFF	Weekly	Daily discrete samples, composited weekly
	*or 3 mg/l whichever is greater					
Perchlorate–Fluidized Bed Biological Reactor	18[1] µg/L	Monitor and Report	-----	INF, EFF	Weekly	Daily discrete samples, composited weekly
pH	between 6.5 and 9 standard units			EFF	Weekly	Discrete

[3] NAC 445A.263, 40 CFR Part 122.62.

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	30 Day Ave. mg/l	7 Day Ave. mg/l	30 Day Ave. lb/day	Sample Location(s)	Measurement Frequency	Sample Type
Hexavalent Chromium	Monitor & Report	0.010 mg/l	Monitor & Report	INF, EFF	Weekly	Discrete
Total Chromium	Monitor & Report	0.1 mg/l	Monitor & Report	INF, EFF	Weekly	Discrete
Total Suspended Solids	135 mg/L	Monitor & Report	Monitor & Report	EFF	Weekly	Discrete
Iron, Total	10 mg/L	Monitor & Report	Monitor & Report	EFF	Weekly	Discrete
Manganese	5 mg/L	NA	Monitor and Report	EFF	Weekly	Discrete
Total Phosphorus as P	Monitor & Report	Monitor & Report	20 lb/day*	INF, EFF	Weekly	Discrete
	*If the load of Total Phosphorous in the Las Vegas Wash exceeds 434 lb/day March 1 - October 31st, the Permittee shall negotiate an Individual Waste Load Allocation or another approved mechanism which ensures the WQS will be met.			LW0.55	Twice/month	Discrete
Ammonia as N	Monitor & Report	Monitor & Report	40 lb/day*	EFF	Weekly	Discrete
	*If the load of Total Ammonia in the Las Vegas Wash exceeds 970 lb/day April 1- September 30, the Permittee shall negotiate an Individual Waste Load Allocation or another approved mechanism which ensures the WQS will be met.			LW0.55	Twice/month	Discrete
Attachment A	The permittee shall demonstrate that there is no increase in the concentration or loading of the "other" constituents as a result of the discharge. The permittee shall only be responsible for utilizing results which are greater than the PQL, however, all data above the MDL shall be reported.			EFF	Quarterly	Discrete
Color	Monitor & Report			INF, EFF	Weekly	Discrete
Total Inorganic Nitrogen as N	Monitor & Report			INF, EFF	Weekly	Discrete
Un-Ionized Ammonia as N	Monitor & Report			INF, EFF	Weekly	Calculated
Total Dissolved Solids	Monitor & Report			INF, EFF	Weekly	Discrete
Sulfide	Monitor & Report			INF, EFF	Weekly	Discrete
Oil and Grease	Monitor & Report			INF, EFF	Weekly	Discrete
Boron	Monitor & Report			EFF	Weekly	Discrete

PARAMETERS	EFFLUENT DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	30 Day Ave. mg/l	7 Day Ave. mg/l	30 Day Ave. lb/day	Sample Location(s)	Measurement Frequency	Sample Type
Dissolved Oxygen	Monitor & Report			EFF	Weekly	Discrete
Nitrate as N	Monitor & Report			EFF	Weekly	Discrete
Kjeldahl Nitrogen as N	Monitor & Report			INF, EFF	Weekly	Discrete
Chloride	Monitor & Report			INF, EFF	Weekly	Discrete
Radium 226 + 228	Monitor & Report			EFF	Weekly	Discrete
Gross Alpha	Monitor & Report			EFF	Weekly	Discrete
Chlorate (ClO3)	Monitor & Report			INF, EFF	Weekly	Discrete
Acute WET	See permit condition I.A.15.			EFF	Monthly	Discrete

[1] Assigned effluent limitations are 'process capability driven', and assume attainability in the absence of definitive demonstration. Reference the schedule of compliance under Part I.A.16.c.

MGD: Million gallons per day
as N: As nitrogen
as P: As phosphorus
SU: Standard units
mg/L: Milligrams per liter
µg/L: Micrograms per liter
lb/day: Pounds per day

Conditions:

1. Perchlorate is considered a toxic pollutant and the application of perchlorate effluent discharge limitations is therefore regulated under Nevada Administrative Code (NAC) 445A.144. Laboratory methods acceptable to illustrate compliance with the designated effluent limitations shall be either: (1) approved per 40 Code of Federal Regulations (CFR) Part 136, (2) an equivalent method approved by the Nevada Division of Environmental Protection. EPA Method 314.0 shall be used to determine compliance with effluent limitations until otherwise specified by the Nevada Division of Environmental Protection.

2. The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities, collection systems or pump stations installed or used by the permittee in association with, or relative to, this permit or to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes optimum performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures.

Rationale:

Flow:
This modification changes the flow rate so that the operation of the remedial treatment system is primarily limited by the characteristic profile of the discharge and appropriate protections to the Wash instead of flow. The revision of this parameter limitation simply authorizes proactive operation of the FBR system to yield maximum remedial effect and optimal return on mechanical investment. The 1.45 MGD permitted flow rate as a 30-day average represents the daily volume of 1000 gpm rounded up, and 1.75 MGD as the daily maximum represents an additional 20% margin for operating fluctuation. Perchlorate treatment efficiency and authorized mass flux limitations to the wash remain unchanged and must be observed during start-up and the transition full scale operation until more aggressive effluent limitations can be derived.

Perchlorate:
The effluent discharge limitation equates to a maximum perchlorate mass discharge of 0.22 pound per day 30-day average and 0.26 pound per day as a daily maximum. The effluent limitation is based on Best Professional Judgment in the absence of promulgated regulatory water quality criteria or standards for perchlorate.

Other Effluent Limitations:
Other effluent discharge limitations are not proposed for modification at this time, with the understanding that effluent limitations for perchlorate will be reconsidered and appropriately revised based on subsequent operations data.

SCHEDULE OF COMPLIANCE:
The Permittee shall implement and comply with the provisions of the permit upon issuance, and the following schedule of compliance, after approval by the Administrator, including in said implementation and compliance, any additions or modifications the Administrator may make in approving the schedule of compliance.

- **Upon issuance of the permit,** the Permittee shall achieve compliance with discharge limitations as described under Table I.1 and in observance of prescribed schedules of compliance;

- **Within 7 days of operating at 1,000 gpm,** the Permittee shall submit written correspondence memorializing the date of system operation at the 1,000 gpm, design flow rate; and

- **Within 9 months of permit issuance,** the Permittee shall achieve compliance with the 18 µg/L perchlorate effluent limitation for the operation of the fluidized bed reactor biological treatment system.

PROPOSED DETERMINATION:
The Division has made the determination to modify the permit as proposed, under the provisions prescribed, for a continued term due to expire on August 7, 2005. In accordance with Nevada Administrative Code 445A.232, this discharge is classified as a *Discharge from Remediation, Dewatering, other than a discharge to ground water from the dewatering of a mine, or from a Power Plant, A Manufacturing or Food Processing Facility or Any Other Commercial or Industrial Facility – 1,000,000 gallons or more but less than 2,000,000 gallons of process water daily.*

PROCEDURES FOR PUBLIC COMMENT:
Notice of the Division's intent to issue a permit authorizing the facility to discharge to ground water of the State of Nevada, subject to the conditions contained within the permit, is being sent to the **Las Vegas Review Journal** for publication. Notice is also mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the date of the public notice, and must be postmarked, faxed, or e-mailed by 5:00 p.m. on **February 23, 2004**. The comment period can be extended at the discretion of the Administrator. A public hearing on the proposed determination can be requested by the Applicant, any affected state, any affected interstate agency, the Regional Administrator, or any interested agency, person, or group of persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reason(s) why a hearing is warranted.

Any public hearing held by the Administrator will be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings will be conducted in accordance with NAC 445A.238. The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Prepared by: Tamara J. Pelham
March 3, 2004
P:\BWPC\BWPC Permits\NV and NEV\KERMCGEE2\2003 Modification\Final KMG fs mod

03/03/04 Tenk

ALLEN BIAGGI. Administrator

(775) 687-4670
TDD 687-4678

Administration
Facsimile 687-5856

Water Pollution Control
Facsimile 687-4684

Mining Regulations & Reclamation
Facsimile 684-5259

State of Nevada
KENNY C. GUINN
Governor

R. Michael Turnnspeed, Director

Waste Management
Corrective Actions
Federal Facilities

Air Quality
Water Quality Planning

Facsimile 687-6396

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138
Carson City, Nevada 89706

March 3, 2004

NOTICE OF DECISION

PERMIT NUMBER NV0023060

KERR-MCGEE CHEMICAL, LLC

Kerr-McGee Chemical, LLC applied for a major modification to increase the discharge flow rate authorized by National Pollutant Discharge Elimination System Permit NV0023060. The determination of the Administrator of the Nevada Division of Environmental Protection, as presented in the draft fact sheet and incorporated into the modified permit, is to authorize the proposed increase in flow rate, subject to a reduced perchlorate effluent discharge limitation in accordance with the incorporated schedule of compliance.

The modified permit authorizes the discharge of 1.45 million gallons of treated groundwater daily as a 30-day average and 1.7 million gallons per day as a daily maximum. The perchlorate effluent discharge limitation for the operation and discharge from the fluidized bed biological reactor is 18 micrograms per liter (µg/L) given a 9-month schedule of compliance.

The modified permit becomes effective March 4, 2004. The final determination may be appealed to the State Environmental Commission pursuant to Nevada Revised Statutes 445A.605 and NAC 445A.407. The appeal must be requested within ten (10) days of the date of this notice of decision and in accordance with the administrative rules of the Commission.

RESPONSE TO COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD – JANUARY 22, 2004 THROUGH FEBRUARY 23, 2004

Letter from the Environmental Protection Agency, Douglas E. Eberhardt, Chief, CWA Standards and Permits Office, February 4, 2004.

Comment: *We recommend that the permit modification be revised to establish an effluent limitation of 18 ppb or lower.*

Response: An effluent limitation of 18 µg/L is established in the permit.

Comment: *We recommend....that the modification include a reasonable schedule of compliance to allow for system start-up and acclimation.*

Response: A schedule of compliance has been incorporated into the permit. The system start-up and acclimation period is 9 months.

Letter from Metropolitan Water District of Southern California, Ronald R. Gastelum and Ed Smith, February 23, 2004.

Comment: *Re-evaluate the perchlorate target effluent limit for the FBR on a quarterly basis and revised the permit limit accordingly.*

Response: The interim perchlorate effluent limitation has been eliminated, and therefore, quarterly re-evaluation is no longer relevant. The final perchlorate effluent limitation is established at 18 µg/L.

Comment: *Once adopted, consider California's drinking water standard for perchlorate, Clean Water Act requirements to protect downstream beneficial uses and maintain high quality waters, the total perchlorate load from the Kerr-McGee site and the impact of the discharge on water quality when Lake Mead levels are below normal when determining an appropriate final effluent limit. The final perchlorate limit should be no higher than 18 µg/L and possibly lower, depending on the factors just cited. The public should have an opportunity to provide comments on the final limit.*

Response: The factors cited have been considered. A final perchlorate effluent limitation of 18 µg/L has been instituted into the permit.

Comment: *NDEP should not have unilateral discretion to increase the effluent limit for perchlorate. Any proposal to increase the limit should be subject to public review*

Response: The final perchlorate effluent limitation has been instituted at 18 µg/L. Modifications of this effluent limitation will be subject to public review and comment.

Comment: *Review the discharge limits for total and hexavalent chromium and revise as needed. The review should consider California's drinking water standard for total chromium, the California drinking water standard for hexavalent chromium once one is adopted and the requirement to maintain high quality waters.*

Response: This permit modification does not open or revise the effluent discharge limitations for total or hexavalent chromium. Consequently, these parameters are not currently subject to public comment; however, these effluent discharge limitations will be subject to review and public comment during future renewals.

Letter from ad hoc group of affiliates, February 23, 2004.

Comment: *We oppose the proposed effluent limitations because interim discharge of perchlorate at 80 ppb to Las Vegas Wash…is in excess of: (1) the State of Nevada action level for drinking water; (2) U.S. EPA's reference dose equivalent of 4 to 18 ppb; and (3) proposed NPDES effluent in other states….Additionally, the proposed permit terms would not ensure that discharges do not cause or contribute to violations of numeric and narrative water quality standards, in violation of the Clean Water Act. Furthermore, the proposed permit is inconsistent with 40 CFR 122.44.*

Response: An effluent limitation of 18 µg/L is established in the modified permit. Numeric water quality standards for perchlorate have not been promulgated.

NDEP Permit Revisions

In response to comments received, a perchlorate effluent limitation from the operation and discharge of the fluidized bed biological reactor system is established at 18 µg/L with a 9 month schedule of compliance.

Todd Croft

From: Bowerman.Larry@epamail.epa.gov
Sent: Wednesday, March 03, 2004 10:59 AM
To: Jones.DavidB@epamail.epa.gov; Kaplan.Mitch@epamail.epa.gov; Mayer.Kevin@epamail.epa.gov; Todd Croft
Cc: Bowerman.Larry@epamail.epa.gov
Subject: RE: February (2004) Perchlorate Data at Whitsett Intake

Dave, Mitch, Kevin and Todd,

Following is the February 2004 perchlorate data point for the Colorado River Aqueduct (MWD's Whitsett Intake). This is the fourth ND in a row! For the last six months, the monthly readings at this location have been less than 4.5 ppb. Obviously, this is good news.

That being said, if the usual seasonal variations occur, the perchlorate concentrations for the next six months are likely to be higher, . In 2003 the concentrations for the six months from March to August ranged from 5.1 ppb to 5.7 ppb, with an average of 5.43 ppb. The 2004 concentrations during this time period should be slightly lower, but you never know.

Thought you'd be interested!

Larry

----- Forwarded by Larry Bowerman/R9/USEPA/US on 03/03/2004 10:35 AM -----

"Kuo,Ching" <ckuo@mwdh2o.com> 03/02/2004 01:55 PM

To: Larry Bowerman/R9/USEPA/US@EPA
cc:
Subject: RE: February (2004) Perchlorate Data at Whitsett Intake

Larry

The February (2004) perchlorate result from Lake Havasu Whitsett intake is ND again. The minimum reporting limit is 4 µg/L. There was a problem with the analytical instrument, sorry for the delay.

Ching

-----Original Message-----
From: Bowerman.Larry@epamail.epa.gov [mailto:Bowerman.Larry@epamail.epa.gov]
Sent: Tuesday, March 02, 2004 1:07 PM
To: Kuo,Ching
Subject: February (2004) Perchlorate Data at Whitsett Intake

Ching,

I don't believe that I've received the February (2004) perchlorate result from Whitsett Intake. Is it available yet? We have a meeting in Las Vegas on 3/11/04 and it would be nice to know the February result before the meeting, if its available. Thanks.

Larry Bowerman
Senior Technical Advisor
Waste Management Division (WST-1)
US Environmental Protection Agency, Region 9
(415) 972-3339

"Kuo,Ching"
<ckuo@mwdh2o.com>
01/20/2004 03:46 PM

To: Larry Bowerman/R9/USEPA/US@EPA
cc: "Wang,Hsiao-Chiu" <hwang@mwdh2o.com>, "Palencia,Leslie Soo" <lpal@mwdh2o.com>
Subject: January (2004) perchlorate data at Whitsett

Larry

The January (2004) perchlorate result from Lake Havasu Whitsett intake is ND
again. The minimum reporting limit is 4 µg/L.

Ching Kuo
Chemist
Metropolitan Water District, Water Quality Section
Phone (909)392-5293
email:ckuo@mwdh2o.com

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: March 2, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney, Leo Drozdoff

RE: KM Conference Call

1. In attendance:
   a. NDEP – Leo Drozdoff, Todd Croft, Tamara Pelham, Brian Rakvica
   b. KM – Keith Bailey, Susan Crowley
2. Remedial System Update
   a. Continuous operation continues. Flow is approximately 380-400 gpm at 106 ppm influent concentration. Discharge is still ND (at varying detection limits; 800 ppb-ion specific probe, 20 & 40 ppb – laboratory analyses).
   b. KM has begun the transition to the ethanol tank today and the use of acetic acid has been shut down.
   c. Occasional "upset conditions" in the primary reactors have occurred resulting in higher than expected perchlorate concentrations being transmitted to the secondary reactor, however, the perchlorate slug was destroyed in the secondary reactor.
   d. KM expects to ramp up the flow rate to the FBR; turn off the plant site IX then turn off the seep area IX. Following this, the concentrations to the FBR will be slowly increased by adding pond water.
   e. KM hopes for a flow rate of 500 gpm by the end of the week.
3. Discussed issues with CC DAQM.
   a. Air permit received and executed.
4. Discussed Permitting.
   a. Noted that the final permit contains a discharge limit of 18 ppb with a 9 month schedule of compliance. In the interim, KM will try to achieve 18 ppb or the best achievable concentration.
   b. It is expected that the permit will be issued tomorrow with an effective date of 3/4/04.
   c. KM noted the desire to revisit the Attachment A list of analytes before the next permit renewal. NDEP would also like to revisit this.
   d. KM also noted that the DMR submittal is currently hampered by the time to analyze some of the analytes. This results in addenda to the DMR. NDEP noted that this issue can be looked at in the permit renewal. It was also noted that KM can memorialize this problem in the next DMR submittal if they like.

e. NDEP noted that they believe the current version of the permit works best for the interests of all parties. KM is still concerned about their ability to maintain permit compliance. NDEP noted that this is an issue that will have to be closely monitored and revisited. NDEP further noted that the effluent limitations may be revised after obtaining 6+ months of data, but that revision will have to take place in a public forum.

5. Discussed Other Issues.
   a. Discussed possible attendees at the 3/11/04 meeting at the KM facility.
   b. NDEP noted that the perchlorate tour scheduled for 3/31/04 will not include a tour of the FBR system and will be handled by NDEP at the Pabco road erosion control structure.
6. Next Meeting: 3/11/04 at the KM Facility.

Todd Croft

From: Brian Rakvica
Sent: Tuesday, March 02, 2004 4:29 PM
To: Todd Croft; Tamara Pelham; Alan Tinney; Jon Palm; Leo Drozdoff; Jeff Johnson; Jennifer Carr
Subject: KM Mtg Notes

All,

Since I have received comments from everyone for today's meeting...

Attached are the finalized meeting notes from today's and last week's conference calls with KM re: perchlorate.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

Lake Mead Water Quality Forum
March 2, 2004
Meeting Summary

I. Status Reports

1. Perchlorate —Todd Croft (NDEP):

As a result of remedial efforts by Kerr McGee we continue to see mass declines in the Las Vegas Wash. Back in October our data indicated we were down to the range of 260 to 270 lbs. per day and as of January this year our data show approximately 200 lbs. per day. No February data is available at this time. Sampling at Northshore Road is done weekly. The preliminary data analyzed by others rather than our lab show a potential spike in the data that is probably related to the rain events that occurred which washed out soils along the Las Vegas Wash.

The Willow Beach sampling occurs monthly. Last year we ranged from a high of approximately 8 parts per billion (ppb) down to a low of approximately 3 ppb. This year the high was at 7 ppb in January and were are currently down to approximately 5 ppb. We continue to see a decline in the Willow Beach data as well.

Kerr-McGee continues to work on bringing a new remedial system on line. It is a biologically based system called a fluidized bed reactor (FBR). It is fully constructed and they are about half way through start up. They are currently processing approximately 400 gallons per minute (gpm) with an influent concentration of approximately 100 parts per million (ppm). We expect to have the FBR system fully online by the end of April and processing approximately 1000 gpm with an influent concentration of about 250 ppm. We are asking them to strive for an effluent that is at least 18 ppb or lower.

Last time we met I indicated we had asked Kerr-McGee to give us better information on the mass capture at Athens Road. They have partially answered this in their most recent quarterly report. The remaining information should be provided by July following completion of an additional 14 monitoring wells in the general vicinity of Sunset Road. These wells will gives us the ability to measure mass headed towards Athens Road and compare this to actual mass captured at Athens Road.

The perchlorate mass removed to date totals over 1,144 tons with the following breakdown: (1) about 297 tons from the Seep Area; (2) about 210 tons from the Athens Road area; and (3) about 637 tons from the on-site area. Current (January 2004) mass removal rates are: (1) a little over 300 lbs. per day removed from the Seep Area; (2) about 700 lbs. per day removed from the Athens Road area; and (3) about 960 lbs. per day removed from the On-site area. The

January data is a little lower than what normally see this time of the year. The January removal rates add up to about 1,960 lbs per day compared to typically over 2,000 lbs. per day.

With regard to AMPAC, they are continuing to look at how to scale up their biological treatment system. It is likely they will have to put a different type of system in near the leading edge of their plume (compared to other areas) because the soil conditions there are much tighter. We are asking them to construct this system first. They are in the process of constructing additional monitoring wells in both the leading edge and source areas to better define the lateral and vertical extent of perchlorate.

SNWA reported 5 ppb in raw water and 6 ppb in finished water for the month of February.

Todd Croft

From: Tamara Pelham
Sent: Monday, March 01, 2004 2:57 PM
To: 'Crowley, Susan'; Todd Croft; Bailey, Keith; Brian Rakvica; Corbett, Pat
Cc: Jon Palm; Alan Tinney
Subject: RE: Teleconference for Perchlorate Remediation Update

I have taken the liberty to execute the shot-gun approach and issue these documents simultaneously to what I consider to be the appropriate group of recipients. Please forgive me if I have misjudged. Attached are the "final" fact sheet, permit (pending issuance), and the Notice of Decision. The plan will be to issue the permit and the NOD tomorrow (3/2) or Wednesday (3/3), with an effective date in the permit of Thursday 3/4/04. Depending on how the logistics work out, we will either 2nd day or overnight a signed permit to arrive at KMG on Thursday.

The NOD will be mailed by certified mail to EPA, MWD, and Matt Hagemann. An email attachment will also be sent to Matt Hagemann since that was their preferred method of communication. Copies of the NOD will be 'snail-mailed' to the remaining signators on the comment letter received from Matt Hagemann. The NOD will also be posted on our website the day it is issued, either Tuesday or Wednesday.

Please forgive my delay in disseminating these documents.

Thanks, Tamara Pelham

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Monday, March 01, 2004 2:26 PM
To: Todd Croft; Bailey, Keith; Brian Rakvica; Tamara Pelham; Jon Palm; Alan Tinney; Jim Najima; Krish, Ed; Reed, Thomas
Cc: Corbett, Pat; Stater, Rick
Subject: Teleconference for Perchlorate Remediation Update

All,
We (NDEP and KM) have a teleconference tomorrow afternoon (Tuesday - 1:00 pm PST) to discuss perchlorate remediation, including discussion of the modified NPDES permit.. The call in number is 405-270-2660. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(702) 651-2310 fax

-----Original Message-----
From: Crowley, Susan
Sent: Tuesday, February 03, 2004 10:51 AM
To: 'Todd Croft (tcroft@ndep.nv.gov)'; Bailey, Keith; 'Brian Rakvica (brakvica@ndep.nv.gov)';

'Tamara Pelham'; 'John . alm (jpalm@govmail.state.nv.us)'
Subject: RE: Teleconference to Update NDEP on FBR Progress

All,
Just a reminder of our teleconference this afternoon. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(702) 651-2310 fax

-----Original Message-----
From: Crowley, Susan
Sent: Wednesday, January 28, 2004 7:50 AM
To: Todd Croft (tcroft@ndep.nv.gov); Bailey, Keith; Brian Rakvica (brakvica@ndep.nv.gov); Tamara Pelham; John Palm (jpalm@govmail.state.nv.us)
Subject: Teleconference to Update NDEP on FBR Progress

All,
A teleconference call-in number has been set up for the update teleconference on February 3rd, 3:00 pm PST. Please dial (405) 270-2683 to join us. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(702) 651-2310 fax

Todd Croft

From: Crowley, Susan [SCROWLEY@KMG.com]
Sent: Monday, March 01, 2004 2:41 PM
To: Todd Croft
Subject: RE: DAQM; Air Permit Status?

Todd,
See your note below. We are as well. This permit defines KM production operations as a minor air emission source. We've been at that level for several years if considering actual emission. Now our permits reflect this as well. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office
(702) 592-7727 cell
(702) 651-2310 fax

-----Original Message-----
From: Todd Croft [mailto:tcroft@ndep.nv.gov]
Sent: Monday, March 01, 2004 1:45 PM
To: Crowley, Susan
Subject: RE: DAQM; Air Permit Status?

Susan:

Great. Glad this came through.

THX BYE TJC

-----Original Message-----
From: Crowley, Susan [mailto:SCROWLEY@KMG.com]
Sent: Monday, March 01, 2004 1:32 PM
To: Todd Croft
Cc: Bailey, Keith
Subject: RE: DAQM; Air Permit Status?

Todd,
I picked up the permit this morning. DAQM got it signed very late on Friday - our management will sign it today. We began calibration of the ethanol pump this morning, anticipating that it would all come together today. I understand that the transition from acetic acid to ethanol will start later today if all goes well mechanically. Thanks.

Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, NV 89009
(702) 651-2234 office

(702) 592-7727 cell
(702) 651-2310 fax

-----Original Message-----
From: Todd Croft [mailto:tcroft@ndep.nv.gov]
Sent: Monday, March 01, 2004 1:00 PM
To: Crowley, Susan
Cc: Bailey, Keith
Subject: DAQM; Air Permit Status?

Susan:

What is the status of your Air Permit?

I was under the impression DAQM was to issue the permit by the end of February. Do you have the permit in hand. Have you heard anything recently about the status? Do you want my assistance?

THX BYE

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

Important Notice!
If you are not the intended recipient of this e-mail message, any use, distribution or copying of the message is prohibited.
Please let me know immediately by return e-mail if you have received this message by mistake,
then delete the e-mail message.
Thank you.

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: February 26, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney

RE: KM Conference Call

1. Remedial System Update
   a. Continuous operation continues. Flow is approximately 400 gpm at 106 ppm influent concentration. Discharge is still ND (40 ppb). Compliance samples are expected at the end of the month.
   b. Currently, the flow does not include liquid from the pond. The pond liquid will push the influent concentration up to approximately 250 ppm. The pond also contains a significant amount of chlorate 7 grams/L.
   c. KM intends to throttle back in the seep area for those wells under 10 ppm to get their flow below 1,000 gpm. This likely will be timed to coincide with the change from a temporary permit to a revised NPDES permit in early March 2004. The temporary permit expires March 5, 2004.
2. Discussed issues with CC DAQM.
   a. No air permit secured yet. Continue use of acetic acid in totes. Feed rate is probably maxed out until air permit can be secured and ethanol tank/ feed system can be used. Permit is expected "soon".
3. Discussed Permitting.
   a. Discussed the revised schedule for attainment of 18 ppb discharge. Noted that the "process capability" limitation will remain in the permit. If it is found that 18 ppb can not be attained by process or analytics then the permit will need to be modified again.
   b. Noted that the public comment received is not much different than the USEPA comment. Tamara will be issuing a ROD to respond to the comments.
   c. BWPC committed that analytical limitations will not be cause for a violation of the permit.
   d. Noted that the IX portion of the permit will remain active.
   e. Discussed interim discharge limitations.
4. Discussed Information Requests and Tours.
   a. An AGWT meeting may be held in March in Las Vegas. KM asked if Todd was attending. NDEP to look into. Note that this is currently scheduled for May 3, 2004.
5. Discussed Other Issues.

a. A well has been installed east of ART-7. This will be called PC-122. Noted that the concentration is 6 ppm (expected) and the drawdown is approximately 5'. Approximately 10' of saturated alluvium is present in this well.
b. Discussed sampling of produce. Asked KM to provide information on US FDA effort to sample agricultural crops.

6. Next Meeting: 3/2/04 at 1:00 PM – Susan to provide call in information.

Todd Croft

From: Brian Rakvica
Sent: Tuesday, March 02, 2004 4:29 PM
To: Todd Croft; Tamara Pelham; Alan Tinney; Jon Palm; Leo Drozdoff; Jeff Johnson; Jennifer Carr
Subject: KM Mtg Notes

All,

Since I have received comments from everyone for today's meeting...

Attached are the finalized meeting notes from today's and last week's conference calls with KM re: perchlorate.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

02/24/04
Rec'd

Todd Croft

From: Eric Noack
Sent: Tuesday, February 24, 2004 2:02 PM
To: Terre Maize; Todd Croft; Jim Najima
Subject: FW: Nevada NPDES Letter

-----Original Message-----
From: Eric Noack
Sent: Tuesday, February 24, 2004 11:09 AM
To: John Walker
Cc: Jon Palm
Subject: Nevada NPDES Letter

FYI -- This was sent to me from Lenny Siegel since I am a member of the Center for Public Environmental Oversight's email spooler.

February 23, 2004
Department of Conservation and Natural Resources
Division of Environmental Protection
Bureau of Water Pollution Control
333 West Nye Lane
Carson City, Nevada 89706

This letter is written in opposition to the perchlorate effluent limitations proposed in the modified NPDES Permit NV0023060 for Kerr-McGee in Henderson, Nevada. As written, this permit would allow discharge of perchlorate at levels up to 80 parts per billion (ppb) for 12 months and would increase the flow rate to 1.45 and 1.75 MGD as a 30-day average and daily maximum, respectively. After 12 months, the anticipated effluent limitation is estimated to be 18 ppb.

We oppose the proposed effluent limitations because interim discharge of perchlorate at 80 ppb to Las Vegas Wash, a tributary to Lake Mead, a vital source of drinking water, is in excess of: (1) the State of Nevada action level for drinking water; (2) U.S. EPA's reference dose drinking water equivalent of 4 to 18 ppb; and (3) proposed NPDES effluent in other states, including a proposed limitation for perchlorate effluent at 4 ppb in California. Additionally, the proposed permit terms would not ensure that discharges do not cause or contribute to violations of numeric and narrative water quality standards, in violation of the Clean Water Act. Furthermore, the proposed permit is inconsistent with 40 CFR 122.44.

1. Effluent from the biological treatment system at Kerr-McGee would be discharged to the Las Vegas Wash which flows directly to Lake Mead, the source of drinking water for over one million residents of Southern Nevada. Recent sampling by the Southern Nevada Water Authority has documented perchlorate levels at up to 19 ppb (2003 Henderson Water Quality report, (http://www.cityofhenderson.com/utilities/wqreport/images/table.jpg), in treated drinking water, in excess of the Nevada action level of 18 ppb. The source of the contamination has been attributed to the Kerr-McGee facility. The discharge of perchlorate at 80 ppb will increase perchlorate loading to Lake Mead, the source of water for 85% of the residents in the Las Vegas Valley and for more than 20 million people

from Arizona to California. According to the U.S. EPA, perchlorate concentrations in the Colorado River range from 5 to 9 ppb from the Hoover Dam to the U.S/Mexico border.

2. The U.S. EPA, on the basis of 1999 interim guidance, has established a level of 4-18 ppb as the basis for establishing perchlorate cleanup levels (January 22, 2003, memo from U.S. EPA Assistant Administrator, (http://www.safedrinkingwater.com/community/2003/021203perchlorate_memo.pdf). The RCRA program, under which State of Nevada directs the cleanup at Kerr-McGee, is subject to the cited guidance. In releasing this guidance, U.S. EPA instructed its staff to "carefully consider the low end" of the 4-18 ppb in making cleanup decisions regarding perchlorate. An NPDES permit which would allow a discharge at 80 ppb would be in direct conflict of this guidance. In effect, the site would be "cleaned" to a level at 80 ppb that would, at other RCRA and Superfund facilities, not be allowable and would be subject to further cleanup.

3. Other states are developing effluent limitations for perchlorate at concentrations much lower than the proposed effluent limitation for Kerr-McGee. In proposing an effluent limitation of 4 ppb, the Los Angeles Regional Water Quality Control Board stated:
"The effluent limitation was ... set at 4 µg/L, which would prevent the degradation of receiving waters and maintain and protect receiving water quality"
(http://www.swrcb.ca.gov/rwqcb4/html/permits/tentative_order/Individual/Boeing/wdr.pdf).

In this cited example, surface water is not used as drinking water in the vicinity of the point of discharge. However, the Los Angeles Regional Water Quality Control Board is apparently acting with caution to ensure protection of water quality. We believe the same approach should be taken with the Kerr-McGee perchlorate discharge.

Previously, U.S. EPA established effluent limitations for perchlorate of 8 ppb (daily maximum) and 4 ppb (monthly average) at the Aerojet facility in Rancho Cordova, California for discharge to the American River, a drinking water source
(http://yosemite.epa.gov/r9/sfund/rodex.nsf/5e2227f65e9593fc8825657100021ab0/361131950f5bf42088256aa300713042/$FILE/Aerojet_ROD_complete.pdf).

Again, the perchlorate effluent limitation at the Kerr-McGee facility is inconsistent with limitations imposed at other significant perchlorate-contaminated sites.

In conclusion, we note that the effluent limitation is anticipated to be 18 ppb, as stated in the Fact Sheet; however, this is still in excess of the low end of the 4-18 ppb range that U.S. EPA has instructed its staff to follow for cleanup at RCRA sites. Whether 80 ppb or 18 ppb, perchlorate effluent limitations for the Kerr-McGee NPDES permit are in excess of U.S. EPA recommended limits and NPDES limitations established and proposed in other states. Given the vital nature of Lake Mead as a drinking water source, perchlorate discharge to the Las Vegas Wash should be limited to a concentration that is as low as is technically feasible.

Sincerely,

Lena Brook
Interim State Director
Clean Water Action
111 New Montgomery St. # 600
San Francisco, CA 94105

Fred Evenson
Ecological Rights Foundation
867 B Redwood Drive
Garberville, California 95542

Matthew Hagemann
Former U.S. EPA Senior Science Policy Advisor
201 Wilshire Blvd., 2nd Floor
Santa Monica, CA 90401

Robert W. Hall
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10720 Button Willow Drive
Las Vegas, NV 89134

Jonathan Parfrey
Executive Director
Physicians for Social Responsibility-Los Angeles

Tiffany Schauer
Our Children's Earth Foundation
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Gina M. Solomon, M.D., M.P.H.
Senior Scientist
Natural Resources Defense Council
71 Stevenson Street
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Bill Walker
Vice President/West Coast
Environmental Working Group
1904 Franklin St. #703
Oakland CA 94612

Eric Noack

Nevada Division of Environmental Protection
Bureau of Federal Facilities
333 West Nye Lane
Carson City, NV 89706
775-687-9393

Todd Croft

From: Todd Croft
Sent: Friday, February 20, 2004 5:46 PM
To: 'Alan Curtis'
Cc: Brian Rakvica; Jim Najima
Subject: RE: Kerr-McGee new Plant; Response to your questions

Mr. Curtis:

Kerr-McGee is actively remediating both perchlorate and chromium from shallow ground water in the vicinity of the Henderson Plant Site. Other contaminants including nitrate and chlorate present in the recovered ground water also will be remediated (removed from the recovered ground water to concentrations acceptable for discharge) by the new Fluidized Bed Reactor, biological treatment system currently under construction and start up by Kerr-McGee. Other potential contaminants are the subject of on-going investigations and future remediation will be dependent upon the results of those investigations.

With adequate notice, you (or your consultant) are welcome to arrange to visit our office to conduct file reviews, make copies, and have documents sent off-site for copying. Please recognize that you will be responsible for the cost of off-site reproduction.

Due to the limited resources of the State of Nevada and the Nevada Division of Environmental Protection, we may not be able to continue to address specific questions regarding technical issues. Representatives of Kerr-McGee or the other companies located in the Henderson, Nevada area may be better suited to answer your specific questions. Alternately, you may wish to hire an environmental consultant to assist you in file review and to help answer various technical questions.

We trust this response meets your needs at this time.

Thank you.

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

-----Original Message-----
From: Alan Curtis [mailto:mm1313@citlink.net]
Sent: Tuesday, January 27, 2004 12:52 PM
To: Todd Croft
Subject: Keer McGee new Plant

Howdy I was going to set up a meeting the first of the month but I have a little trouble with My computer in crashed and I just got this one up any running today.

On the 15th of this month I got a tour of the Keer McGee new plant for the Perchlorate recover, while I was out there Mr. Bailey said that they where cleaning up more that just Perchlorate and Chromium 6 or 7? how much other stuff is out there on that site? And is that new recover system just for perchlorate or is it for what every is out thier. Thanks Alan Curtis I hope that your Holidays where fine say Hi to Brain for me

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: February 18, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham, Alan Tinney

RE: KM Conference Call

1. Remedial System Update
   a. Continuous operation continues. Flow is now 330-350 gpm at 106 ppm influent concentration. Discharge is still ND. Monitoring is with ion-specific probes with a 1 ppm detection limit and laboratory analyses with a 40 ppb reporting limit. Compliance samples have also been collected and sent off site for confirmation.
   b. KM noted that they hope to be down to 20 ppb reporting limit via MWH soon.
   c. The plant has been in continuous operation since February 5, 2004 (other than a 30 hour shutdown last week for piping modifications).
   d. KM intends to throttle back in the seep area for those wells under 10 ppm to get their flow below 1,000 gpm. This likely will be timed to coincide with the change from a temporary permit to a revised NPDES permit in early March 2004.
2. Discussed issues with CC DAQM.
   a. No air permit secured yet. Continue use of acetic acid in totes. Feed rate is probably maxed out until air permit can be secured and ethanol tank/ feed system can be used.
3. Discussed Permitting.
   a. A draft NDEP response to the EPA has been created. Currently in internal review. After NDEP internal review, this draft will be sent to KM, after which it will be sent to the EPA.
   b. Jon Palm has tried to contact Jon Kemmerer at EPA with no success thus far.
   c. MWD may be commenting.
   d. Noted that the 10 day appeals process begins 10 days after the issue date. The permit becomes effective on an "effective date" which is 10 days after the issue date.
4. Discussed Information Requests and Tours.
   a. Tom Harbour from Arizona CAP has been asked to re-visit the FBR system once it is fully operational. This is likely to be after 4/30/04.
5. Next Meeting: 2/26/04 at 1:00 PM.
   Call In # (405) 270-2683

02/25/04
Rec'd

UNIVERSITY OF CALIFORNIA, IRVINE

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University of California, Irvine
Urban Water Research Center
School of Social Ecology
1359 Social Ecololgy II

Irvine, CA 92697
(949) 824-3442
(949) 824-2056 Fax
uwrc@uci.edu

February 12, 2004

Todd Croft, Supervisor
Remediation and LUST Branch
Nevada Division of Environmental Protection
1771 East Flamingo, Suite 121-A
Las Vegas, NV 89449-0837

Dear Todd:

On behalf of the Urban Water Research Center, we would like to thank you for taking your time to participate in the Scholars Committee on Perchlorate Review held February 9, 2004, at the University Club Library on the UC Irvine campus. Your presentation, "Overview of Las Vegas Valley Perchlorate Remedial Efforts," was excellent.

You will receive a copy of the Committee's final report regarding the perchlorate issue. The document will include the background information leading to the Committee's conclusions and recommendations. After a period of public comment and inclusion of those comments, the report will be given the State Department of Health Services to help advance their important decision-making process.

Thank you, once again, for adding your expertise.

Sincerely,

Betty H. Olson, Ph.D.
Professor and Interim Director
Urban Water Research Center
University of California, Irvine

Jan Scherfig, Ph.D., P.E.
Research Professor and Associate Director
Urban Water Research Center
University of California, Irvine

BHO/JS:wsk

Todd Croft

From: Palencia,Leslie Soo [lpal@mwdh2o.com]
Sent: Wednesday, February 11, 2004 12:23 PM
To: Todd Croft
Subject: RE: Kerr McGee Public Notice and Draft Permit Documents

Hi Todd,

Thanks for this. Marcia Torobin from our group will be providing comments.

Leslie

-----Original Message-----
From: Todd Croft [mailto:tcroft@ndep.nv.gov]
Sent: Wednesday, January 28, 2004 4:15 PM
To: lpal@mwdh2o.com
Cc: Bowerman.Larry@epa.gov
Subject: FW: Kerr McGee Public Notice and Draft Permit Documents

Leslie:

Attached, please find a copy of the public notice, Fact Sheet, and Draft revised NPDES Permit for the Kerr-McGee perchlorate remediation project. This permit revision accommodates the FBR (in place of the ISEP-PDM) and a change in flow to 1,000 gpm (from 847 gpm). This permit revision also begins to address a revised numerical standard for perchlorate in the effluent. It provides a path forward that allows for lowered permit values when the permit becomes active (~March 2004), lower values later in 2004, and then even lower values when the permit is reissued in late 2005. The 2005 values will be based upon performance achieved throughout 2004. I thought you would be interested in seeing these documents. I believe these strike a good balance and allow for better effluent quality sooner than otherwise might be achieved.

I'll be out of the office this Thursday & Friday. I'll be in the office next Monday & Tuesday. I'm then difficult to reach until 02/12/04.

You may wish to contact Tamara Pelham (contact information provided in the attachments and e-mail above) to discuss the permit.

THX BYE

Todd J. Croft
Remediation Branch Supervisor
NDEP Bureau of Corrective Actions - Las Vegas Office
tcroft@ndep.nv.gov (Please note the Change)
(702) 486-2871 (Phone)
(702) 486-2863 (Fax)

-----Original Message-----
From: Tamara Pelham
Sent: Wednesday, January 28, 2004 3:57 PM
To: Todd Croft
Subject: Kerr McGee Public Notice and Draft Permit Documents

Todd:

As we discussed, could you please forward the attached public notice to the appropriate recipient at the Metropolitan Water District? If they would like additional information regarding the fact sheet or permit, there is contact and URL information in the public notice that will direct them to me.

Thank you,

Tamara Pelham

Bureau of Water Pollution Control
775.687.9434
tpelham@ndep.nv.gov

<<00230160_pn mod 2003.doc>> <<Draft KMG fs mod.doc>> <<Draft KMG Pmt Mod.doc>>

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

February 11, 2004

Ms. Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

Re: **Kerr-McGee Chemical Corporation LLC (KM)**
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection Response to:
Supplemental Phase II Report – Environmental Conditions Assessment

Dear Ms. Crowley,

The Nevada Division of Environmental Protection (NDEP) has reviewed the:

Supplemental Phase II Report – Environmental Conditions Assessment; Kerr-McGee Chemical LLC, April 25, 2001.

NDEP's comments to the aforementioned report are contained in Attachment A. In summary, characterization work performed to date does not appear to be technically defensible and additional work will be required. Some specific points include: 1) a need to identify all potential contaminants associated with the site; 2) appropriate background sampling; 3) use of inappropriate action levels; and 4) existence of data gaps. Before additional work is completed, the NDEP recommends that Kerr-McGee Chemical LLC (KM) meet with the NDEP to discuss the comments and development of a plan to move forward.

By **March 8, 2004,** KM should provide to the NDEP a schedule for addressing the issues outlined herein. Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2870.

Sincerely,

Brian A. Rakvica, P.E.
Staff Engineer III
Remediation and LUST Branch
Bureau of Corrective Actions
NDEP – Las Vegas Office

BAR/bar
Encl: Attachment A

CC: Jim Najima, NDEP, BCA, Carson City
Jon Palm, NDEP, BWPC, Carson City
Todd Croft, NDEP, BCA, Las Vegas
Jennifer Carr, NDEP, BCA, Carson City
Jeff Johnson, NDEP, BCA, Carson City
Valerie King, BWPC, Carson City
Tamara Pelham, BWPC, Carson City
Barry Conaty, Akin, Gump, Strauss, Hauer & Feld, L.L.P., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036
Brenda Pohlman, City of Henderson, 240 Water Street, Suite 210, Henderson, NV 89015
Mitch Kaplan, U.S. Environmental Protection Agency, Region 9, mail code: WST-5, 75 Hawthorne Street, San Francisco, CA 94105-3901
Carrie Stowers, Clark County Comprehensive Planning, PO Box 551741, Las Vegas, NV, 89155-1741
Ranajit Sahu, BEC, 875 West Warm Springs Road, Henderson, Nevada 89015
Craig Wilkinson, TIMET, PO Box 2128, Henderson, Nevada, 89009-7003
Kirk Stowers, Broadbent & Associates, 8 West Pacific Avenue, Henderson, Nevada 89015

Attachment A
NDEP Comments on the *Supplemental Phase II Report – Environmental Conditions Assessment*

1. **Submission of documents**
   a. Two copies of all reports should be provided to Brian Rakvica in the Las Vegas office of the NDEP and two additional copies should be provided to Mr. Jeff Johnson in the Carson City office of the NDEP.
   b. An electronic copy of all reports in PDF format should also be provided to Mr. Brian Rakvica.
   c. All laboratory data should be formatted to comply with the Division's Electronic Data Deliverable's (EDD) format. These data packages will need to be compatible with Earthsoft's EquIS Data Management System (relational database written in Visual Basic and using the Microsoft Access engine). The specific formatting requirements of this data will be provided to KM under separate cover at a later date.
2. **Project Personnel**
   a. NDEP needs to understand what personnel are being applied to this project. Please provide current resumes and/or curricula vitae for each project staff member. This is a multi-disciplinary project and the following expertise may be needed to complete this project: hydro-geologist, engineer, toxicologist, radiochemist, risk assessor, expert in fate and transport, statistician and chemist.
   b. Please provide an organizational chart for the project team.
   c. Please identify the Nevada Certified Environmental Manager (CEM) for this project.
3. **Presentation of Calculations and Data**
   a. Calculations: When a significant calculation is performed and referenced in the text an example calculation should be included in the report. The formulae used and the reference for the formulae should also be shown for the example calculation. These example calculations could be summarized in an appendix to the report, in a footnote, or in the body of the text. The NDEP is also amenable to alternate presentation forms.
   b. Data: Data for soil shall not be separated from data for groundwater. One drawing should be presented for each site-related chemical to illustrate the three dimensional extent of contamination. Information to be included on each drawing is summarized below.
      i. All soil analytical data shall be presented.
      ii. All potential source areas for the chemical being evaluated shall be clearly identified and highlighted. Potential source areas include areas where concentrations in soil exceed background and those portions of the facility where chemicals were used or stored. Source areas may include several Letter of Understanding (LOU) study areas.
      iii. All groundwater analytical data shall be presented.

iv. Iso-concentration contours for groundwater data illustrating the extent of the groundwater plume shall be presented. Property boundaries are not to be used for termination of the delineation of the chemical plumes.

v. Any location that is considered a background location for any chemical in soil or groundwater shall be clearly identified on all drawings.

vi. All site features that may impact contaminant transport (surface and subsurface) shall be identified.

c. Drawings shall be self-explanatory without the need to refer to the text to interpret what is being presented. The presentation of more than one site-related chemical on a drawing is appropriate when the chemicals are similar (e.g.: VOCs, metals, etc.), are migrating together and have common sources. The above presentation is required to complete a conceptual site model. The conceptual site model should be updated as more data is collected.

4. Averaging of Analytical Data

a. In previous reports, analytical data on several tables are averaged. The NDEP can not evaluate the adequacy of site characterization work based on analytical data that are averaged. Risk assessment is the only phase of the project where analytical data should be averaged. Analytical results should be presented discretely and compared to appropriate risk based criteria; Applicable or Relevant and Appropriate Requirements (ARARs); or approved background levels.

b. Composite soil samples are appropriate where justification is provided and NDEP approval is obtained. Composite samples may not be appropriate for risk-based closures without a rigorous statistical analysis.

5. Phase II Consent Agreement Reporting and Public Involvement Obligations

a. KM is reminded that quarterly progress reports are due to the NDEP in accordance with Section XIII of the Phase II Consent Agreement.

b. KM is further reminded that participation in the Public Involvement Plan (PIP) is required in accordance with Section V.2. of the Phase II Consent Agreement. This PIP requires a copy of all key documents to be submitted to the Public Information Repository located at the James I. Gibson Public Library in Henderson, Nevada.

6. Site Groundwater

a. The Nevada Revised Statutes and the Nevada Administrative Code consider all groundwater of the State of Nevada to be potential sources of drinking water; prohibit the discharge of pollutants into the groundwater without a permit; and require the source of any pollutant to be eliminated. It has been well documented that the water beneath the KM plant site has the ability to reach the Las Vegas Wash. The Las Vegas Wash is a tributary to Lake Mead. Lake Mead and the Lower Colorado River are the drinking water supply for over 20,000,000 people. The NDEP would like to stress the importance of: elimination of the migration of pollutants from

the KM site; delineation of the extents of the off-site contamination in the form of a conceptual site model (CSM); and management and remediation of all off-site pollutants. Characterization of off-site pollutants in groundwater may require broad suite analyses. These analyses should include (at a minimum) the following chemical classes: VOCs, SVOCs, PAHs, Pesticides, Radionuclides, Metals, Inorganics, Dioxins/Furans, and PCBs. Please note that the radionuclide analyses should include (at a minimum): the uranium series, the thorium series, radium 226/228 (and all daughter products), as well as potassium 40.

b. It should also be noted that "Beneficial Use Standards" have been developed for the Las Vegas Wash and are presented in NAC 445A.144 and NAC 445A.199-NAC 445A.201.

c. The NDEP requests that KM provide a summary of the on-going monitoring of the site groundwater. This summary should include a list of the monitoring wells; the analytes that each well is monitored for; and the frequency of the analysis.

d. The Division requests that plume maps be developed for each of the site-related chemicals including data that extends off-site. See also comment 3.

7. **Pond GW-11**

a. Pond GW-11 has received effluent from the chromium mitigation system and the perchlorate remediation system. The contaminants in this effluent have been evapo-concentrating in pond GW-11. It is the Division's understanding that the contents of pond GW-11 will eventually be processed through the new fluidized bed reactor (FBR).

   i. Please provide any data on analyses that have been performed on the contents of Pond GW-11.

b. Broad suite analyses may be appropriate for pond GW-11. It is not clear to the NDEP that the contents of pond GW-11 are well characterized.

8. **Chromium Mitigation System**

a. The existing chromium mitigation system treats a limited quantity of groundwater on the plant site. From plume maps provided by KM, it is obvious that there is a large plume of chromium downgradient of the plant site slurry wall. KM has implemented a temporary remedial system to address the elevated hexavalent chromium concentrations at the Athens Road well field.

   i. Please explain KM's long-term plan for the remediation of chromium (total and hexavalent) at the Athens Road well field. It appears to the Division that the concentrations will continue to increase in this location (based on available data).

b. The existing total chromium plume maps terminate near the property boundary and are delineated to 1.0 ppm.

   i. Please provide complete mapping of the existing total chromium plume down to ND(0.05 mg/l). Also, include a 0.1 mg/l contour (current MCL for total chromium).

ii. It is requested that chromium plume mapping eventually be coordinated with the development of the perchlorate plume maps. Maps should be of identical orientation, scale and sampling date. Please identify a schedule by which this mapping can be coordinated with the perchlorate mapping.

iii. Please provide any information on sampling conducted to date for total and hexavalent chromium in the Muddy Creek Formation and Muddy Creek Aquifers.

c. Please provide any available data for the influent concentrations of total and hexavalent chromium to the on-plant site chromium mitigation system.

9. Site-Related Chemicals

a. The NDEP is concerned that site-related chemicals have not been adequately identified for the KM facility. Site-related chemicals include all raw materials, products processed, byproducts, waste products and any other chemical used at the facility. All degradation products associated with any chemical that may have been used at the facility are also site-related chemicals. All site-related chemicals need to be identified in accordance with USEPA guidance (see *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, Part A, EPA/540/1-89/002, December 1989*). If it is unknown whether or not chemicals are present at the site, or if all chemicals associated with historical operations have not been adequately documented, then a broad suite analysis is warranted for those chemical classes that may be present. Please note that some chemicals associated with the site may not be covered by broad suite analyses. Site-related chemicals associated with the KM facility need to be identified and justified for each chemical class including but not limited to: metals, radionuclides, volatile organic compounds, semi-volatile organic compounds, dioxins, furans, pesticides, and polycyclic aromatic hydrocarbons (PAHs). A detailed discussion on site-related chemicals is required for any risk assessment. During risk assessment, the list of site-related chemicals is reduced to a list of chemicals of potential concern (COPC). Please note that the term COPC is specific to risk assessment and should only be used after the completion of site characterization and the development of a CSM.

b. For example, if the suite of metals associated with the site cannot be identified, then a broad suite of metals needs to be analyzed. Twenty-four metals are considered site-related chemicals for the Upper and Lower Ponds east of Boulder Highway (aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium (total), chromium (VI), cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, titanium, tungsten, vanadium and zinc). These 24 metals should be included in the list of site-related chemicals for the KM facility or the abbreviated list of metals that were analyzed during the previous investigations needs to be justified.

c. Another example is the unknown chemicals and wastes at the site. In the April 1993 Phase I Environmental Conditions Assessment there are several examples of unknowns at the site.
    i. U.S. Government Activities – "Detailed records describing the quantities of waste produced and the location(s) for disposal...were not found during this study".
    ii. Other previous lessees on KM property – "The actual locations leased and operations conducted by these companies are not well documented".
    iii. Hardesty/Amecco Chemical – "residue from the manufacturing process was pumped directly into a steel tank truck and removed to a remote location and burned". The by-products from this incomplete combustion process are unknown but may include: dioxins, furans, PAHs, as well as components of the residue that were burned. KM should identify this potential source area.

d. The analytical methods for the list of site-related chemicals must be presented for review by the NDEP.

e. The development of a comprehensive list of site-related chemicals should be the <u>first</u> priority for this project.

10. Data Quality

a. In this report and previous reports elevated detection limits have been presented. These detection limits are at or above their (potential) corresponding screening levels. Examples include (but are not limited to): benzene, cadmium, ethylbenzene, selenium, and toluene.

b. If a risk assessment is to be performed, the usability of this data will need to be demonstrated in accordance with US EPA Guidance.

c. KM is requested to review this issue with their laboratories to determine the reasoning behind these elevated detection limits.

d. KM is requested to review these issues and the remaining part of the quality assurance program (in accordance with Section VIII of the Phase II Consent Agreement) and submit a formalized response to NDEP.

11. Action Levels

a. The NDEP has repeatedly stressed the importance of comparing data to appropriate action levels including letters dated June 10, 1998 and December 17, 1998.

b. Please note that if a chemical is present, but below an established action level, it will not necessarily be removed from consideration or future analysis. This chemical may need to be carried through as a contributor to cumulative risk.

c. Action levels should be protective of human health and the environment. Standards or criteria that can be used to evaluate human health or ecological risks include Maximum Contaminant Levels (MCLs), USEPA soil screening levels (SSLs), USEPA Ambient Water Quality Criteria (AWQC), ATSDR criteria, site-specific background levels, and USEPA Region IX Preliminary Remediation Goals (if used correctly, see below

for additional details). KM should present a detailed evaluation of the derivation of the action levels to be used for this project.

d. Please note that although NAC 445A.2272 does allow the use of TCLP maximum concentrations as action levels where the exposure pathway is to surface water or groundwater, TCLP maximum concentrations were established Federally to classify hazardous waste for disposal purposes; they were not established to evaluate human health and ecological risk. Further, there is no basis in regulations to extrapolate these concentrations for use as human health and ecological risk criteria for soil exposure. According to NAC 445A.2272, the most restrictive action level must be used, and at an appropriate level of concentration that is based on the protection of human health and safety and of the environment. Contaminant concentrations associated with human health and ecological risk criteria are generally much lower than TCLP criteria, especially when multiple chemicals are being evaluated. Human health risk criteria, and potentially ecological risk criteria, must be addressed prior to site closure if contaminated media (above applicable target risk levels) are not removed from the site.

e. USEPA Preliminary Remediation Goals (PRGs) can be used to determine action levels if the analysis is completed correctly. If more than one contaminant exists at a site, then the use of PRGs may not be appropriate.

f. It is critical that background concentrations be appropriately evaluated. Background concentrations need to be evaluated by collecting soil samples in an area that is not impacted by site operations. Use of ASTM or USGS background levels for wide geographic areas is not acceptable per the June 10, 1998 NDEP letter to KM. A separate work plan should be submitted that describes where background samples will be collected and how background concentrations will be evaluated. It is highly recommended that an appropriate background study be completed prior to additional site characterization sampling. The development of a Remedial Alternatives Study (RAS) after site characterization is completed will depend heavily on comparisons of background concentrations to contaminant concentrations detected at the facility. The NDEP suggests that KM review the guidance documents listed below.

    i. U.S. Environmental Protection Agency, Guidance for Characterizing Background Chemicals in Soil at Superfund Sites, OSWER 9285.7-41 (EPA 540-R-01-003), June 2001.

    ii. U.S. Environmental Protection Agency, Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites, EPA/540/s-96/500, December 1995.

g. Due to the number of contaminants present at the facility, the lack of acceptable chemical-specific action levels or PRGs for many of the contaminants, and the potential that removal activities may not be cost-effective as a remedial option, KM should consider that a deterministic risk assessment might be required for site closure. A probabilistic risk assessment will not be accepted until after a deterministic risk assessment

is completed and it is determined that a probabilistic risk assessment is warranted. Risk assessment, if performed, shall be completed in accordance with USEPA guidance (see references below). Tentative cleanup goals for risk assessment are listed below.

i. Non-carcinogens: Hazard Index = 1
ii. Chemical carcinogens: Target Risk = $1x10^{-6}$
iii. Radionuclides: Target Risk= $1x10^{-6}$

h. Prior to performing a risk assessment, the usability of the data must be demonstrated in accordance with USEPA guidance (see reference below).
i. It is not clear what the objectives of the investigation to date are. Decision rules to guide the characterization process are not clearly laid out. Also, it is not clear how KM will sufficiently evaluate the facility to justify closure. It is highly recommended that data quality objectives (DQOs) be completed in accordance with the reference below. Ideally, DQOs should have been completed prior to any site characterization work to streamline the data collection process. A brief discussion on data quality assessment (DQA) may also be warranted (see reference below). In summary, the NDEP needs to have a better understanding of how KM proposes to close the site and recommends that KM discus the proposed DQOs with NDEP prior to submittal. Additionally, NDEP recommends submittal of DQOs as a separate, stand-alone document. It should be anticipated that these DQOs will be adjusted as the project proceeds.
j. References

i. U.S. Environmental Protection Agency, Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual, December 1989.
ii. U.S. Environmental Protection Agency, Guidance for Data Usability in Risk Assessment, April 1992.
iii. U.S. Environmental Protection Agency, Guidance for the Data Quality Objectives Process, August 2000.
iv. U.S. Environmental Protection Agency, Guidance for Data Quality Assessment, Practical Methods for Data Analysis, EPA QA/G-9, July 2000.

12. Conceptual Site Model

a. The NDEP has repeatedly stressed the importance of the development of a conceptual site model (CSM) including in letters dated June 10, 1998 and December 17, 1998.
b. Kerr-McGee has completed a significant amount of hydro-geologic investigative work for the perchlorate remediation project. This information should prove to be very helpful in the development of a CSM.
c. It is suggested that the CSM be submitted under separate cover as soon as possible. For your information, all of the BMI Companies are preparing CSMs. It is suggested that the CSM include, but not be limited to, the following elements:
i. A list of site-related chemicals for soil and groundwater should be developed in accordance with USEPA guidance (see also comment

10). This list should identify chemicals that may have been disposed of but were not analyzed for during recent investigations. This list should also present risk-based criteria, such as USEPA Region IX PRGs, soil screening levels (SSLs), MCLs, and other criteria where appropriate. See also comment 11.

ii. A discussion pertaining to the potential for contaminants in soil to leach to groundwater should be provided. Contaminant concentrations in soil should be compared to migration to groundwater SSLs developed by the USEPA at the DAF of 1 or site-specific SSLs could be developed.

iii. Preferential migration pathways, such as paleochannels on top of the Muddy Creek Formation; the fine grained facies of the Muddy Creek Formation (e.g. channel sands); and the coarse grained facies of the Muddy Creek Formation also should be evaluated. Kerr-McGee has already completed significant work on this for the perchlorate remediation project.

iv. Cross sections showing the shallow alluvial aquifer and the next deeper water-bearing zone should also be presented.

v. It does not appear that the nature and extent of the contaminant plumes are well understood. Iso-concentration drawings for contaminant plumes in soil and groundwater (including the vertical extent of contamination) that show the entire extent of the plume (including off site data) should be provided. See also comment 8.

vi. The conceptual site model should discuss surface drainage patterns, surface migration of contaminants, and contaminant migration pathways within the vadose zone and groundwater.

vii. The CSM should discuss exposure pathways for current and future receptors, including ecological receptors.

viii. Data gaps should be identified and additional investigation work to close the data gaps should be proposed.

ix. Unqualified data may be presented, however, KM must ensure that the data are presented in a manner that allows the NDEP to differentiate between qualified and unqualified data.

13. Soil Sampling

a. In general, the soil sampling that has been conducted has been in the surface and near-surface. The limited sampling that was conducted is not sufficient to evaluate potential sources that may exist within the vadose zone. Soil samples need to be collected throughout the vadose zone to fully evaluate the extent of contamination in three dimensions and potential impacts to groundwater.

14. Section 1.0, page 1-1

a. Second paragraph – Please correct the date for NDEP's conditional approval of the Phase II Supplemental Work Plan from "*December 17, 1999*" to the correct date of December 17, 1998.

15. Section 2.2.2, page 2-3

a. First paragraph – In the statement "*The spacing of seven successfully drilled perimeter borings comprises a nearby equidistant...*" replace the word "*nearby*" with the word "nearly".

16. **Section 3.1, page 3-1**

a. Total chromium results for soil were compared to a 100 mg/kg level. This is not an appropriate action level or screening level. For example, the USEPA SSL (DAF 1) is 2.0 mg/kg and the USEPA TCLP is 5.0 mg/kg. Background levels may be more conservative. Using either of the above concentrations, all soil samples are grossly elevated. It appears that the depth and breadth of chromium contamination has not been properly evaluated. Please note that the NDEP is using these SSLs for discussion purposes only. KM should calculate their own SSLs or verify that the model used by the USEPA to calculate the published SSLs fits the model for the KM site. A DAF of 1 is being used for discussion purposes, assuming that there is little or no dilution or attenuation of soil leachate at the site (due to the shallow water table and the large source size).

b. The NDEP's December 17, 1998 letter to KM required comparison of sample results to actual Nevada cleanup standards and background values.

c. Soil samples also appear to indicate that there are elevated pH levels in a number of the locations and depths. Background levels for pH should be delineated in accordance with USEPA guidance (see also comment #11.f).

d. The data presented do not delineate the valences of the chromium present in soil. KM states "*elevated pH values tend to retard the mobility of chromium, especially trivalent chromium Cr(III) (Allen 1993). This implies that the mobility of chromium in soil beneath Old P-2 and P-3 Ponds is retarded, thus limiting or eliminating the ponds as an existing or future source of chromium to groundwater.*" The NDEP does <u>not</u> agree with this assessment. There are very high concentrations of chromium in groundwater in the vicinity of the P-2 and P-3 ponds. Data presented by KM indicates that a majority of this chromium may be hexavalent. Please provide further justification for the above statement.

17. **Section 3.2.1, page 3-11**

a. The detection limits presented in Table 3-2 and discussed in this section appear to be elevated. Potential screening levels for benzene, toluene and ethylbenzene in soil are at least an order of magnitude lower than the detection limits presented in table 3-2. For example, the USEPA SSL DAF 1 for benzene is 0.002 mg/kg, for toluene is 0.6 mg/kg, and for ethylbenzene is 0.7 mg/kg. KM needs to derive appropriate action levels and re-evaluate the need for additional sampling in this area.

b. For soil samples SB5-4 and SB5-5, the highest concentrations of "TEPH" are at the greatest depth. The NDEP believes that the depth and volume of soil contamination has not been appropriately evaluated. Additional deeper samples should be proposed in the next workplan.

c. It is suggested that future groundwater samples be analyzed for BTEX. Revised sampling procedures may need to be investigated due to the reported low flow conditions.

18. **Section 3.2.2, page 3-11**

a. The NDEP does not concur with the assessment that no further investigation is recommended or warranted for the former diesel fuel tank storage area.

ISSUED
2/10/04

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: February 10, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham

RE: KM Conference Call

1. Remedial System Update
   a. Continuous operation has been tested off and on since last Wednesday with discharges below 1 ppm. Recent results have shown the discharge to be ND (40). Continuous operation went up to 200 gpm and is expected to start again tomorrow.
2. Discussed issues with CC DAQM.
   a. KM noted that their operation will likely be limited to 400-500 gpm until issues with CC DAQM are resolved.
3. Discussed Permitting.
   a. One other comment came in from Rob Reinhardt.
   b. Discussed the US EPA Comment.
      i. KM noted that Aerojet took months to start up and that the Henderson plant is more complex and has much worse influent water.
      ii. KM noted that the permit does allow for NDEP to lower the effluent limit if the data suggest that it is feasible.
      iii. KM noted their commitment to achieve the lowest possible discharge concentration.
      iv. KM also noted that currently the lab can not detect below 20 ppb and it will take at least 6 months for them to alter the method to detect lower.
      v. NDEP will draft a response to US EPA.
4. Discussed Information Requests and Tours.
   a. Brian attended the American Ground Water Trust conference in Phoenix. The format of this meeting was similar to others in the past and Brian acted to correct the out dated information that was being presented. Brian noted that a similar meeting may be held in May in Las Vegas and it may be helpful for KM to attend as many of the questions revolve around their site.
   b. Todd attended the Scholar Committee to Review Perchlorate at UC Irvine. This committee will likely issue a report to the California agencies that are looking at setting the public health goal. This group is also concerned with the effects on food crops.

c. Pat noted that the FDA will be doing some extensive produce sampling.
d. NDEP noted that the Turnipseed tour in April may be a large group of DWR personnel and other water personnel from the West.

5. Next Meeting: 2/18/04 at 1:00 PM. KM to provide call in information.

Todd Croft

From: Brian Rakvica
Sent: Friday, February 06, 2004 3:12 PM
To: Todd Croft
Subject: notes on KM quarterly perchlorate report dated 1/28/04

Todd,

per our conversation on Tuesday, here are my notes (thus far) on KM's quarterly report

1. data sets are mixed from November and December 2003

2. Figure 3 is the same as Figure 2

3. Appendix D is illegible

4. Appendix C is misplaced in the document

5. Calculation of mass flux uses concentration data from 5/98 and water levels from 4/98 - - why not data from the same day? and aquifer properties are derived from information in 1998 and 2001.

6. Plate 3 - the size and location of the Muddy Creek Island is inferred from a limited data set - - appears to be base on ART4, -5 and ARP-4.

7. Plate 4 - Southern part of drawdown contours is based on very limited data.

That's all I have for now.

Report is on my desk if you would like to look at it.

Brian

Brian A. Rakvica, P.E.
Nevada Division of Environmental Protection
Bureau of Corrective Actions
1771 East Flamingo Road
Suite 121-A
Las Vegas, Nevada 89119
tel: 702-486-2870
fax: 702-486-2863
email: brakvica@ndep.nv.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 9
75 Hawthorne Street
San Francisco, CA 94105-3901

Perchlorate in Henderson, NV-Significant Controls Are Operating

February 2004

Source and Problem Description

*Kerr McGee Chemical Company (KMCC) - perchlorate production was initiated in 1945; full commercial production of ammonium perchlorate began in 1951 under prior owners/operators; Kerr McGee acquired the property in 1967.
*Perchlorate contaminated ground water from Kerr McGee plume flows north about 3 miles from KMCC to Las Vegas Wash (LVW). KMCC is the most significant source of perchlorate entering LVW. Prior to controls, the KMCC plume released about 900 pounds per day (average) to LVW.

Kerr McGee Control Strategy and Status

*Control Strategy: capture and treat perchlorate at three locations

1) on KMCC property where perchlorate is most concentrated,
2) at Athens Road about midway between KMCC and Las Vegas Wash where there is a narrow subsurface paleo-channel that makes effective capture possible, and
3) near LVW where capture will have the most immediate impact on reducing releases to LVW

*Current Status (see attached annotated photograph for additional details)

1) on KMCC property - **source control achieved in October 2001**; slurry wall (1700 feet long & 60 feet deep) and 22 extraction wells capture about 940 to 1150 pounds per day ("virtually complete capture").
2) at Athens Road - 8 extraction wells began regular operation in October 2002; they capture about 710 to 910 pounds per day (an estimated 90 to 95% of the mass flow).
3) near Las Vegas Wash - seep and 9 extraction wells capture about 320 to 450 pounds per day (an estimated 60-80% of mass flow).

*Water Treatment - total of 1100 gpm of water captured from the three locations is treated using 15 ion exchange units. The units are 99+% efficient; the treated water contains 0.5 to 2.0 ppm perchlorate and is discharged back to LVW. [1 ppm equates to 13 pounds per day to LVW]. A new biologically based perchlorate treatment plant has been constructed and is undergoing start-up/shakedown. It has a treatment capacity of about 1000 gpm, and will eventually replace the ion exchange treatment units. As a result, the perchlorate concentrations in the treatment plant effluent will be reduced to about 20 ppb.
*Summary - engineered controls are in place and **removing** 2000-2200 pounds **(about 1 ton) per day** of perchlorate from the Kerr McGee plume that flows towards Las Vegas Wash.

Remaining Issues

*Las VegasWash Gravels - There is a reservoir of perchlorate in the gravels underlying Las Vegas Wash and beyond KMCC's last capture point; this perchlorate surfaces into LVW within 2 miles downstream of the seep capture area; it currently adds about 100-250 pounds per day to LVW. Modeling performed for NDEP indicates that most perchlorate in the Wash gravels will flush out by the end of 2004. The October 20, 2003 final report of these results concluded that perchlorate in the Wash gravels would clear before controls could be installed.
*There Could Be Other Small Sources of Perchlorate - There are on-going investigations about the existence and significance of possible additional sources of perchlorate downstream of the seep area.

Next Steps

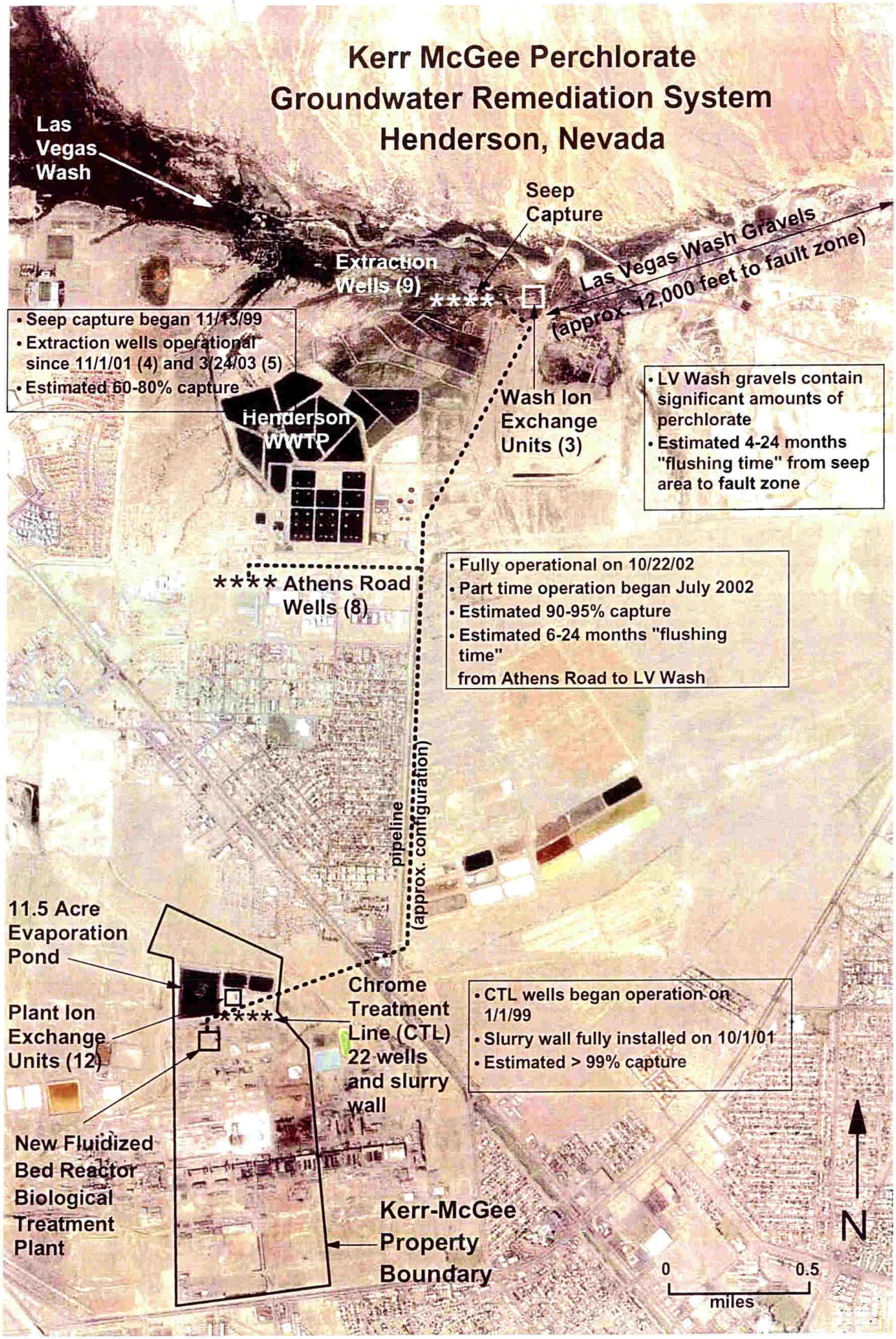
*Ensure that KMCC operates existing controls at maximum efficiency.
*Continue to evaluate the effectiveness of Kerr McGee's control strategy; require additional controls if necessary.
*NDEP to continue to investigate the possibility that other small sources of perchlorate might exist; work began in early 2003.
*Evaluate results of PEPCON pilot scale in-situ bioremediation plant, and develop strategy to intercept and treat this perchlorate plume before it reaches Las Vegas Wash. Intercept plume in mid 2004.

Estimated Travel Times and Flushing Times

It takes time for ground water to travel from one capture point to the next (travel time). Even after a source of perchlorate is reduced or eliminated, it takes time for clean water to flush out the contaminated ground water (flushing time).

*Athens Road to Las Vegas Wash - travel time is estimated to be 6 months; flushing time to reach 1 ppm is estimated to be 12 to 24 months (2 to 4 travel times)

*Las Vegas Wash Gravels - travel time is estimated to be 4 - 6 months; flushing time is estimated to be 12 to 24 months (3 to 6 travel times)


Kerr McGee Perchlorate
Groundwater Remediation System
Henderson, Nevada
Las Vegas Wash
Seep Capture
Extraction Wells (9)
Las Vegas Wash Gravels (approx. 12,000 feet to fault zone)
• Seep capture began 11/13/99
• Extraction wells operational since 11/1/01 (4) and 3/24/03 (5)
• Estimated 60-80% capture
Henderson WWTP
Wash Ion Exchange Units (3)
• LV Wash gravels contain significant amounts of perchlorate
• Estimated 4-24 months "flushing time" from seep area to fault zone
Athens Road Wells (8)
• Fully operational on 10/22/02
• Part time operation began July 2002
• Estimated 90-95% capture
• Estimated 6-24 months "flushing time" from Athens Road to LV Wash
pipeline (approx. configuration)
11.5 Acre Evaporation Pond
Plant Ion Exchange Units (12)
Chrome Treatment Line (CTL) 22 wells and slurry wall
• CTL wells began operation on 1/1/99
• Slurry wall fully installed on 10/1/01
• Estimated > 99% capture
New Fluidized Bed Reactor Biological Treatment Plant
Kerr-McGee Property Boundary
N
0
0.5
miles

Todd Croft

From: Todd Croft
Sent: Tuesday, February 04, 2003 9:20 AM
To: Doug Zimmerman
Cc: Terre Maize
Subject: 02/06/03 Tour of Perchlorate Remediation' ~1;00 p.m.

Doug:

I have updated information Re: the referenced tour. This is from two sources (V-mail to Terre from Verne & v-mail from Kevin Mayer to Todd). As such, the information diverges some but provides what I need at this moment:

Kevin Mayer:

* anticipate two people w/ Kevin (Keith Decata & Mike Cooke) (sp?)

* Meet at ERT ~2:00 p.m. ~ 1345

* Do not plan to go on the Kerr-McGee property. Do desire to see Athens Road and discuss the planned capture and mass intercept.

Verne Rosse:

*Plan to meet at ERT no later than 1:00 p.m. Todd can attend earlier...totally up to him.

* Anticipate ~6-8 of them plus Terre, Verne, & Todd

* Verne to be down on the early flight, stop by the office, leave for ERT w/ Terre.

Lets discuss this more at your convenience later today (~after lunch if we can).

I plan to follow up w/ Kevin Mayer to discuss needs (vehicles, handouts, etc.)

THX BYE TJC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

WTR-5

February 4, 2004

Ms. Tamara Pelham
Bureau of Water Pollution Control
Nevada Division of Environmental Protection
333 W. Nye Lane, Room 138
Carson City, NV 89706

Re: Permit modification
NPDES Permit No. NV0023060, Kerr-McGee Chemical LLC, Henderson facility

Dear Ms. Pelham:

Thank you for the opportunity to review the proposed National Pollutant Discharge Elimination System (NPDES) permit modification for the Kerr McGee Chemical, LLC perchlorate contaminated groundwater treatment facility.

EPA understands the proposed modification will increase the allowable discharge flow and will modify the perchlorate effluent limits to establish a more stringent limit. We appreciate that the Nevada Division of Environmental Protection (NDEP) has proposed to modify the permit to reflect improved technology and effluent reductions of the new treatment system that will result in a reduction of perchlorate loads into the Las Vegas Wash.

The existing permit establishes a flow limit with a monthly average of 1.22 million gallons per day (mgd) and a daily maximum of 1.4 mgd. The proposed modification will increase the allowable flow to a monthly average of 1.45 mgd and a daily maximum of 1.75 mgd. We understand that the flow increase is necessary due to the increased volume of groundwater pumped to the treatment system. The additional pump and treat flow volume will aid remediation efforts by removing additional perchlorate from the groundwater seeping into the Las Vegas Wash. The new, higher flow limits will allow an increased level of treatment for removal of perchlorate contaminated groundwater that will decrease the overall discharge of perchlorate from the site.

The existing permit establishes a two-tiered effluent limit for perchlorate treatment. For ion-exchange treatment, the permit establishes a requirement of 97% removal or 3,000

parts per billion (ppb) whichever is greater. For a biological treatment system, the permit establishes a requirement of 99% removal or 3,000 ppb, whichever is greater. The Kerr-McGee facility has been utilizing ion-exchange treatment on a temporary basis, which has been achieving effluent concentrations of 500 to 2,000 ppb perchlorate, and is in compliance with the effluent limits. Kerr-McGee is in the process of installing a new anaerobic fluidized bed biological treatment system that will replace the ion exchange units.

EPA understands that the new biological treatment system is designed to meet significantly lower effluent concentrations, and is expected to approach non-detect levels when fully operational. The construction of the new system is progressing rapidly, and is expected to be tested and acclimated in January and February, 2004 and is expected to be fully operational by late March. According to the modification proposal fact sheet, the new permit limit will establish a temporary limit of 80 ppb after 90 days of operation at design flow levels, and will then be in place for one year. After this one year period, NDEP expects to establish a final limit of 18 ppb after technology performance has been verified.

As you are aware, the discharge of perchlorate to the Las Vegas Wash impacts the drinking water supply of 15 to 20 million people in Arizona, southern California, southern Nevada, Tribal nations, and Mexico. While the effluent concentrations from the treated groundwater will represent a small percentage of the overall perchlorate loading to the Las Vegas Wash, the effluent limitations contained in this permit are an important component of the overall goal to reduce perchlorate contamination in the drinking water for a large population in the American Southwest.

The Clean Water Act establishes that effluent limitations contained in an NPDES permit be based on the more stringent level of either water quality standards or Best Professional Judgement representing the Best Available Technology (BAT) of treatment performance. The proposed permit modification contains a temporary permit limit that does not establish the most stringent effluent limitations for BAT or water quality based standards.

For perchlorate, the U.S. EPA provisional risk reference dose drinking water equivalent concentration is in the range of 4-18 ppb, and the State of Nevada uses a "provisional cleanup level" of 18 ppb. While we recognize that these are not promulgated water quality standards, they provide guidance for treatment goals, and we recommend that the permit modification establish the effluent limitation at the State's provisional cleanup level of 18 ppb or lower if technologically achievable. Based on our experience of demonstrated treatment of perchlorate contaminated groundwater, existing treatment technologies are capable of meeting this level of treatment (e.g., the Aerojet facility in Rancho Cordova, California). While we believe it is reasonable to allow time for system start-up and acclimation of the biological system, the length of time allowed in the permit for the temporary limit (15 months) appears to be excessive.

We recommend that the permit modification be revised to establish an effluent limitation of 18 ppb or lower, and that the modification include a reasonable schedule of compliance to allow for system start-up and acclimation.

If you have any questions concerning this correspondence, please call me at (415) 972-3420 or John Tinger of my staff at (415) 972-3518.

Sincerely,

Douglas E. Eberhardt

Douglas E. Eberhardt
Chief, CWA Standards and Permits Office

cc: Jon Palm, NDEP

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: February 3, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham

RE: KM Conference Call

1. Remedial System Update
   a. Construction is nearly complete.
   b. Batch operation continues and pond space is becoming limited.
   c. Continuous operation was expected yesterday, however, it has been delayed due to issues with Clark County (CC) DAQM.
   d. It is expected that KM may attempt to go to 50 gpm as soon as tomorrow. If this works well they may increase flow by 10-20% per day.
2. Discussed issues with CC DAQM.
   a. KM is currently not allowed to use their ethanol tank or lime silo until issues are resolved with CC DAQM. It is expected that these issues will be resolved by mid to late February.
   b. Currently KM is using barrels of ethanol and acetic acid to maintain the bacterial culture. This complicates control of the system.
3. Discussed Permitting.
   a. EPA is expected not to object, however, they will comment.
   b. Draft of permit was copied to MWD.
4. Discussed Information Requests and Tours.
   a. Alan Curtis has requested additional information and KM has provided him with some plume maps.
   b. Senator McCain's office has contacted USEPA Region IX on this issue. Larry Bowerman is following up.
   c. Brian is attending the AGWT conference in Phoenix on 2/9/04
5. Other issues.
   a. City of Henderson did not add KM's request for additional wells to their agenda. It is expected that this will be on the next agenda. This delays the work by a couple of weeks.
   b. Reviewed the revisions to the NDEP comment letter on the ECIA.
6. Next Meeting: 2/10/04 at 3:00 PM. Susan to provide call in information.

ALLEN BIAGGI, *Administrator*

Administration
Water Pollution Control
Air Quality
(702) 486-2850

STATE OF NEVADA
KENNY C. GUINN
Governor

R. MICHAEL TURNIPSEED, *Director*

Federal Facilities
Corrective Actions
Waste Management
Facsimile 486-2863

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
(Las Vegas Office)
1771 E. Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119-0837

TRANSMITTAL

To: Susan Crowley
Kerr-McGee Chemical LLC
PO Box 55
Henderson, Nevada 89009

From: Brian A. Rakvica BAR

Date: 2/3/04

Re: Recent Correspondence to the BMI Companies

Enclosed we transmit the following:

Copies of recent letters to the BMI Companies regarding their Phase II Scope of Work.

Please call if there are any questions.

~~DRAFT~~

ISSUED
2/2/04

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: January 27, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham

RE: KM Conference Call

1. Remedial System Update
   a. A total of 360,000 gallons of IX feed water has been fed in to the FBR system and another 90,000 gallons are expected to be brought in tomorrow. All will be discharged to GW-11.
   b. The perchlorate has been reduced from 83 ppm to 2 ppm in two days in this influent.
   c. Beginning tomorrow, the secondary reactors will begin to be inoculated.
   d. It is expected that continuous operation will begin as early as next week at 50 gpm. This water will be discharged to GW-11 until 99% removal is achieved. Once this is achieved the water will be discharged down the pipe and the flow rate will be increased.
   e. The IX plant will remain on stand by until the FBR has proven that it can meet effluent limitations.
2. Discussed Permitting.
   a. KM inquired if there had been any public comments yet.
3. Discussed Information Requests and Tours.
   a. Alan Curtis has requested additional information.
   b. 2/10/04 - 1:00 PM - USEPA tour.
4. Next Meeting: 2/3/04 at 3:00 PM. Susan to provide call in information.

DRAFT

ISSUED
1/23/04

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica 20

DATE: January ~~6~~, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham

RE: KMCC ~~Quarterly Perchlorate Meeting~~ Conf. Call

1. Remedial System Update
   a. Final inspections being completed; expect completion by the end of January.
   b. Currently, the start up is about 2 weeks behind schedule. They hope to catch up based on microbial growth.
   c. Currently, the system is working in batch mode.
   d. System was inoculated last Friday with denitrifiers, perchlorate destroyers and in-situ microbes present in the natural groundwater. Additional ethanol will be added. The inoculants contains commercial denitrifer; dense sludge from the NJ laboratory; carbon loaded with sludge; and drums of carbon from a denitrifying operation.
   e. This batch has destroyed nitrate and chlorate and has begun to destroy perchlorate.
   f. It is planned to add batch 2 on Thursday and move batch 1 to reactors 5-8.
   g. Eventually, they will move to continuous operation. The continuous operation will be partially monitored based on ethanol consumption and will be confirmed with perchlorate concentrations. It is hoped that a low flow rate can be achieved by mid-February.
   h. Once fully operation the residence time will be over six hours.
2. Discussed Permitting.
   a. Public notice has not been issued yet.
   b. Lingering issues are currently being discussed at higher levels of NDEP and USEPA.
   c. Noted that pilot test was completed in NJ with water from the site.
   d. Noted that the existing FBR design is based on the existing permit limitations and 99% destruction. Also hope for ND at a later time.
   e. KMCC feels that USEPA is being unreasonable and is potentially asking for something that may be technically unfeasible. No other system exists with influent concentration similar to KMCC. The Aerojet facility has influent of 1.7 ppm (versus ~350 ppm at KMCC).
   f. NDEP is currently thinking that there will be a start up period; after the start up period the discharge limit will be 99% removal for the next 90 days; after that the discharge limit will be 80 ppb.

g. Noted that 80 ppb is higher quality effluent than the IX system is currently producing.
h. NDEP noted that the Nevada lab certification person would be interested in providing whatever assistance he can with regards to development of lower detection limits in the high salinity environment.

3. Discussed Information Requests and Tours.
   a. 1/26 – MWD would like to tour. KMCC indicated that this would not be a good day. February would be better.
   b. 2/9/04 – Todd will attend the Urban Water Research Center and give a presentation similar to the NAS presentation.
   c. 2/10 or 2/12 - USEPA tour.
4. Next Meeting: 1/27/04 at 3:00 PM. Susan to provide call in information.

RECEIVED

2004 JAN 26 PM 12: ??

DCNR/NDEP
LAS VEGAS

KERR-McGEE CHEMICAL LLC

POST OFFICE BOX 55 - HENDERSON, NEVADA 89009

January 15, 2004

Mr. Brian Rakvica
Nevada Division of Environmental Protection
1771 East Flamingo Road, Suite 121-A
Las Vegas, Nevada 89119

Dear Mr. Rakvica:

Subject: Kerr-McGee Environmental Conditions Investigation Quarterly Report – 4th Q 2003

Pursuant to Section XIII of the Consent Agreement, signed September 5, 1996, between Nevada Division of Environmental Protection (NDEP) and Kerr-McGee Chemical LLC (Kerr-McGee), formerly Kerr-McGee Chemical Corporation (KMCC), Kerr-McGee submits the following quarterly progress report for the Henderson facility's Environmental Conditions Investigation.

Activities Conducted 10/01/03 to 12/31/03

- Kerr-McGee participated in review of the draft BRC Common Areas Administrative Order on Consent, prepared and forward by NDEP.

Please feel free to call me at (702) 651-2234, if you have any questions. Thank you.

Sincerely,

Susan M. Crowley
Staff Environmental Specialist

smc\Quarterly (4th Q 03) Progress Report to Rakvica.doc

cc: Jennifer Carr, NDEP
Todd Croft, NDEP
RGAddison
RLWaters
RHJones
FRStater
PSCorbett
JTSmith (Covington & Burling)
TWReed
RSimon (ENSR)

CERTIFIED MAIL

7000 1670 0002 1245 9770

DRAFT

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: January 6, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham

RE: KMCC Quarterly Perchlorate Meeting

1. Remedial System Update
   a. Final inspections being completed.
   b. Media loaded into reactors 1-4. Nitrate and nitrifying bacteria added to reactors 1-4. This serves to provide minor conditioning of the sand.
   c. Still waiting to receive inoculants. This is a potential delay of 1-3 weeks. KMCC is reviewing a number of different pathways for getting these inoculants.
   d. About 2 weeks of construction remain on units that are not currently needed.
   e. Noted that a performance test is required to operate for 30 days 24/7 and produce ND (20 ppb). Another performance requirement is to achieve 99% destruction (~2 ppm).
   f. Reviewed start up procedure as discussed in previous meetings.
2. Discussed the KMCC response letter. Noted that NDEP agrees with this letter and the schedule and understands that the schedule may slip due to access agreements and other factors.
3. Reviewed upcoming information requests and tours.
   a. 2/5/04 – Natural Resource Advisory Board – may tour the plant site FBR or may not.
   b. 2/9/04 – Todd will attend the Urban Water Research Center and give a presentation similar to the NAS presentation.
   c. 4/1/04 - Nevada DWR tour of plant site FBR and surrounding areas.
   d. 4/27/04-4/30/04 – USEPA – Keith Takata and Wayne Nastri – date to be confirmed. Tour the plant site FBR.
4. Next Meeting: 1/20/04 at 3:00 PM. Susan to provide call in information.

DRAFT

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: January 6, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham

RE: KMCC Quarterly Perchlorate Meeting

1. Remedial System Update
   a. Final inspections being completed.
   b. Media loaded into reactors 1-4. Nitrate and nitrifying bacteria added to reactors 1-4. This serves to provide minor conditioning of the sand.
   c. Still waiting to receive inoculants. This is a potential delay of 1-3 weeks. KMCC is reviewing a number of different pathways for getting these inoculants.
   d. About 2 weeks of construction remain on units that are not currently needed.
   e. Noted that a performance test is required to operate for 30 days 24/7 and produce ND (20 ppb). Another performance requirement is to achieve 99% destruction (~2 ppm).
   f. Reviewed start up procedure as discussed in previous meetings.
2. Discussed the KMCC response letter. Noted that NDEP agrees with this letter and the schedule and understands that the schedule may slip due to access agreements and other factors.
3. Reviewed upcoming information requests and tours.
   a. 2/5/04 – Natural Resource Advisory Board – may tour the plant site FBR or may not.
   b. 2/9/04 – Todd will attend the Urban Water Research Center and give a presentation similar to the NAS presentation.
   c. 4/1/04 - Nevada DWR tour of plant site FBR and surrounding areas.
   d. 4/27/04-4/30/04 – USEPA – Keith Takata and Wayne Nastri – date to be confirmed. Tour the plant site FBR.
4. Next Meeting: 1/20/04 at 3:00 PM. Susan to provide call in information.

DRAFT

MEMORANDUM TO FILE

TO: KMCC File

FROM: Brian Rakvica

DATE: January 6, 2004

CC: Todd Croft, Jennifer Carr, Jeff Johnson
Jon Palm, Tamara Pelham

RE: KMCC Quarterly Perchlorate Meeting

1. Remedial System Update
   a. Final inspections being completed; expect completion by the end of January.
   b. Currently, the start up is about 2 weeks behind schedule. They hope to catch up based on microbial growth.
   c. Currently, the system is working in batch mode.
   d. System was inoculated last Friday with denitrifiers, perchlorate destroyers and in-situ microbes present in the natural groundwater. Additional ethanol will be added. The inoculants contains commercial denitrifer; dense sludge from the NJ laboratory; carbon loaded with sludge; and drums of carbon from a denitrifying operation.
   e. This batch has destroyed nitrate and chlorate and has begun to destroy perchlorate.
   f. It is planned to add batch 2 on Thursday and move batch 1 to reactors 5-8.
   g. Eventually, they will move to continuous operation. The continuous operation will be partially monitored based on ethanol consumption and will be confirmed with perchlorate concentrations. It is hoped that a low flow rate can be achieved by mid-February.
   h. Once fully operation the residence time will be over six hours.
2. Discussed Permitting.
   a. Public notice has not been issued yet.
   b. Lingering issues are currently being discussed at higher levels of NDEP and USEPA.
   c. Noted that pilot test was completed in NJ with water from the site.
   d. Noted that the existing FBR design is based on the existing permit limitations and 99% destruction. Also hope for ND at a later time.
   e. KMCC feels that USEPA is being unreasonable and is potentially asking for something that may be technically unfeasible. No other system exists with influent concentration similar to KMCC. The Aerojet facility has influent of 1.7 ppm (versus ~350 ppm at KMCC).
   f. NDEP is currently thinking that there will be a start up period; after the start up period the discharge limit will be 99% removal for the next 90 days; after that the discharge limit will be 80 ppb.

g. Noted that 80 ppb is higher quality effluent than the IX system is currently producing.
h. NDEP noted that the Nevada lab certification person would be interested in providing whatever assistance he can with regards to development of lower detection limits in the high salinity environment.

3. Discussed Information Requests and Tours.
   a. 1/26 – MWD would like to tour. KMCC indicated that this would not be a good day. February would be better.
   b. 2/9/04 – Todd will attend the Urban Water Research Center and give a presentation similar to the NAS presentation.
   c. 2/10 or 2/12 - USEPA tour.
4. Next Meeting: 1/27/04 at 3:00 PM. Susan to provide call in information.

Todd Croft

From: Brian Rakvica
Sent: Wednesday, January 21, 2004 9:52 AM
To: Todd Croft; Tamara Pelham
Subject: notes from yesterdays mtg

Todd and Tamara,

attached are notes from yesterday's meeting

Please provide any comments to me and I will finalize on Friday , 1/23/04.

Brian

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