APR 0 8 1994

Mr. Richard Hayslip, Manager
Environmental Services Dept.
Salt River Project
P. O. Box 52025
Phoenix, AZ 85072-2025

Subject: Groundwater Monitoring at Navajo Generating Station pursuant to RCRA CA/FO (Docket # 009-90-0001)

Dear Mr. Hayslip:

Based on a review of the four quarters of groundwater monitoring conducted by Salt River Project (SRP) at the Navajo Generating Station pursuant to the modified CA/FO of August 14,1992, EPA verifies that all tasks have been completed satisfactorily. This will therefore return SRP to compliance with the applicable RCRA provisions, and will close Docket Number RCRA 009-90-0001.

While SRP has complied with the provisions of the CA/FO, EPA strongly urges Salt River Project to continue to monitor the three wells in the Navajo sandstone on a yearly basis, in order to insure that there is no future migration of chromium contamination to the Navajo.

Please call Ms. Latha Rajagopalan, of my staff, at (415)744-2025, or Ms. Thelma Estrada, of our Office of Regional Counsel, at (415)744-1386, should you have any questions.

Sincerely,

Richard Vaille
Chief, State
Programs Branch

cc: Sadie Hoskie, Navajo EPA

bc: Latha Rajagopalan, H-2-2
Thelma Estrada, RC-2-4
H-2 Reading File
Elaine Schimmel, H-4-1

SYMBOL	H-2-2	ORC	H-2-3	H-2		
SURNAME	Rajagopalan	Estrada	Bryson	Unno		
DATE	4/6/94	4/6/94	4/7/94	4/7/94		

U.S. EPA CONCURRENCES OFFICIAL FILE COPY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105-3901

APR 0 8 1994

Mr. Richard Hayslip, Manager
Environmental Services Dept.
Salt River Project
P. O. Box 52025
Phoenix, AZ 85072-2025

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Please call Ms. Latha Rajagopalan, of my staff, at (415)744-2025, or Ms. Thelma Estrada, of our Office of Regional Counsel, at (415)744-1386, should you have any questions.

Sincerely,

Richard Vaille
Chief, State
Programs Branch

cc: Sadie Hoskie, Navajo EPA

bc: Latha

Printed on Recycled Paper

SALT RIVER PROJECT
POST OFFICE BOX 52025
PHOENIX, ARIZONA
85072-2025
(602) 236-6699

Richard M. Hayslip
MANAGER
Environmental Services

September 29, 1993

Latha Rajagopalan
Hazardous Waste Management Division
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Re: Fourth Quarterly Groundwater Monitoring Report
Navajo Generating Station (RCRA 009-90-001)

Dear Ms. Rajagopalan:

Pursuant to requirements specified in the Modifications to the Consent Agreement and Final Order (Modified CA/FO) executed on August 14, 1992, attached is the fourth quarterly monitoring report of the investigation of hexavalent chromium contamination in shallow and deep monitor wells at the Navajo Generating Station. The report documents the results of hexavalent chromium analyses of groundwater samples collected on August 17, 1993.

The results of the sampling indicate no detectable concentration of hexavalent chromium is observed in the three existing deep wells. As was the case in the third round of sampling, the analytical laboratory reported the hexavalent chromium concentration to a method detection limit (MDL) of 0.005 mg/l. In the shallow monitor wells, the fourth quarter monitoring data indicate hexavalent chromium is detected in monitor well #71 at a concentration of 0.87 mg/l. Monitor well #71 has consistently shown sub part per million levels of hexavalent chromium in the previous monitoring periods. Hexavalent chromium was also reported in groundwater from monitor well #63 at a concentration of 0.005 mg/l, the laboratory method detection limit.

With the submittal of this report, SRP has completed quarterly sampling and analysis of NGS shallow and deep monitor wells for hexavalent chromium for a one year period as required by the Modified CA/FO. The results of the quarterly monitoring obtained from the three existing deep wells at NGS have demonstrated that there is no detectable hexavalent chromium in groundwater. Moreover, in the third and fourth rounds of sampling the method detection limit for hexavalent chromium was 0.005 mg/l, one order of magnitude lower than the 0.050 mg/l MDL reported in the first two sampling rounds. Thus, the recent monitoring results provide even greater assurance that there has been no contamination of the regional aquifer underlying the NGS site.

With respect to the shallow monitor wells, the results of quarterly monitoring have confirmed

Investigation For Hexavalent Chromium Contamination in Shallow and Deep Monitor Wells

Overview:

On August 17, 1993, field technicians from SRP Environmental Services Department collected samples from three deep wells and nine shallow monitor wells at the Navajo Generating Station (NGS). The samples were transferred to Westech Laboratories, Incorporated of Phoenix, Arizona and analyzed for hexavalent chromium.

Summary of Deep Groundwater Monitoring Activities:

Field and laboratory procedures for monitoring the deep groundwater monitor wells were specified in a Sampling and Analysis Plan (SAP) that was submitted to EPA Region IX on September 14, 1992, as an amendment to the May 1991 "Sampling and Analysis Plan for Determining Potential Chromium Contamination at the Navajo Generating Station". EPA approval of the SAP was documented in a letter dated November 17, 1992. The locations of the deep wells are shown in Figure 1.

Prior to sampling, measurements of the depth to groundwater were taken in each well. The measured groundwater elevations relative to a Mean Sea Level (MSL) datum are as follows:

Well ID	*Elevation (feet above MSL)*	*Measuring Point Depth to Water (feet)*	*Groundwater Elevation (feet above MSL)*
DW #1	4,298.0	901.4	3,396.6
DW #2	4,366.2	948.7	3,417.5
DW #3	4,424.1	976.6	3,447.5

Groundwater samples were collected from deep wells #1 and #3 following well purging with the dedicated pumps in the well. A groundwater sample was collected from deep well #2 using a two inch stainless steel bailer lowered to below static water level via wireline. Field records of deep well groundwater sampling are provided in Attachment 1.

The groundwater samples were submitted to Westech Laboratories Incorporated of Phoenix, Arizona for hexavalent chromium analysis. The results of the laboratory analysis are shown below and indicate there is no detectable concentration of hexavalent chromium in any of the deep well samples. Of particular significance in this report, Westech Laboratories reported the hexavalent chromium concentration to a method detection limit (MDL) of 0.005 mg/l rather than the MDL of 0.050 mg/l that was reported in the first two quarterly reports.

Well ID	*Sample ID*	*Location*	*Hexavalent Chromium*
DW #1	NGS-DW-1	north plant site	> 0.005 mg/l
DW #2	NGS-DW-2	railroad loop at plant site	< 0.005
DW #3	NGS-DW-3	ash disposal area	< 0.005

Laboratory certificates of analysis and chain of custody records for the deep well sample analyses are provided in Attachment 2.

Summary of Shallow Groundwater Monitoring Activities:

Field and laboratory procedures for monitoring the shallow groundwater monitor wells were stated in the "Sampling and Analysis Plan for Determining Potential Chromium Contamination at the Navajo Generating Station" (SAP) submitted to the EPA in May 1991. EPA approval of the SAP was documented in a letter dated July 17, 1991. In further refinement of sampling procedures, SRP and EPA agreed that samples would be collected from the shallow wells as soon as sufficient water had entered the well following well purging. This provision was included in the EPA letter dated November 17, 1992. Figure 2 shows the locations of the shallow monitor wells that were sampled.

Groundwater samples were collected on August 17, 1993, from all shallow wells designated for monitoring. Prior to sampling, the wells were purged by removing three well casing volumes of water or bailed dry where there was insufficient water to purge. Samples of groundwater were collected when a sufficient volume of water had entered the well. The amount of time required to yield the 250 milliliter sample volume ranged from a few minutes to approximately twelve hours. Field records of groundwater sampling in the shallow wells are provided in Attachment 3.

The groundwater samples were submitted to Westech Laboratories for hexavalent chromium analysis. The results of the laboratory analysis are shown in the following table. Monitor well #71, which has shown hexavalent chromium concentrations ranging from 0.049 to 0.98 mg/l in the previous three rounds of groundwater monitoring, exhibited a concentration of 0.87 mg/l hexavalent chromium. Monitor well #63, which has never been observed to have any detectable concentrations of hexavalent chromium, was reported to have 0.005 mg/l hexavalent chromium in this round. It should be noted that 0.005 mg/l is the Westech Laboratories method detection limit for the procedure. Laboratory certificates of analysis and chain of custody records for the shallow well sample analyses are provided in Attachment 4.

Results of Hexavalent Chromium Analyses of Shallow Ground Water Monitor Well Samples Collected on August 17, 1993					
Well ID	*Sample ID*	*Approx. Plant Coordinates*		*Screened Interval (feet bgs)*	*Hexavalent Chromium (mg/l)*
		North	*East*		
A	GSMWNS-A	N6704	E4807	10-30	< 0.005
B	GSMWNS-B	N6697	E4506	5-25	< 0.005
C	GSMWNS-C	N7067	E4319	7.5-17.5	< 0.005
D	GSMWNS-D	N7007	E4044	9-19	< 0.005
E	GSMWNS-E	N7431	E4018	6.5-16.5	< 0.005
31	GSMWNS-31	N6990	E4960	0-33	< 0.005
63	GSMWNS-63	N7983	E4028	3-21	0.005
66	GSMWNS-66	N6400	E6050	17-28	< 0.005
71	GSMWNS-71	N6480	E5070	16-22	0.87

Quality Assurance/Quality Control:

SRP followed the protocol documented in the SAP for quality assurance/quality control (QA/QC) of the sample collection and handling. The protocol includes measures for decontaminating sampling equipment, purging the well, obtaining well and quality control samples, documenting the samples and sampling procedure, and transferring the samples to the analytical laboratory.

Two samples were collected during the August 17, 1993, sampling event for quality control purposes including a monitor well duplicate and an equipment blank. Documentation of the quality control samples is provided in the groundwater monitoring field data reports in Attachment 3. The duplicate sample was collected from NGS monitor well #71 and designated as NGMWNS-F. The primary and duplicate sample from monitor well #71 were both reported to have a concentration of 0.870 mg/l hexavalent chromium. The equipment blank sample represents a sample of the rinse water from the decontamination of the submersible pump used to purge shallow monitor wells. The equipment blank sample, designated GSMWNS-EB, was collected once the pump was decontaminated after purging monitor well #71. The equipment blank did not have any detectable hexavalent chromium.

All samples collected on August 17, 1993, were submitted and analyzed by Westech Laboratories within the 24 hour holding time limit for hexavalent chromium. Westech Laboratories performed quality control testing during the analysis of the NGS water samples

as specified in their quality assurance manual. The quality control program included analysis of laboratory spike, duplicate, blank, and control samples.

Laboratory certificates of analysis and chain of custody records for the quality control sample analyses are provided in Attachment 5. Also provided in this attachment are the results of the Westech Laboratories quality control testing for the set of samples.

Attachment 1

Figure 5

Groundwater Monitoring Field Data

Site NGS - DW - 1 Date 8/17/93

Casing Diameter 6.75" Casing Depth 1200' Pump Setting 945'

Purging Data TAKEN 8/16/93 1330 HRS.

SWL 901.4 Feet Of Water In Well 298.6 Gal. Water/Ft 1.859

1x Well Vol 555 2x Well Vol 1110 3x Well Vol 1665 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading 9999680 Start Time 0450

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.03	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	9999680	186	9.4	18.8	8.6	H_2O CLEAR
1x Vol	0000235	231	8.5	21.9	9.1	" "
2x Vol	0000790	415	8.3	22.0	9.1	VERY SLIGHT PINKISH TINT
3x Vol	0001345	432	8.3	22.4	9.0	" " " "
4x Vol						
5x Vol						

Ending Flowmeter Reading 1370 Gallons Pumped 1690 Sample Time 0755

Additional Comments:

PURGED WELL W/ DEDICATED PUMP. SAMPLED W/ SAME.

Sampled by:

R. PRIGGE / J. LEE WATTS

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-2 Date 8/17/93

Casing Diameter 4" → 660' 6.75" → 1500' Casing Depth 1500' Pump Setting No Pump in Well

Purging Data

SWL 948.7 Feet Of Water In Well 551.3' Gal. Water/Ft 1.859

1x Well Vol _____ 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	t°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1115

Additional Comments:

Well was not Purged. Sampled w/ Stainless Steel Bailer @ ≅ 10' Below SWL

- MP is Top of 4" Casing

Sampled by:

R. Trigger / J. Lee Watts

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-3 Date 8/17/93

Casing Diameter 6.75" Casing Depth 1500' Pump Setting 1029'

Purging Data TAKEN 8/16/93 1500 HRS.

SWL 976.6 Feet Of Water In Well 523.4 Gal. Water/Ft 1.859

1x Well Vol 973 2x Well Vol 1946 3x Well Vol 2919 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading 1370 Start Time 0900

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.03	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	1370	248	9.3	24.0	9.5	H_2O CLEAR
1x Vol	2343	238	8.4	22.9	9.3	" "
2x Vol	3316	212	8.4	23.1	9.5	" "
3x Vol	4289	238	8.4	23.3	9.4	" "
4x Vol						
5x Vol						

Ending Flowmeter Reading 4290 Gallons Pumped 2920 Sample Time 1415

Additional Comments:

PURGED WELL W/ DEDICATED PUMP. SAMPLED W/ SAME.

Sampled by:

R. TRIGGS / J. LEE WATTS

Print Signature

Signature

Attachment 2

Westech Laboratories Inc.
The Quality People
Since 1955

Phoenix • 3737 E. Broadway Rd. • AZ 85040 • 602-437-1080 • fax 437-8706
Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • 602-774-2312 • fax 774-6469
El Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

RECEIVED
AUG 26 1993
WATER & WASTE DIVISION
Environmental Services

CLIENT	ADDRESS	
SRP	PO Box 52025 PHX. AZ. 85072-2025	
TELEPHONE: 236-4130	PROJECT: NGS	JOB / P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature] IV / [signature]
SAMPLER (PLEASE PRINT): R. PRIGGE / J. LEE WATTS

SAMPLE TYPE CODES: S - SOIL, O - OIL, T - TRAVEL BLANK, W - WATER, G - SLUDGE, F - FIELD BLANK, X - OTHER (SPECIFY)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: HEX CHROMIUM	COMMENTS	LABORATORY IDENTIFICATION
NGS-DW-1	8/17/93	0755			✓	W	1		✓		9317471
GSMWNS-63		0620			✓	W	1		✓		7472
GSMWNS-66		0725			✓	W	1		✓		7473
GSMWNS-D		0810			✓	W	1		✓		7474
GSMWNS-E		0815			✓	W	1		✓		7475
GSMWNS-C		0820			✓	W	1		✓		7476
GSMWNS-EB		0840			✓	W	1		✓		7477
NGS-DW-2		1115			✓	W	1		✓		7478
GSMWNS-71		1330			✓	W	1		✓		7479
GSMWNS-A		1345			✓	W	1		✓		7480
GSMWNS-31		1355			✓	W	1		✓		7481
NGS-DW-3		1415			✓	W	1		✓		7482
GSMWNS-F		1430			✓	W	1		✓		7483
GSMWNS-B		1455			✓	W	1		✓		7484

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
[signature] IV	R. PRIGGE	8/17/93 1525 HRS.	[signature]	SKY WEST
Sky West	[signature]	1830 8-17-93	Mike English	[signature]

REMARKS

SAMPLE / COOLER °C

SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

623 (6/93) White - Testing Laboratory; Yellow - Department Job File; Pink - Client

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317471
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

RECEIVED
AUG 25 1993
WATER & WASTE DIVISION
Environmental Services

(1) Copy to Client

Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317478
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317482
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-3
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

(1) Copy to Client

M. Engel
Managing Director

Attachment 3

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-A Date 8/17/93

Casing Diameter 2" Casing Depth 32.13' Pump Setting Bailed Dry

Purging Data

SWL 23.67 Feet Of Water In Well 8.46' Gal. Water/Ft 0.163

1x Well Vol _____ 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1345

Additional Comments:

Evacuated Well w/ Disposable Bailer @1325 HRS. Let sit for ≈ 20 mins
Sampled w/ Same Bailer @ 1345 HRS.

Sampled by:

R. Pringle / J. Lee Watts
Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-B Date 8/17/93

Casing Diameter 2" Casing Depth 27.20' Pump Setting Bailed Dry

Purging Data

SWL 19.60' Feet Of Water In Well 7.60' Gal. Water/Ft 0.163

1x Well Vol _____ 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1455

Additional Comments:

Evacuated Well w/ Disposable Bailer @ 1300 HRS 8/17/93 Let Recover For 120 mins. Sampled w/ Same Bailer @ 1455 HRS.

Sampled by:

R. Pringle / J. Lee Watts

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-C Date 8/17/93

Casing Diameter 2" Casing Depth 19.59' Pump Setting Bailed Dry

Purging Data

SWL 11.31 Feet Of Water In Well 8.28 Gal. Water/Ft 0.163

1x Well Vol 1.3 2x Well Vol 2.6 3x Well Vol 3.9 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 0820

Additional Comments:

Evacuated Well w/ Disposable Bailer on 8/16/93 @1620 hrs. Let Recover Overnight.

Sampled w/ Same Bailer @ 0820 hrs 8/17/93

Sampled by:

R. Triggle / J. Lee Watts

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-D Date 8/17/93

Casing Diameter 2" Casing Depth 21.41' Pump Setting Bailed Dry

Purging Data

SWL 13.97 Feet Of Water In Well 7.44 Gal. Water/Ft 0.163

1x Well Vol 1.2 2x Well Vol 2.4 3x Well Vol 3.6 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	t°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 0810

Additional Comments:

Evacuated well w/ Disposable Bailer on 8/16/93 @ 1540 hrs. Let Recover overnight.

Sampled w/ Same Bailer @ 0810 hrs 8/17/93

Sampled by:

R Trigg / J. Lee Yates

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-E Date 8/17/93

Casing Diameter 2" Casing Depth 18.63 Pump Setting Bailed Dry

Purging Data

SWL 13.00 Feet Of Water In Well 5.63 Gal. Water/Ft 0.163

1x Well Vol 0.92 2x Well Vol 1.84 3x Well Vol 2.76 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 0815

Additional Comments:

Evacuated Well w/ Disposable Bailer on 8/16/93 @ 1600 hrs. Let Recover overnight

Sampled w/ Same Bailer @ 0815 hrs 8/17/93

Sampled by:

R. Pringle / J. Lee Wates

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-31 Date 8/17/93

Casing Diameter 2" Casing Depth 30.43' Pump Setting Bailed Dry

Purging Data

SWL 15.55 Feet Of Water In Well 14.88 Gal. Water/Ft 0.163

1x Well Vol _____ 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1355

Additional Comments:

EVACUATED WELL WITH 2" STAINLESS STEEL BAILER @ 1330 HRS. LET SIT FOR 25 MINS. + SAMPLED W/ DISPOSABLE BAILER @ 1355 HRS.

Sampled by:

R. PRIGGE / J. LEE WATTS

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-63 Date 8/17/93

Casing Diameter 4" Casing Depth 23.27' Pump Setting 23'

Purging Data

SWI 8.37 Feet Of Water In Well 14.90 Gal. Water/Ft 0.653

1x Well Vol 9.7 2x Well Vol 19.4 3x Well Vol 29.1 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time 0605

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.03	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 Gal.	34	8.1	25.6	~5	H_2O Clear (Suspect Residual DI H_2O)
1x Vol	10 Gals	11,560	7.1	21.3	~5	" Stained
2x Vol	20 Gals	6890	7.1	20.4	~5	" "
3x Vol	30 Gals.					
4x Vol						Pumped Dry after 20 Gals.
5x Vol						(0610 hrs.)

Ending Flowmeter Reading — Gallons Pumped 20 Sample Time 0620

Additional Comments:

Evacuated Well w/ Redi-Flo 2 Env. Pump. Let Recover 5 mins. + Sampled w/ Disposable Bailer

Volumes measured w/ 5 Gal. Bucket.

Pump Decontaminated w/ Liquinox + DI H_2O from X-cut Lab

Sampled by:

R. Prigge / J. Lee Watts

Print Signature

[signature] / [signature]

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-66 Date 8/17/93

Casing Diameter 4" Casing Depth 30.08' Pump Setting 30'

Purging Data

SWL 15.03 Feet Of Water In Well 15.05 Gal. Water/Ft 0.653

1x Well Vol 10 2x Well Vol 20 3x Well Vol 30 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading — Start Time 0712

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.03	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 Gals	10,510	7.5	23.5	~4	H_2O Pinkish
1x Vol	10 Gals	10,490	7.4	23.4	~4	" Clear
2x Vol	20 Gals	10,530	7.4	23.4	~4	" "
3x Vol	30 Gals	10,570	7.4	23.4	~4	" "
4x Vol						
5x Vol						

Ending Flowmeter Reading — Gallons Pumped 35 Sample Time 0725

Additional Comments:

Purged Well w/ Redi-Flo 2 Env. Pump. Volumes measured w/ 5 Gal. Bucket.
Sampled w/ Disposable Bailer.

Decontaminated Pump w/ Liquinox + DI H_2O from X-cut Lab

Sampled by:
R Pringle / J Lee Watts
Print Signature

J Lee Watts
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-71 Date 8/17/93

Casing Diameter 4" Casing Depth 24.82' Pump Setting 24'

Purging Data

SWL 16.97 Feet Of Water In Well 7.85 Gal. Water/Ft 0.653

1x Well Vol 6 2x Well Vol 12 3x Well Vol 18 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time 0830

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.03	pH	1000	

	Meterread	EC ?	pH	T°	Q (GPM)	Remarks
Start	0 Gals	~~2580~~	7.8	25.8	~3	H_2O CLEAR
1x Vol	6 Gals	6990	7.7	23.5	~3	" "
2x Vol	12 Gals					
3x Vol	18 Gals					Pumped Dry after 10-11 Gals. 0835 hrs
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped 11 Sample Time 1330

Additional Comments:

Purged Well w/ Red-Flo 2 Env. Pump. Volumes measured w/ 5 Gal. Bucket
Let Recover Till 1330 hrs. Sampled w/ Disposable Bailer @ 1330 hrs.
Decontaminated pump w/ Liquinox + DI H_2O from XCT Lab.
Duplicate Sample taken at this site - GSMWNS-F (Bears Time of 1430 hrs put on COC)
Took Equipment Blank out of Cleaned Pump GSMWNS-EB 1840 hrs.

Sampled by:
R. Bragge / J. Lee Watts
Print Signature

Signature

Attachment 4

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Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • 602-774-2312 • fax 774-6469
El Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

RECEIVED
AUG 26 1993
WATER & WASTE DIVISION
Environmental Services

CLIENT	ADDRESS	
SRP	PO Box 52025 Phx. Az 85072	
TELEPHONE: 236-4130	PROJECT: NGS	JOB / P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature] J. Lee Watts
SAMPLER (PLEASE PRINT): R. Prigge / J. Lee Watts

SAMPLE TYPE CODES: S - Soil; O - Oil; T - Travel Blank; W - Water; G - Sludge; F - Field Blank; X - Other (specify)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	Hex Chromium	COMMENTS	LABORATORY IDENTIFICATION
NGS-DW-1	8/17/93	0755			✓	W	1		✓		9317471
GSMWNS-63		0620			✓	W	1		✓		7472
GSMWNS-66		0725			✓	W	1		✓		7473
GSMWNS-D		0810			✓	W	1		✓		7474
GSMWNS-E		0815			✓	W	1		✓		7475
GSMWNS-C		0820			✓	W	1		✓		7476
GSMWNS-ED		0840			✓	W	1		✓		7477
NGS-DW-2		1115			✓	W	1		✓		7478
GSMWNS-71		1330			✓	W	1		✓		7479
GSMWNS-A		1345			✓	W	1		✓		7480
GSMWNS-31		1355			✓	W	1		✓		7481
NGS-DW-3		1415			✓	W	1		✓		7482
GSMWNS-F		1430			✓	W	1		✓		7483
GSMWNS-B	↓	1455			✓	W	1		✓		7484

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
[signature]	R. Trigge	8/17/93 1525	[signature]	SKY WEST
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
SkyWest	[signature]	1530 8-17-93	Mike English	[signature]
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME

REMARKS

SAMPLE / COOLER °C

SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317480
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-A
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

(1) Copy to Client

M. Grafil
Managing Director

Westech Laboratories Inc.
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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317484
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-B
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

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WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317476
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-C
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

(1) Copy to Client

M. Engel
Managing Director

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317474
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-D
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

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M. Engel
Managing Director

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317475
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-E
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317481
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-31
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

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Managing Director

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317472
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-63
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	0.005	mg/L	0.005	08-18-93

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M. Wright
Managing Director

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317473
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-66
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

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Managing Director

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317479
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AEN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-71
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	0.87	mg/L	0.005	08-18-93

(1) Copy to Client

M. Engel
Managing Director

Attachment 5

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El Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

RECEIVED
AUG 26 1993
WATER & WASTE DIVISION
Environmental Services

CLIENT	ADDRESS	
SRP	PO Box 52025 PHX. AZ 85072-2025	
TELEPHONE: 236-4130	PROJECT: NGS	JOB / P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature] IV; [signature]
SAMPLER (PLEASE PRINT): R. PRIGGE; J. LEE WATTS

SAMPLE TYPE CODES: S - SOIL, O - OIL, T - TRAVEL BLANK, W - WATER, G - SLUDGE, F - FIELD BLANK, X - OTHER (SPECIFY)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: HEX CHROMIUM	COMMENTS	LABORATORY IDENTIFICATION
NGS-DW-1	8/17/93	0755			✓	W	1		✓		9317471
GSMWNS-63		0620			✓	W	1		✓		7472
GSMWNS-66		0725			✓	W	1		✓		7473
GSMWNS-D		0810			✓	W	1		✓		7474
GSMWNS-E		0815			✓	W	1		✓		7475
GSMWNS-C		0820			✓	W	1		✓		7476
GSMWNS-EB		0840			✓	W	1		✓		7477
NGS-DW-2		1115			✓	W	1		✓		7478
GSMWNS-71		1330			✓	W	1		✓		7479
GSMWNS-A		1345			✓	W	1		✓		7480
GSMWNS-31		1355			✓	W	1		✓		7481
NGS-DW-3		1415			✓	W	1		✓		7482
GSMWNS-F		1430			✓	W	1		✓		7483
GSMWNS-B		1455			✓	W	1		✓		7484

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
[signature] IV	R. PRIGGE	8/17/93 1525	[signature]	SKYWEST
Sky West	[signature]	1830 8-17-93	Mike English	[signature]

REMARKS

SAMPLE / COOLER °C

SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

623 (6/93) White - Testing Laboratory; Yellow - Department Job File; Pink - Client

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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317483
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-F
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	0.87	mg/L	0.005	08-18-93

(1) Copy to Client

M. Engel
Managing Director

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Since 1955

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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9317477
INVOICE NO.: 22132841
REPORT DATE: 08-19-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-EB
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/J. WATTS
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : #VV10117CDJA
SAMPLE DATE ...: 08-17-93
SUBMITTAL DATE : 08-18-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	08-18-93

(1) Copy to Client

M. Enzel
Managing Director

Westech Laboratories Inc.
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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-081893-5a
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 93

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 08-18-93

TEST DESCRIPTION ..: Chromium, Hexavalent
TEST METHOD .....: 3500-Cr-D

SAMPLES IN THIS RUN: 9317471 9317472 9317473 9317474 9317475 9317476 9317477 9317478 9317479 9317480 9317481 9317482 9317483 9317484 9317512

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Chromium, Hexavalent	mg/L	0.100	.1012	101.2
Chromium, Hexavalent	mg/L	0.100	.1064	106.4
Chromium, Hexavalent	mg/L	0.500	.5242	104.8
Chromium, Hexavalent	mg/L	0.500	.5164	103.3

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9317483	Chromium, Hexavalent	mg/L	0.87	0.85	2.3
9317479	Chromium, Hexavalent	mg/L	0.87	0.90	3.4

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9317476	Chromium, Hexavalent	mg/L	<0.005	.5	.5360	107.2
9317484	Chromium, Hexavalent	mg/L	<0.005	.5	.5491	109.8

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Chromium, Hexavalent	mg/L	<0.005

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-081893-5a
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 93

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 08-18-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result - Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result - Replicate Result}}{(\text{Sample Result + Replicate Result})/2} \times 100$$

LABORATORIES
QUALITY ASSURANCE OFFICER
Anne Nichols

SALT RIVER PROJECT
POST OFFICE BOX 52025
PHOENIX, ARIZONA
85072-2025
(602) 236-5900

Via Certified Mail

March 26, 1993

Latha Rajagopalan
Hazardous Waste Management Division
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Re: Second Quarterly Groundwater Monitoring Report
Navajo Generating Station (RCRA 009-90-001)

Dear Ms. Rajagopalan:

Pursuant to requirements specified in the Modifications to the Consent Agreement and Final Order (CA/FO) executed on August 14, 1992, attached is the second quarterly monitoring report of the investigation of hexavalent chromium contamination in shallow and deep monitor wells at the Navajo Generating Station located near Page, Arizona. The groundwater samples were collected on February 15-16, 1993. SRP received the results of the hexavalent chromium determination on March 4, 1993.

The results of the sampling indicate no detectable concentration of hexavalent chromium is observed in the three existing deep wells. The data also show that, with the exception of monitor well #71, there is no detectable concentration of hexavalent chromium in the shallow monitor wells. Groundwater in monitor well #71 was shown to have 0.10 mg/l hexavalent chromium.

SRP will conduct the third round of sampling at NGS in May and we anticipate submitting the third quarterly monitoring report by July 1, 1993.

Sincerely,

Dennis H. Shirley
Environmental Services Department

BHD:DHS/dg
Attachment

cc: Sadie Hoskie, Navajo Environmental Protection Administration

WW-9842.033

SECOND QUARTERLY MONITORING REPORT

INVESTIGATION FOR HEXAVALENT CHROMIUM CONTAMINATION IN SHALLOW AND DEEP MONITOR WELLS

NAVAJO GENERATING STATION
PAGE, ARIZONA

OVERVIEW:

During February 15-16, 1993, field technicians from SRP Environmental Services Department collected samples from three deep wells and nine shallow monitor wells at the Navajo Generating Station (NGS). The samples were transferred to Westech Laboratories, Incorporated of Phoenix, Arizona and analyzed for hexavalent chromium. Laboratory results of the analysis were submitted to Salt River Project on March 4, 1993.

SUMMARY OF DEEP GROUNDWATER MONITORING ACTIVITIES:

Field and laboratory procedures for monitoring the deep groundwater monitor wells were specified in a Sampling and Analysis Plan (SAP) that was submitted to EPA Region IX on September 14, 1992 as an amendment to the May 1991 "Sampling and Analysis Plan for Determining Potential Chromium Contamination at the Navajo Generating Station". EPA approval of the SAP was documented in a letter dated November 17, 1992. The locations of the deep wells are shown in Figure 1.

Prior to sampling, measurements of the depth to groundwater were taken in each well. The measured groundwater elevations relative to a Mean Sea Level (MSL) datum are as follows:

Well ID	Measuring Point Elevation (ft above MSL)	Depth to Water (feet)	Groundwater Elevation (ft above MSL)
DW #1	4,298.0	901.9	3,397.0
DW #2	4,366.2	949.3	3,416.9
DW #3	4,424.1	979.2	3,444.9

Groundwater samples were collected from deep wells #1 and #3 following well purging. A groundwater sample was collected from deep well #2 using a two inch stainless steel bailer lowered to below static water level via wireline. Field records of deep well groundwater sampling are provided in Attachment 1.

The groundwater samples were submitted to Westech Laboratories Incorporated of Phoenix, Arizona for hexavalent chromium analysis. The results of the laboratory analysis are shown below and indicate there is no detectable concentration of hexavalent chromium in any of the deep well samples.

Well ID	Sample ID	Location	Hexavalent Chromium
DW #1	NGS-DW-1	North Plant Site	< 0.05 mg/l
DW #2	NGS-DW-2	Railroad Loop at Plant Site	< 0.05 mg/l
DW #3	NGS-DW-3	Ash Disposal Area	< 0.05 mg/l

Laboratory certificates of analysis and chain of custody records for the deep well sample analyses are provided in Attachment 2.

SUMMARY OF SHALLOW GROUNDWATER MONITORING ACTIVITIES:

Field and laboratory procedures for monitoring the shallow groundwater monitor wells were stated in the "Sampling and Analysis Plan for Determining Potential Chromium Contamination at the Navajo Generating Station" submitted to the EPA in May, 1991. EPA approval of the SAP was documented in a letter dated July 17, 1991. In further refinement of sampling procedures, SRP and EPA agreed that samples would be collected from the shallow wells as soon as sufficient water had entered the well following well purging. This provision was included in the EPA letter dated November 17, 1992. Figure 2 shows the locations of the shallow monitor wells that were sampled.

Groundwater samples were collected in all shallow wells designated for monitoring. Prior to sampling, the wells were pumped or bailed dry. Samples of groundwater were collected when a sufficient volume of water had entered the well. The amount of time required to yield the 250 milliliter sample volume ranged from a few minutes to approximately 12 hours. Field records of groundwater sampling in the shallow wells are provided in Attachment 3.

The groundwater samples were submitted to Westech Laboratories Incorporated of Phoenix, Arizona for hexavalent chromium analysis. The results of the laboratory analysis are shown below and indicate, with the exception of monitor well #71, there is no detectable concentration of hexavalent chromium in the shallow monitor well samples. Monitor well #71 was found to have 0.10 mg/l hexavalent chromium.

Well ID	Sample ID	Approx Plant Coordinates		Screened Interval (feet)	Hexavalent Chromium (mg/l)
		North	East		
A	GSMWNS-A	N6704	E4807	10-30	< 0.05
B	GSMWNS-B	N6697	E4506	5-25	< 0.05
C	GSMWNS-C	N7067	E4319	7.5-17.5	< 0.05
D	GSMWNS-D	N7007	E4044	9-19	< 0.05
E	GSMWNS-E	N7431	E4018	6.5-16.5	< 0.05
31	GSMWNS-31	N6990	E4960	0-33	< 0.05
63	GSMWNS-63	N7983	E4028	3-21	< 0.05
66	GSMWNS-66	N6400	E6050	17-28	< 0.05
71	GSNWNS-71	N6480	E5070	16-22	0.10

Laboratory certificates of analysis and chain of custody records for the shallow well sample analyses are provided in Attachment 4.

QUALITY ASSURANCE/QUALITY CONTROL:

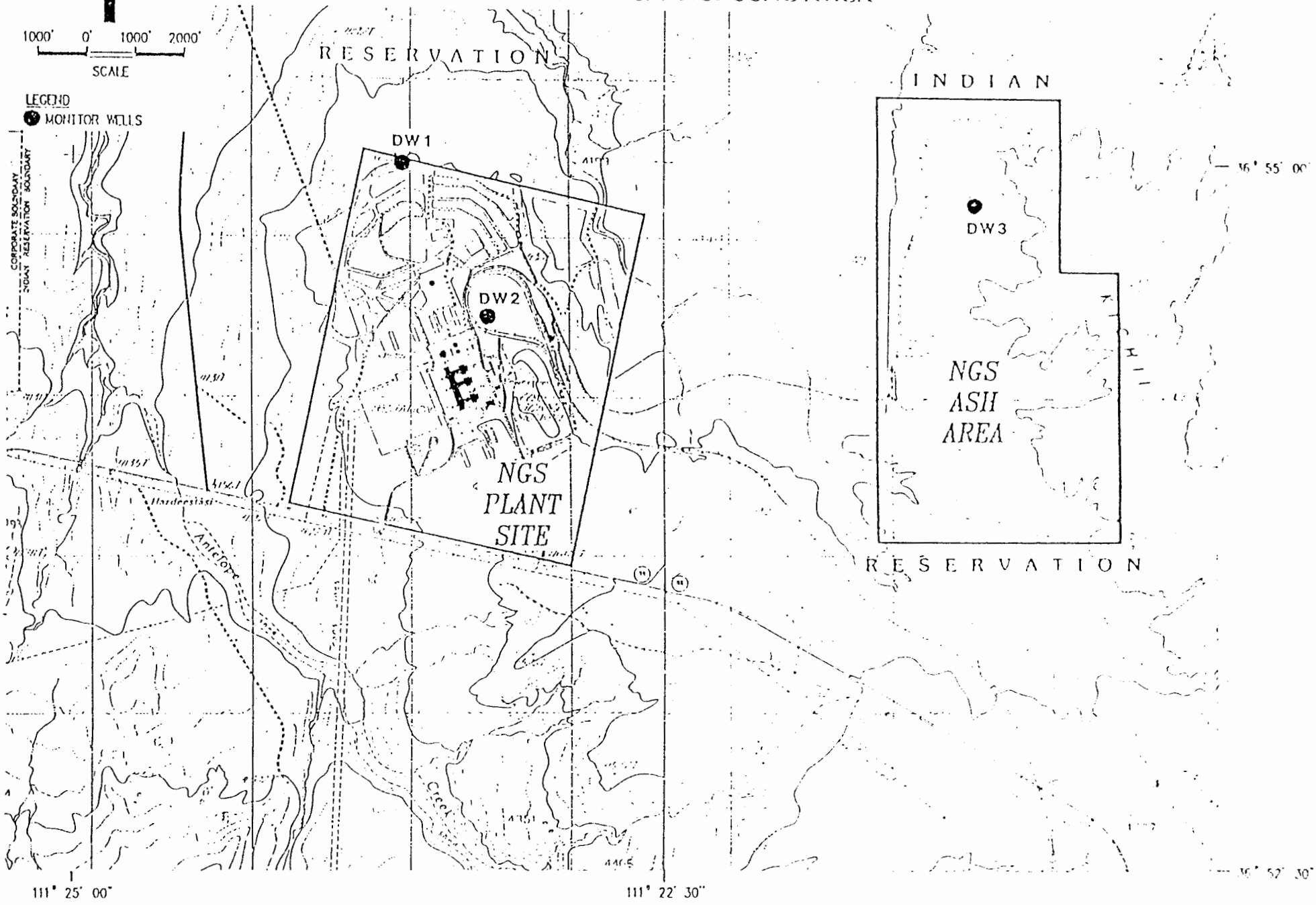
SRP followed the protocol documented in the SAP for quality assurance/quality control (QA/QC) of the sample collection and handling. The protocol included measures for decontaminating sampling equipment, purging the well, obtaining well and quality control samples, documenting the samples and sampling procedure, and transferring the samples to the analytical laboratory.

Two samples were collected during the February 16, 1993 sampling event to provide a quality control check of the field sampling and laboratory analyses. The samples include a duplicate sample collected from NGS deep well #1 and a field blank also collected following the sampling of NGS deep well #1. The duplicate sample is designated as SRP sample NGS-DW-11 and the blank sample as NGS-FIELD BLANK. Documentation of the quality control samples are provided in the groundwater monitoring field data reports in Attachment 2. Both samples were analyzed by Westech Laboratories Inc. in conjunction with the other NGS groundwater samples. The results of laboratory analysis indicate there is no detectable concentration of hexavalent chromium in either of the quality control samples. Laboratory certificates of analysis and chain of custody records for the quality control sample analyses are provided in Attachment 5.

Westech Laboratories performed quality control testing during the analysis of the NGS water samples as specified in their quality assurance manual. The quality control program included analysis of laboratory spike, duplicate, blank, and control samples. The results of the quality control testing indicate that the laboratory testing was within acceptable precision and accuracy limits for the methodology. The Westech Laboratories quality control report for the NGS water sample analyses is provided in Attachment 6.

Figures

FIGURE 1
DEEP GROUNDWATER MONITOR WELLS
NGS PLANT SITE AND ASH DISPOSAL AREA



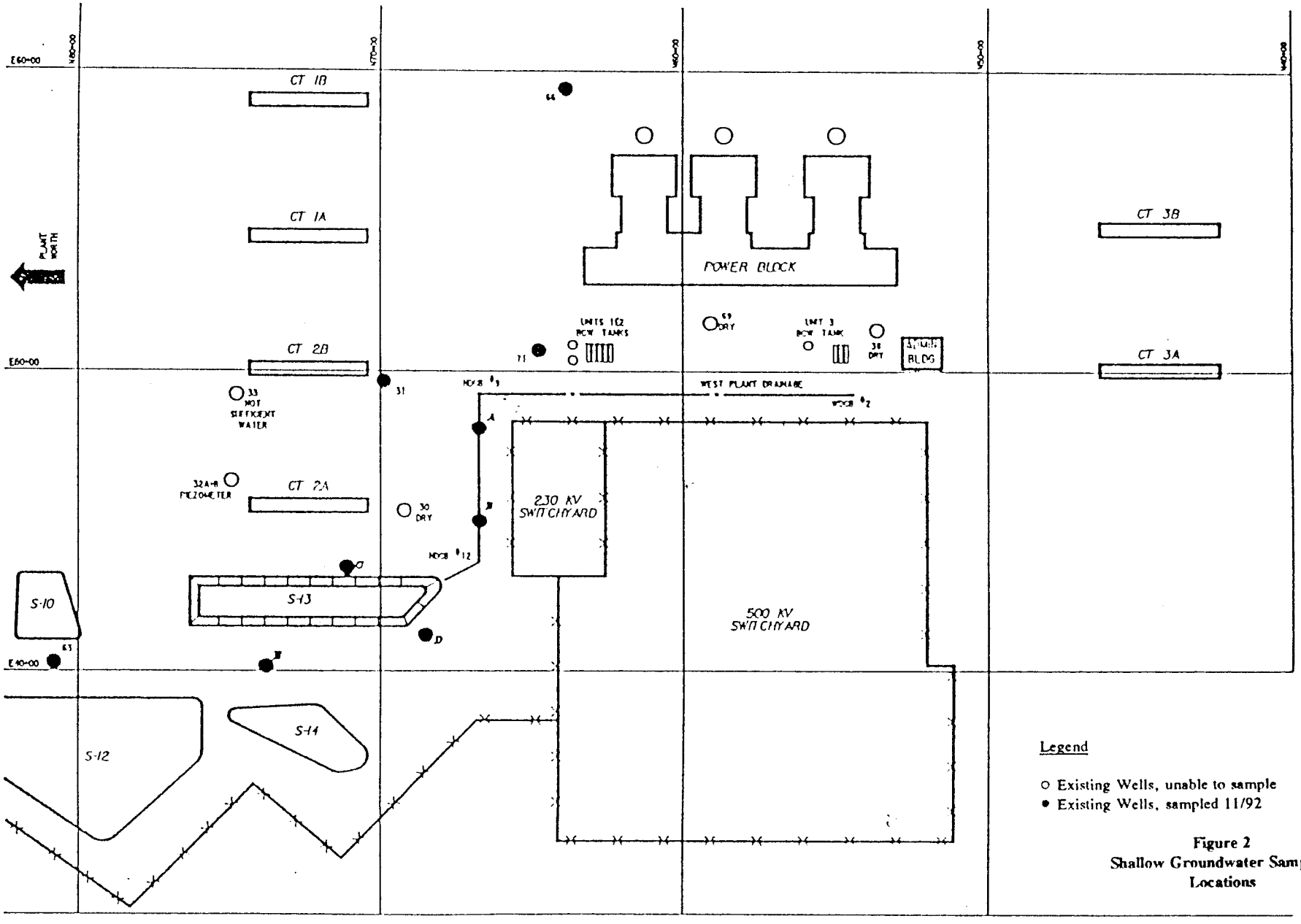


Figure 2
Shallow Groundwater Sampling Locations

Attachment 1

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-1 Date 2/15/93

Casing Diameter 6.75" ~~Casing~~ Depth 1200 Pump Setting 945'

Purging Data

SWL 901.9' Feet Of Water In Well 298.1 Gal. Water/Ft 1.859

1x Well Vol 554 2x Well Vol 1108 3x Well Vol 1662 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading 510 Start Time 0715 (2/16/93)

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.1	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	510	195	9.4	21.0	9.5	Water Pinkish Color
1x Vol	1064	181	7.9	21.3	9.4	PWL = 918.5, water clear
2x Vol	1618	180	7.9	21.6	9.4	PWL = 919.5, " "
3x Vol	2172	180	7.9	21.3	9.4	PWL = 919.8, water cloudy
4x Vol						
5x Vol						

Ending Flowmeter Reading 2200 Gallons Pumped 1690 Sample Time 1015 HR (2/16/93)

Additional Comments:

Purged well w/ dedicated submersible pump. Sample with same.
V = 460, Pump pulling 8.2 Amps

* Took duplicate sample here - NGS-DW-11

Sampled by:
D. Whitmer / R. Pringle
Print Signature

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MAR 04 1993
WATER & WASTE DIVISION
Environmental Services

Signature

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-2 Date 2/16/93

Casing Diameter 4"→660' 6.75"→1500' Casing Depth 1500' Pump Setting NO PUMP IN WELL

Purging Data

SWL 949.3' Feet Of Water In Well 550.7 Gal. Water/Ft _____

1x Well Vol _____ 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1745 HR.

Additional Comments:

Did not purge well. Sampled w/ stainless steel bailer @ 5' below static water level.

MP is @ Top of well casing (4").

Sampled by:

D. WHITMER / R. PRIGGE
Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-3 Date 2/16/93

Casing Diameter 6.75" Casing Depth 1500' Pump Setting 1029'

Purging Data

SWL 979.2' Feet Of Water In Well 520.8 Gal. Water/Ft 1.859

1x Well Vol 968 2x Well Vol 1936 3x Well Vol 2904 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading 2200 Start Time 1135

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.1	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	2200	152	9.4	11.8	9.6	H_2O Clear
1x Vol	3168	160	7.9	22.0	9.6	PWL = 994.7' H_2O Clear
2x Vol	4136	150	7.9	20.8	9.6	PWL = 995.5', " "
3x Vol	5104	146	7.9	21.5	9.5	PWL = 996.0', " "
4x Vol						
5x Vol						

Ending Flowmeter Reading 5134 Gallons Pumped 2934 Sample Time 1640 HRI

Additional Comments:

Purged well w/dedicated submersible pump. Sampled from pump discharge.

Sampled by:

D. Whitmer / R. Pricke
Print Signature

D. Whitmer / [signature] IV
Signature

Attachment 2

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303826
INVOICE NO.: 22130536
REPORT DATE: 02-22-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-NGS-DW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

RECEIVED
MAR 0 2 1993
WATER & WASTE DIVISION
Environmental Services

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303881
INVOICE NO.: 22130548
REPORT DATE: 02-18-93
REVIEWED BY: DR
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-NGS-DW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303880
INVOICE NO.: 22130548
REPORT DATE: 02-18-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-NGS-DW-3
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

Managing Director

S R P

Salt River Project
Post Office Box 52025
Phoenix, Arizona
85072-2025

CHAIN OF CUSTODY RECORD/TRANSMITTAL

ENVIRONMENTAL SERVICES DEPARTMENT
LAB & FIELD SERVICES DIVISION
(602) 236-4141

Project: NGS HEX. CHROMIUM MONITORING

Charge No:

Project Manager/Contact: Dennis Shirley

Phone: 236-2685

Cost Center:

Sampler(s) Signature: [illegible] / [illegible]

Sample ID	Date Collected	Time Collected	Matrix	Lab ID No.	No of Containers	FIELD DATA: FLOW (GPM ____ CFS ____)	NO3 / N	TEMP °C	EC	pH	ANALYSIS: HEX. CHROMIUM
SRP-NGS-DW-3	2/16/93	1640	H_2O	1930 3880	1	ph 6.0					✓
SRP-NGS-DW-2	2/16/93	1745	H_2O	3881	1	ph 6.0					✓
SRP-GSMWNS-71	2/16/93	1810	H_2O	3882	1	ph 6.0					✓
SRP-GSMWNS-A	2/16/93	1835	H_2O	3883	1	ph 7.0					✓
SRP-GSMWNS-B	2/16/93	1900	H_2O	3884	1	ph 6.0					✓
SRP-GSMWNS-63	2/16/93	1930	H_2O	3885	1	ph 7.0					✓
SRP-GSMWNS-31	2/16/93	2000	H_2O	3886	1	ph 7.0					✓

Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time
[illegible]	2/17/93	1230	M. Miller	2/17/93	1230
Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time
Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time

Remarks:

S R P

Salt River Project
Post Office Box 52025
Phoenix, Arizona
85072-2025

CHAIN OF CUSTODY RECORD/TRANSMITTAL

ENVIRONMENTAL SERVICES DEPARTMENT
LAB & FIELD SERVICES DIVISION
(602) 236-4141

Project: NGS HEX. CHROMIUM MONITORING

Charge No:

Project Manager/Contact: Dennis Shirley

Phone: 236-2685

Cost Center:

Sampler(s) Signature

Sample ID	Date Collected	Time Collected	Matrix	Lab ID No.	No of Containers	FIELD DATA: FLOW (GPM ___ CFS ___)	NO3 / N	TEMP °C	EC	pH	ANALYSIS: HEX. CHROMIUM
SRP-NGS-DW-1	2/16/93	1015	H_2O	9303 3826	1						✓
SRP-NGS-DW-11	2/16/93	1015	H_2O	" 3827	1						✓
SRP-GSMWNS-C	2/16/93	1050	H_2O	" 3828	1						✓
SRP-GSMWNS-D	2/16/93	1045	H_2O	" 3829	1						✓
SRP-GSMWNS-E	2/16/93	1040	H_2O	" 3830	1						✓
~~SRP NGS DW 3~~	~~2/16/93~~		~~H_2O~~		~~1~~						~~✓~~
SRP-GSMWNS-66	2/16/93	1230	H_2O	" 3831	1						✓
SRP-FIELD BLANK	2/16/93	1150	H_2O	" 3832	1						✓

Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time
	2/16/93	1610	Kes		
Relinquished By: (signature) Kes	Date	Time	Received By: (signature)	2/17/93	Time 730
Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time

Remarks: 5°C pH = 7

Attachment 3

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-A Date 2/16/93

Casing Diameter 2" Casing Depth 32.13' Pump Setting

Purging Data

SWL 23.35' Feet Of Water In Well 8.8 Gal. Water/Ft 0.163

1x Well Vol 1.4 2x Well Vol 3x Well Vol 4x Well Vol 5x Well Vol

Beginning Flowmeter Reading Start Time 1825

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading Gallons Pumped 1.5 Sample Time 1835 HR.

Additional Comments:

Purged Well dry with "Rediflo2" Env. Pump. Let recover 7 min. and Sampled w/ disposable bailer.

* - Decon. Pump between wells w/ Liquinox and demineralized H_2O.

Sampled by:

D. WHITMER / R. PRICE
Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-B Date 2/16/93

Casing Diameter 2" Casing Depth 27.20' Pump Setting

Purging Data

SWL 19.20' Feet Of Water In Well 8.0 Gal. Water/Ft 0.163

1x Well Vol 1.3 2x Well Vol 3x Well Vol 4x Well Vol 5x Well Vol

Beginning Flowmeter Reading Start Time 1854

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading Gallons Pumped 1.3 Sample Time 1900 HRS.

Additional Comments:

Evacuated well w/ "Rediflow 2" Env. Pump. Sampled after 5 min. to recover. Sampled w/ disposable bailer.

Sampled by:

D. Whitmer / R. Prigge
Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS - C Date 2/15/93

Casing Diameter 2" Casing Depth 19.59' Pump Setting —

Purging Data

SWL 10.38' Feet Of Water In Well 9.21 Gal. Water/Ft 0.163

1x Well Vol 1.5 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1050 HRS. (2/16/9

Additional Comments:

Evacuated well w/ disposable bailer on 2/15/93 @ 1845 HRS. Let recover overnight. SAMPLED 2/16/93 @ 1050 HRS.

Sampled by:

D. WHITMER / R. PRICHE

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS - D Date 2/15/93

Casing Diameter 2" Casing Depth 21.41' Pump Setting —

Purging Data

SWL 12.30' Feet Of Water In Well 9.11 Gal. Water/Ft 0.163

1x Well Vol 1.48 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1045 HRS. (2/16/

Additional Comments:

Evacuated well w/ disposable bailer on 2/15/93 @ 1825 HRS. Let recover overnight. SAMPLED 2/16/93 @ 1045 HRS.

Sampled by:

D. WHITMER / R. TRIGLE
Print Signature

D. Whitmer / R. Trigle IV
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS - E Date 2/15/93

Casing Diameter 2" Casing Depth 18.63' Pump Setting –

Purging Data

SWL 13.52' Feet Of Water In Well 5.11 Gal. Water/Ft 0.163

1x Well Vol 0.83 2x Well Vol 1.66 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1040 HRS. (2/16/

Additional Comments:

Evacuated well with disposable bailer on 2/15/93 @ 1810 HRS. Let recover overnight. SAMPLED 2/16/93 @ 1040 HRS.

Sampled by:

D. Whitmer / R. Prigge
Print Signature

D Whitmer / R Prigge IV
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-31 Date 2/16/93

Casing Diameter 2" Casing Depth 30.43' Pump Setting 30'

Purging Data

SWL 11.78 Feet Of Water In Well 18.65 Gal. Water/Ft 0.163

1x Well Vol 3 2x Well Vol 6 3x Well Vol 9 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time ____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 GAL					
1x Vol	3					
2x Vol	6					
3x Vol	9					
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped ____ Sample Time 2000 HRS.

Additional Comments:

Evacuated well w/ bailer and sampled w/ disposable bailer.
Fine sand in H_2O fouled "Rediflo 2" Pump. Had to bail dry.

Sampled by:

D. WHITMER / R. TRIGLE
Print Signature

D. Whitmer / R. Trigle IV
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-63 Date 3/16/93

Casing Diameter 4" Casing Depth 23.27' Pump Setting

Purging Data

SWL 5.67 Feet Of Water In Well 17.60' Gal. Water/Ft 0.653

1x Well Vol 12 2x Well Vol 24 3x Well Vol 36 4x Well Vol 5x Well Vol

Beginning Flowmeter Reading Start Time 1920

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.1	pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 GAL	10,020	6.7	15.2		Stained yellow
1x Vol	12 GAL	9040	6.8	13.0		Stained Yellow
2x Vol	24 GAL					Pumped dry @ 21 GALS.
3x Vol	36 GAL					
4x Vol						
5x Vol						

Ending Flowmeter Reading Gallons Pumped 21 Sample Time 1930 HRS

Additional Comments:

Evacuated well w/ "Rediflo 2" Env. Pump. Sampled w/ disposable bailer after 5 min. recovery Time.

* Decon. "Rediflo 2" Env. Pump by pumping "Liquinox" and demineralized H_2O Through it between each well used.

Sampled by:

D. Whitmer / R. Prigge
Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-66 Date 2/16/93

Casing Diameter 4" Casing Depth 30.08 Pump Setting ~~29.0~~ 30.0

Purging Data

SWL 14.27' Feet Of Water In Well 15.81 Gal. Water/Ft .653

1x Well Vol 10 2x Well Vol 20 3x Well Vol 30 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time 1220 HRS.

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.1	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 GAL	6010	7.1	15.1	~5	
1x Vol	10 GAL	7560	7.0	17.5	"	
2x Vol	20 GAL	7490	6.9	18.5	"	
3x Vol	30 GAL	7350	6.9	19.1	"	
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped 35 Sample Time 1230 HRS.

Additional Comments:

Purged w/ Rediflo Env. Pump. Measured volumes w/ 5 GAL Bucket.
Sampled w/ disposable bailer.

Sampled by:

D. WHITMER / R. PRIGLE
Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-71 Date 2/16/93

Casing Diameter 4" Casing Depth 24.82' Pump Setting 24'

Purging Data

SWL 9.30' Feet Of Water In Well 15.52 Gal. Water/Ft 0.653

1x Well Vol 10.1 2x Well Vol 20.2 3x Well Vol 30.3 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading 0 GALS. Start Time 1800

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.1	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 GAL	6050	7.3	16.6	~5	
1x Vol	10 GAL	6110	7.3	16.7	~5	
2x Vol	20 GAL	5850	7.3	17.5	~5	PUMPED DRY @ 2 WELL VOLUMES.
3x Vol	30 GAL					Let recover ~5min. and sampled.
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped 20 Sample Time 1810 HRS.

Additional Comments:

Purged w/ "Rediflo2" Env. Pump. Sampled w/ Disposable bailer.

VOLUMES MEASURED W/ 5 GAL Bucket.

Sampled by:

D. WHITMER / R. PRIGGE
Print Signature

Signature

Attachment 4

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303883
INVOICE NO.: 22130548
REPORT DATE: 02-18-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-GSMWNS-A
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303884
INVOICE NO.: 22130548
REPORT DATE: 02-18-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-GSMWNS-B
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303828
INVOICE NO.: 22130536
REPORT DATE: 02-22-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-GSMWNS-C
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

M. English
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303829
INVOICE NO.: 22130536
REPORT DATE: 02-22-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-GSMWNS-D
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

M. Guzfil
Managing Director

Westech Laboratories Inc.
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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303830
INVOICE NO.: 22130536
REPORT DATE: 02-22-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-GSMWNS-E
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

M. Grashil
Managing Director

Westech Laboratories Inc.
The Quality People
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3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303886
INVOICE NO.: 22130548
REPORT DATE: 02-18-93
REVIEWED BY: DW
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-GSMWNS-31
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

Managing Director

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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303885
INVOICE NO.: 22130548
REPORT DATE: 02-18-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-GSMWNS-63
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

Managing Director

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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303831
INVOICE NO.: 22130536
REPORT DATE: 02-22-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-GSMWNS-66
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

M. Grafil
Managing Director

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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303882
INVOICE NO.: 22130548
REPORT DATE: 02-18-93
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-GSMWNS-71
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	0.10	mg/L	0.05	02-17-93

(1) Copy to Client

Managing Director

S R P

Salt River Project
Post Office Box 52025
Phoenix, Arizona
85072-2025

CHAIN OF CUSTODY RECORD/TRANSMITTAL

ENVIRONMENTAL SERVICES DEPARTMENT
LAB & FIELD SERVICES DIVISION
(602) 236-4141

Project: NGS HEX. CHROMIUM MONITORING

Charge No:

Project Manager/Contact: Dennis Shirley

Phone: 236-2685

Cost Center:

Sampler(s) Signature

Sample ID	Date Collected	Time Collected	Matrix	Lab ID No.	No of Containers	FIELD DATA: FLOW (GPM / CFS)	NO3/N	TEMP °C	EC	pH	ANALYSIS: HEX. CHROMIUM
SRP-NGS-DW-1	2/16/93	1015	H_2O	93033826	1						✓
SRP-NGS-DW-11	2/16/93	1015	H_2O	" 3827	1						✓
SRP-GSMWNS-C	2/16/93	1050	H_2O	" 3828	1						✓
SRP-GSMWNS-D	2/16/93	1045	H_2O	" 3829	1						✓
SRP-GSMWNS-E	2/16/93	1040	H_2O	" 3830	1						✓
~~SRP-NGS-DW-3~~	~~2/16/93~~		~~H_2O~~		~~1~~						~~✓~~
SRP-GSMWNS-66	2/16/93	1230	H_2O	" 3831	1						✓
SRP-FIELD BLANK	2/16/93	1150	H_2O	" 3832	1						✓

Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time
	2/16/93	1610	Kes		
Relinquished By: (signature) Kes	Date	Time	Received By: (signature)	2/17/93	1730
Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time

Remarks:
5°C
pH = 7

S R P

Salt River Project
Post Office Box 52025
Phoenix, Arizona
85072-2025

CHAIN OF CUSTODY RECORD/TRANSMITTAL

ENVIRONMENTAL SERVICES DEPARTMENT
LAB & FIELD SERVICES DIVISION
(602) 236-4141

Project: NGS HEX. CHROMIUM MONITORING

Charge No:

Project Manager/Contact: Dennis Shirley

Phone: 236-2685

Cost Center:

Sampler(s) Signature

Sample ID	Date Collected	Time Collected	Matrix	Lab ID No.	No of Containers	FIELD DATA: FLOW (GPM ____ CFS ____)	NO3 / N	TEMP °C	EC	pH	ANALYSIS: HEX. CHROMIUM
SRP-NGS-DW-3	2/16/93	1640	H_2O	1930 3880	1	ph 6.0					✓
SRP-NGS-DW-2	2/16/93	1745	H_2O	3881	1	ph 6.0					✓
SRP-GSMWNS-71	2/16/93	1810	H_2O	3882	1	ph 6.0					✓
SRP-GSMWNS-A	2/16/93	1835	H_2O	3883	1	ph 7.0					✓
SRP-GSMWNS-B	2/16/93	1900	H_2O	3884	1	ph 6.0					✓
SRP-GSMWNS-63	2/16/93	1930	H_2O	3885	1	ph 7.0					✓
SRP-GSMWNS-31	2/16/93	2000	H_2O	3886	1	ph 7.0					✓

Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time
	2/17/93	1230		2/17/93	1230
Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time
Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time

Remarks:

Attachment 5

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303832
INVOICE NO.: 22130536
REPORT DATE: 02-22-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-FIELD BLANK
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
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3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
EMPLOYEE SAFETY SERVICES-CRF-218
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9303827
INVOICE NO.: 22130536
REPORT DATE: 02-22-93
REVIEWED BY: RGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : SRP-NGS-DW-11
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 02-16-93
SUBMITTAL DATE : 02-17-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	02-17-93

(1) Copy to Client

M. Engel
Managing Director

S R P

Salt River Project
Post Office Box 52025
Phoenix, Arizona
85072-2025

CHAIN OF CUSTODY RECORD/TRANSMITTAL

ENVIRONMENTAL SERVICES DEPARTMENT
LAB & FIELD SERVICES DIVISION
(602) 236-4141

Project: NGS HEX. CHROMIUM MONITORING

Charge No:

Project Manager/Contact: Dennis Shirley

Phone: 236-2685

Cost Center:

Sampler(s) Signature

Sample ID	Date Collected	Time Collected	Matrix	Lab ID No.	No of Containers	FIELD DATA: FLOW (GPM ___ CFS ___)	NO3/N	TEMP °C	EC	pH	ANALYSIS: HEX. CHROMIUM
SRP-NGS-DW-1	2/16/93	1015	H_2O	9303 3826	1						✓
SRP-NGS-DW-11	2/16/93	1015	H_2O	" 3827	1						✓
SRP-GSMWNS-C	2/16/93	1050	H_2O	" 3828	1						✓
SRP-GSMWNS-D	2/16/93	1045	H_2O	" 3829	1						✓
SRP-GSMWNS-E	2/16/93	1040	H_2O	" 3830	1						✓
~~SRP-NGS-DW-3~~	~~2/16/93~~		~~H_2O~~		~~1~~						~~✓~~
SRP-GSMWNS-66	2/16/93	1230	H_2O	" 3831	1						✓
SRP-FIELD BLANK	2/16/93	1150	H_2O	" 3832	1						✓

Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time
	2/16/93	1610	Kes		
Relinquished By: (signature) Kes	Date	Time	Received By: (signature)	2/17/93	Time 730
Relinquished By: (signature)	Date	Time	Received By: (signature)	Date	Time

Remarks:
5°C
pH = 7

Attachment 6

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-021793-11
REFERENCE NOTEBOOK : WW-081
REFERENCE PAGE ....: 34

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 02-17-93

TEST DESCRIPTION ..: Chromium, Hexavalent
TEST METHOD .....: 3500-Cr-D

SAMPLES IN THIS RUN: 9303826 9303827 9303828 9303829 9303830 9303831 9303832 9303872

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
INITIAL:				
Chromium, Hexavalent	mg/L	0.100	.108	108.0
CONTINUING:				
Chromium, Hexavalent	mg/L	0.500	.5367	107.3
FINAL:				
Chromium, Hexavalent	mg/L	0.100	.108	108.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9303829	Chromium, Hexavalent	mg/L	<0.05	<0.05	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9303831	Chromium, Hexavalent	mg/L	<0.05	.5	.5499	110.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-021793-11
REFERENCE NOTEBOOK : WW-081
REFERENCE PAGE ....: 34

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 02-17-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Chromium, Hexavalent	mg/L	<0.05

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-021793-11a
REFERENCE NOTEBOOK : WW-081
REFERENCE PAGE ....: 35

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 02-17-93

TEST DESCRIPTION ..: Chromium, Hexavalent
TEST METHOD .....: 3500-Cr-D

SAMPLES IN THIS RUN: 9303880 9303881 9303882 9303883 9303884 9303885 9303886

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
INITIAL:				
Chromium, Hexavalent	mg/L	0.100	.0974	97.4
CONTINUING:				
Chromium, Hexavalent	mg/L	0.100	.0948	94.8
FINAL:				
Chromium, Hexavalent	mg/L	0.500	.4932	98.6

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9303882	Chromium, Hexavalent	mg/L	0.10	0.10	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9303885	Chromium, Hexavalent	mg/L	<0.05	.25	.2439	97.6

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-021793-11a
REFERENCE NOTEBOOK : WW-081
REFERENCE PAGE ....: 35

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 02-17-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Chromium, Hexavalent	mg/L	<0.05

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

SALT RIVER PROJECT
POST OFFICE BOX 52025
PHOENIX, ARIZONA
85072-2025
(602) 236-5900

Via Overnight Express Delivery

June 29, 1993

Latha Rajagopalan
Hazardous Waste Management Division
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105

Re: Third Quarterly Groundwater Monitoring Report
Navajo Generating Station (RCRA 009-90-001)

Dear Ms. Rajagopalan:

Pursuant to requirements specified in the Modifications to the Consent Agreement and Final Order executed on August 14, 1992, attached is the third quarterly monitoring report of the investigation of hexavalent chromium contamination in shallow and deep monitor wells at the Navajo Generating Station located near Page, Arizona. The report documents the results of hexavalent chromium analyses of groundwater samples collected on May 18, 1993 and June 14, 1993. The second sampling and analysis event was conducted due to concerns about the data reliability for the shallow monitor well samples in the initial set.

The results of the sampling indicate no detectable concentration of hexavalent chromium is observed in the three existing deep wells. Of particular significance in this report, the analytical laboratory reported the hexavalent chromium concentration to a method detection limit (MDL) of 0.005 mg/l rather than the MDL of 0.050 mg/l given in previous quarterly reports. Thus, the recent monitoring results provide greater assurance that there has been no contamination of the regional aquifer underlying the NGS site.

In the shallow monitor wells, the third quarter monitoring data indicate hexavalent chromium is detected in monitor well #71 at a concentration of 0.049 mg/l. Monitor well #71 has consistently shown sub part per million levels of hexavalent chromium in the previous monitoring periods. There is no conclusive evidence of detectable hexavalent chromium in the other shallow monitor wells.

SRP will conduct the fourth round of sampling at NGS in August and we anticipate submitting the next quarterly monitoring report by October 1, 1993.

Sincerely,

Dennis H. Shirley, P.G.
Environmental Services Department

DHS:

Attachment

cc: Sadie Hoskie, Navajo Environmental Protection Administration

THIRD QUARTERLY MONITORING REPORT

INVESTIGATION FOR HEXAVALENT CHROMIUM CONTAMINATION IN SHALLOW AND DEEP MONITOR WELLS

NAVAJO GENERATING STATION
PAGE, ARIZONA

OVERVIEW:

On May 18, 1993, field technicians from SRP Environmental Services Department collected samples from three deep wells and nine shallow monitor wells at the Navajo Generating Station (NGS). The samples were transferred to Westech Laboratories, Incorporated of Phoenix, Arizona and analyzed for hexavalent chromium. Laboratory results from the analyses indicate there was significant contamination of an equipment blank sample and, hence, concern regarding the analytical data reliability. Consequently, a second round of samples was collected from the shallow wells on June 14, 1993 and submitted for hexavalent chromium analysis. The laboratory results obtained in the second round are consistent with previous monitoring data and are submitted as the third quarter results.

SUMMARY OF DEEP GROUNDWATER MONITORING ACTIVITIES:

Field and laboratory procedures for monitoring the deep groundwater monitor wells were specified in a Sampling and Analysis Plan (SAP) that was submitted to EPA Region IX on September 14, 1992 as an amendment to the May 1991 "Sampling and Analysis Plan for Determining Potential Chromium Contamination at the Navajo Generating Station". EPA approval of the SAP was documented in a letter dated November 17, 1992. The locations of the deep wells are shown in Figure 1.

Prior to sampling, measurements of the depth to groundwater were taken in each well. The measured groundwater elevations relative to a Mean Sea Level (MSL) datum are as follows:

Well ID	Measuring Point Elevation (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
DW #1	4,298.0	898.9	3,399.1
DW #2	4,366.2	949.0	3,417.2
DW #3	4,424.1	978.3	3,445.8

Groundwater samples were collected from deep wells #1 and #3 following well purging with the dedicated pumps in the well. A groundwater sample was collected from deep well #2 using a two inch stainless steel bailer lowered to below static water level via

wireline. Field records of deep well groundwater sampling are provided in Attachment 1.

The groundwater samples were submitted to Westech Laboratories Incorporated of Phoenix, Arizona for hexavalent chromium analysis. The results of the laboratory analysis are shown below and indicate there is no detectable concentration of hexavalent chromium in any of the deep well samples. Of particular significance in this report, Westech Laboratories reported the hexavalent chromium concentration to a method detection limit (MDL) of 0.005 mg/l rather than the MDL of 0.050 mg/l given in previous quarterly reports.

Well ID	Sample ID	Location	Hexavalent Chromium
DW #1	NGS-DW-1	north plant site	< 0.005 mg/l
DW #2	NGS-DW-2	railroad loop at plant site	< 0.005
DW #3	NGS-DW-3	ash disposal area	< 0.005

Laboratory certificates of analysis and chain of custody records for the deep well sample analyses are provided in Attachment 2.

SUMMARY OF SHALLOW GROUNDWATER MONITORING ACTIVITIES:

Field and laboratory procedures for monitoring the shallow groundwater monitor wells were stated in the "Sampling and Analysis Plan for Determining Potential Chromium Contamination at the Navajo Generating Station" (SAP) submitted to the EPA in May, 1991. EPA approval of the SAP was documented in a letter dated July 17, 1991. In further refinement of sampling procedures, SRP and EPA agreed that samples would be collected from the shallow wells as soon as sufficient water had entered the well following well purging. This provision was included in the EPA letter dated November 17, 1992. Figure 2 shows the locations of the shallow monitor wells that were sampled.

Samples Collected on May 18, 1993

Groundwater samples were collected on May 18, 1993 from all shallow wells designated for monitoring. Prior to sampling, the wells were purged by removing three well casing volumes of water or bailed dry where there was insufficient water to purge. Samples of groundwater were collected when a sufficient volume of water had entered the well. The amount of time required to yield the 250 milliliter sample volume ranged from a few minutes to approximately 12 hours. Field records of groundwater sampling in the shallow wells are provided in Attachment 3.

The groundwater samples were submitted to Westech Laboratories for hexavalent chromium analysis. The results of the laboratory analysis are shown in the following table and indicate detectable concentrations of hexavalent chromium were found in monitor well B and D. Monitor well #71, which has shown hexavalent chromium concentrations ranging from 0.10 to 0.98 mg/l in the previous two rounds of groundwater monitoring, did not have any detectable hexavalent chromium. Laboratory certificates of analysis and chain of custody records for the shallow well sample analyses are provided in Attachment 4. In addition, the sample collected as an equipment blank was reported to have 0.43 mg/l hexavalent chromium. The equipment blank sample was collected from rinse water used to decontaminate the submersible pump used to purge shallow monitor wells.

Results of Hexavalent Chromium Analyses
of Shallow Groundwater Monitor Well Samples
Collected on May 18, 1993

Well ID	**Sample ID**	**Approx. Plant Coordinates North**	**East**	**Screened Interval (feet bgs)**	**Hexavalent Chromium (mg/l)**
A	GSMWNS-A	N6704	E4807	10-30	< 0.005
B	GSMWNS-B	N6697	E4506	5-25	0.012
C	GSMWNS-C	N7067	E4319	7.5-17.5	< 0.005
D	GSMWNS-D	N7007	E4044	9-19	0.010
E	GSMWNS-E	N7431	E4018	6-5-16.5	< 0.005
31	GSMWNS-31	N6990	E4960	0-33	< 0.005
63	GSMWNS-63	N7983	E4028	3-21	< 0.005
66	GSMWNS-66	N6400	E6050	17-28	< 0.005
71	GSMWNS-71	N6480	E5070	16-22	< 0.005

Based on these results, the reliability and accuracy of the laboratory analytical data were suspect. The contamination observed in the equipment blank sample was particularly disturbing because the concentration observed was significantly greater than levels reported for the groundwater samples. Following review of the analytical data, Westech Laboratories was requested to return the sample containers in order to evaluate whether the lab had mislabeled samples. Prior to this request, however, the lab had disposed of the sample containers.

Samples Collected on June 14, 1993

Due to SRP concerns regarding data quality of the May 1993 groundwater monitoring, a second set of samples from the shallow groundwater monitor wells was collected on June 14, 1993 and submitted to Westech Laboratories Incorporated of Phoenix, Arizona for retesting of hexavalent chromium. The field records for the second groundwater sampling event are provided in Attachment 5. The results of the laboratory analysis for the second sampling event are shown below.

Results of Hexavalent Chromium Analyses
of Shallow Groundwater Monitor Well Samples
Collected on June 14, 1993

Well ID	Sample ID	Hexavalent Chromium (mg/l)
A	GSMWNS-A	< 0.005
B	GSMWNS-B	< 0.005
C	GSMWNS-C	< 0.005
D	GSMWNS-D	0.020
E	GSMWNS-E	< 0.005
31	GSMWNS-31	< 0.005
63	GSMWNS-63	< 0.005
66	GSMWNS-66	< 0.005
71	GSMWNS-71	0.049

Laboratory certificates of analysis and chain of custody records for the second set of shallow monitor well samples are provided in Attachment 6.

QUALITY ASSURANCE/QUALITY CONTROL:

SRP followed the protocol documented in the SAP for quality assurance/quality control (QA/QC) of the sample collection and handling. The protocol includes measures for decontaminating sampling equipment, purging the well, obtaining well and quality control samples, documenting the samples and sampling procedure, and transferring the samples to the analytical laboratory.

Westech Laboratories performed quality control testing during the analysis of the NGS water samples as specified in their quality assurance manual. The quality control program included analysis of laboratory spike, duplicate, blank, and control samples.

Samples Collected on May 18, 1993

All samples collected on May 18, 1993 were submitted and analyzed by Westech Laboratories within the 24 hour holding time limit for hexavalent chromium. It should be noted the detection limit reported for the hexavalent chromium determination is 0.005 mg/l rather than 0.050 mg/l reported in previous quarterly reports. According to Westech Laboratories, the lower MDL reported in this round was established following an internal review of the Method 3500 quantification level.

Two samples were collected during the May 18, 1993 sampling event for quality control purposes including a monitor well duplicate and an equipment blank. Documentation of the quality control samples is provided in the groundwater monitoring field data reports in Attachments 1 and 3. The duplicate sample was collected from NGS deep well #3 and designated as NGS-DW-33. The primary and duplicate sample from deep well #3 were both reported to have less than 0.005 mg/l hexavalent chromium. The equipment blank sample represents a sample of the rinse water from the decontamination of the submersible pump used to purge shallow monitor wells. The equipment blank sample, designated GSMWNS-EB, was collected after the sampling of shallow monitor well B. As stated in the previous section, the equipment blank was reported to have 0.43 mg/l hexavalent chromium. Laboratory certificates of analysis and chain of custody records for the quality control sample analyses are provided in Attachment 7. Also provided in this attachment are the results of the Westech Laboratories quality control testing for the set of samples.

Samples Collected on June 14, 1993

In conducting the second sampling event on June 14, 1993, additional QA/QC procedures and samples were included to further evaluate the monitoring data reliability. The procedures included utilizing deionized water provided by the SRP Environmental Laboratory in Phoenix for field decontamination rather than demineralized water from NGS. In addition, to the extent possible, the shallow wells were purged and sampled with a single disposable bailer to avoid cross contamination by reusable field equipment.

All samples collected during the June 14, 1993 sampling event were submitted and analyzed by Westech Laboratories within the 24 hour holding time limit for hexavalent chromium. Laboratory certificates of analysis and chain of custody records for the quality control samples are provided in Attachment 8. Also provided in this attachment are the results of the Westech Laboratories quality control testing for the second sample set.

A sample of the deionized water used to rinse the portable pump during decontamination was collected prior to using the pump to purge monitor well 71. The sample, taken from the pump during final decontamination, was designated GSMWNS-EB and was determined to have no detectable hexavalent chromium. A sample was also collected from the demineralized water that was used in the previous sampling event as the decontamination rinse water. This sample, designated GSMWNS-DMW, was also reported to be less than the MDL for hexavalent chromium.

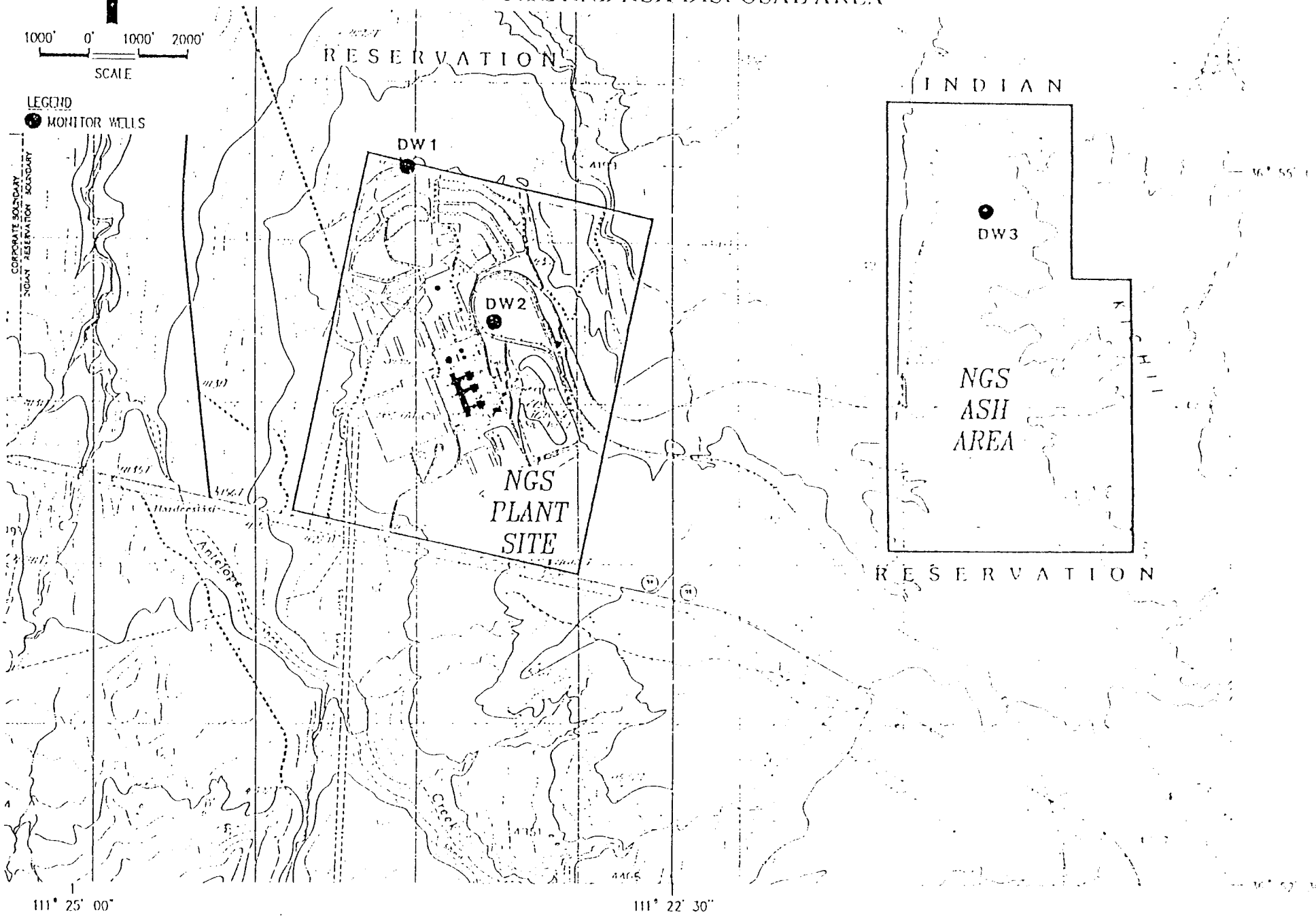
Three duplicate samples were collected from the nine shallow monitor wells as part of the June 14, 1993 sampling event. The original and duplicate samples were submitted to the laboratory with different sample designations and collection times so that the laboratory personnel performing the analyses could not identify the duplicates. The duplicate samples from monitor wells B, D, and 71 were designated GSMWNS-F, GSMWNS-H, and GSMWNS-G, respectively. Documentation of the QA/QC samples is provided in the groundwater monitoring field data reports in Attachment 5. The results of the duplicate QA/QC testing are given in the following table. The relative percent difference (RPD%) is expressed as the ratio of the difference in the two values and the average of the two values multiplied by 100. For values reported to be below the laboratory method detection limit (MDL), a value of 0.005 mg/l is used for RPD calculations.

Well ID	**Sample ID**	**Original Hexavalent Chromium (mg/l)**	**Duplicate Hexavalent Chromium (mg/l)**	**RPD %**
B	GSMWNS-B	< 0.005	< 0.005	0
D	GSMWNS-D	0.020	< 0.005	120
71	GSMWNS-71	0.049	0.050	2.0

As is evident, the blind duplicate samples submitted for monitor wells B and 71 exhibit good precision with results obtained from the original samples. The data are well within the +/- 20% range consider acceptable for laboratory replicate analysis. The duplicate samples from monitor well D, on the other hand, are significantly beyond the range of acceptable laboratory precision. For this reason, the concentration, or even the presence of hexavalent chromium in the monitor well D sample cannot be accurately determined. The sample analyses indicate the only conclusive evidence of hexavalent chromium is found in monitor well 71.

FIGURES

FIGURE 1
DEEP GROUNDWATER MONITOR WELLS
NGS PLANT SITE AND ASH DISPOSAL AREA



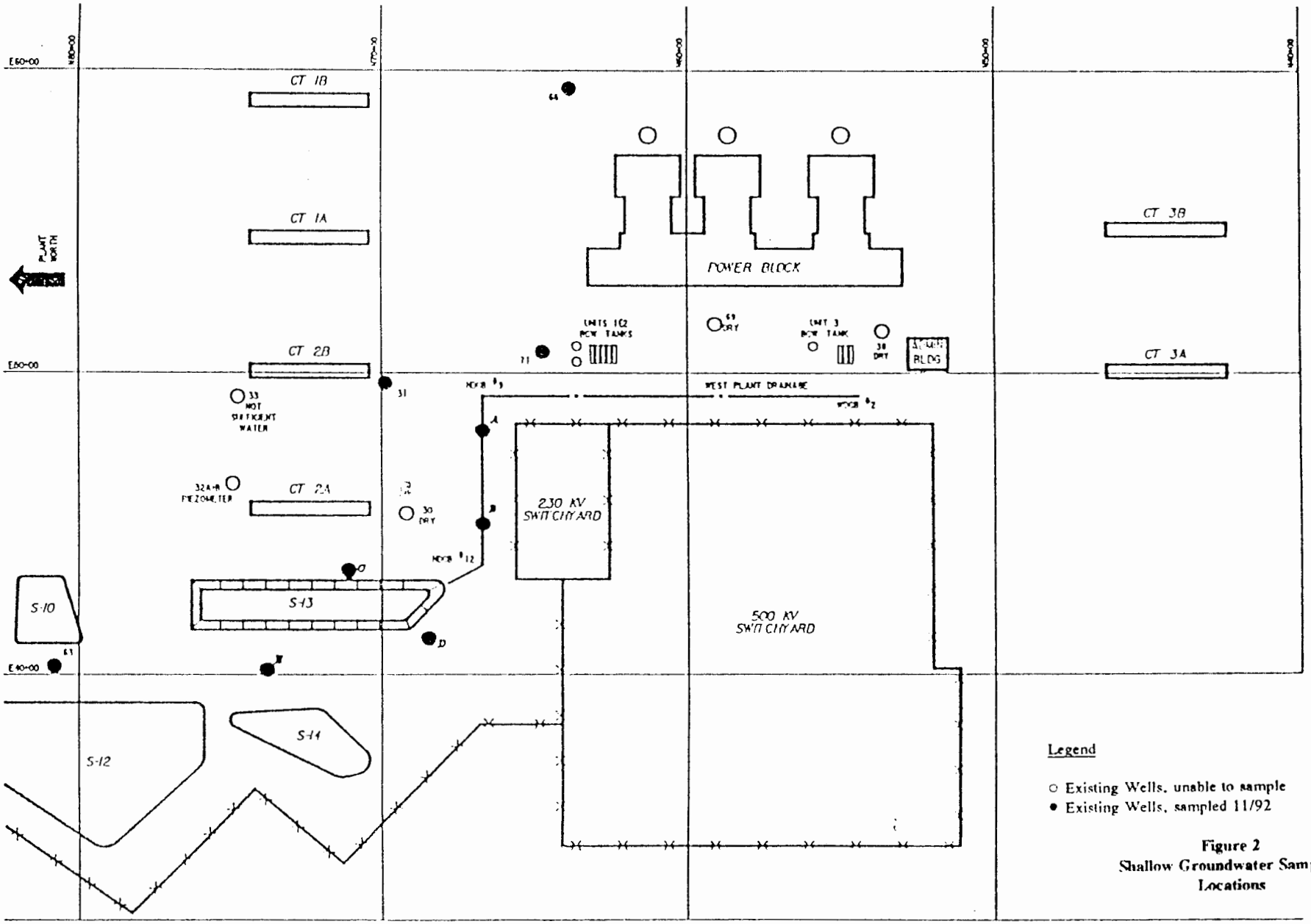


Figure 2
Shallow Groundwater Sampling Locations

ATTACHMENT 1

NGS Deep Wells
Groundwater Monitoring Field Data

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-1 Date 5/18/93

Casing Diameter 6.75" Casing Depth 1200' Pump Setting 945'

Purging Data TAKEN 5/17/93 1430 HRS

SWL 898.9' Feet Of Water In Well 301.1' Gal. Water/Ft 1.859

1x Well Vol 560 2x Well Vol 1120 3x Well Vol 1680 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading 5145 Start Time 0605

Instrument Calibration

Std	7.0	10.0
pH	7.01	10.04

Std	1000	10,000
pH	1000	—

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	5145	159	9.8	17.5	9.7	H_2O CLEAR
1x Vol	5705	191	8.6	21.8	9.5	VERY SLIGHT PINK TINT
2x Vol	6265	193	8.5	22.0	9.4	SLIGHT PINK TINT
3x Vol	6825	193	8.4	22.1	9.5	" " "
4x Vol						
5x Vol						

Ending Flowmeter Reading 6860 Gallons Pumped 1715 Sample Time 0905

Additional Comments:

PURGED WELL W/ DEDICATED SUBMERSIBLE PUMP. SAMPLED W/ SAME.

GENERATOR PUTTING OUT 500 VOLTS! PUMP PULLING 8.5-9.0 AMPS.

Sampled by:

R. PRIGGE / M. McKenzie
Print Signature

[signature] / Mike McKenzie
Signature

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-2 Date 5/18/93

Casing Diameter 4" → 660' 6.75" → 1500' Casing Depth 1500' Pump Setting No Pump in Well

Purging Data

SWL 949.0' Feet Of Water In Well 551' Gal. Water/Ft 1.859

1x Well Vol _____ 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time —

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.04	pH	1000	

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1100

Additional Comments:

Well was not Purged. Sampled w/ Stainless Steel Bailer @ 5' Below SWL.

-MP is Top of 4" Well Casing

Sampled by:

R. Prigge / M. McKenzie
Print Signature

[signature] / Mike McKenzie
Signature

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-3 Date 5/18/93

Casing Diameter 6.75" Casing Depth 1500' Pump Setting 1029'

Purging Data

SWI 978.3' TAKEN 5/17/93 1530 HRS. Feet Of Water In Well 521.7 Gal. Water/Ft 1.859

1x Well Vol 970 2x Well Vol 1940 3x Well Vol 2910 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading 6860 Start Time 1010

Instrument Calibration

Std	7.0	10.0
pH	7.01	10.04

Std	1000	10,000
pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	6860	152	9.4	17.7	9.5	H_2O CLEAR
1x Vol	7830	202	8.4	22.9	9.5	" "
2x Vol	8800	202	8.4	22.9	9.5	" "
3x Vol	9770	212	8.4	22.8	9.5	" "
4x Vol						
5x Vol						

Ending Flowmeter Reading 9790 Gallons Pumped 2930 Sample Time 1520

Additional Comments:

PURGED WELL W/ DEDICATED SUBMERSIBLE PUMP. SAMPLED W/ SAME.

* TOOK DUPLICATE SAMPLE HERE - NGS-DW-33

Sampled by:

R. TRIGGE / M. McKENZIE
Print Signature

[illegible] / [illegible]
Signature

ATTACHMENT 2

NGS Deep Wells
Laboratory Data and Chain of Custody

Westech Laboratories Inc.
The Quality People
Since 1955

Phoenix • 3737 E. Broadway Rd. • AZ 85040 • 602-437-1080 • fax 437-8706
Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • 602-774-2312 • fax 774-6469
El Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS	
SRP--	PO Box 52025	
	Phx. Az 85072-2025	
TELEPHONE 236-4130	PROJECT NGS	JOB / P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature] / Mike McGuire

SAMPLER (PLEASE PRINT): R. Pringle / M. McKenzie

SAMPLE TYPE CODES: S - SOIL, O - OIL, T - TRAVEL BLANK, W - WATER, G - SLUDGE, F - FIELD BLANK, X - OTHER (SPECIFY)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: Hex. Chromium	COMMENTS	LABORATORY IDENTIFICATION
NGS-DW-1	5/18/93	0905			✓	W	1		✓		9312435
NGS-DW-2		1100			✓	W	1		✓		2436
GSMWNS-D		1205			✓	W	1		✓		2437
GSMWNS-E		1210			✓	W	1		✓		2438
GSMWNS-C		1220			✓	W	1		✓		2439
GSMWNS-63		1250			✓	W	1		✓		2440
GSMWNS-66		1430			✓	W	1		✓		2441
NGS-DW-3		1520			✓	W	1		✓		2442
NGS-DW-33		1520			✓	W	1		✓		2443

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	REMARKS
[signature]	R. Pringle	5/18/93 1550	Mrs. Skywest		
SkyWest	Mel	5-19-93 7:30	Steve Donoghue	Steve Donoghue	Mel
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

623 (8/92) White - Testing Laboratory; Yellow - Department Job File; Pink - Client

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312435
INVOICE NO.: 22131753
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312436
INVOICE NO.: 22131753
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

(1) Copy to Client

M. Enright
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312442
INVOICE NO.: 22131753
REPORT DATE: 05-24-93
REVIEWED BY: AEN
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-3
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

(1) Copy to Client

M. Grafil
Managing Director

ATTACHMENT 3

NGS Shallow Wells
May 18, 1993
Groundwater Monitoring Field Data

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-A Date 5/18/93

Casing Diameter 2" Casing Depth 32.13' Pump Setting 32'

Purging Data

SWL 23.33' Feet Of Water In Well 8.80' Gal. Water/Ft 0.163

1x Well Vol 1.5 2x Well Vol 3.0 3x Well Vol 4.5 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading — Start Time 1708

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.04	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 Gals.					Pumped Dry after ≈ 1.5 Gals
1x Vol	1.5 Gals					
2x Vol	3.0 Gals					
3x Vol	4.5 Gals					
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped 1.5 Sample Time 1715

Additional Comments:

Purged Well Dry w/ Redi-Flo 2 Env. Pump. Let Recover for 10 mins. & sampled w/ Disposable Bailer.

Pump Decontaminated Between wells w/ Liquinox & Demin. H_2O

Sampled by:

R. Pringle / M. McKenzie
Print Signature

[signature] / Mike McKenzie
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-B Date 5/18/93

Casing Diameter 2" Casing Depth 27.20' Pump Setting 27'

Purging Data

SWL 18.50' Feet Of Water In Well 8.70' Gal. Water/Ft 0.163

1x Well Vol 1.4 2x Well Vol 2.8 3x Well Vol 4.2 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time 1744

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.04	pH	1000	

	Meterread	EC	pH	t°	Q (GPM)	Remarks
Start	0 Gals					Pumped ≅ 1.5 Gals + Pumped Dry
1x Vol	1.4 Gals					
2x Vol	2.8 Gals					
3x Vol	4.2 Gals					
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped 1.5 Sample Time 1755

Additional Comments:

Evacuated Well w/ Redi-Flo 2 Env. Pump Let Recover 10 mins + Sample w/ Disposable Bailer

Pump Decontaminated Between Wells w/ Liquinox + Demin. H_2O

*** Took Equip. Blank after Decontaminating Pump → GSMWNS-EB

Sampled by:

R. Prigge / M. Mckenzie
Print Signature

[signature] / Mike Mckenzie
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-C Date 5/18/93

Casing Diameter 2" Casing Depth 19.59' Pump Setting —

Purging Data

SWL 10.79' Feet Of Water In Well 8.80' Gal. Water/Ft 0.163

1x Well Vol 1.4 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time —

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1220

Additional Comments:

EVACUATED WELL W/ DISPOSABLE BAILER ON 5/17/93 @ 1700 HRS LET RECOVER OVERNIGHT.

SAMPLED W/ SAME BAILER @ 1220 HRS 5/18/93

Sampled by:

R. TRIGGLE / M. McKENZIE

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-1 Date 5/18/93

Casing Diameter 2" Casing Depth 21.41' Pump Setting —

Purging Data

SWL 12.25' Feet Of Water In Well 9.16 Gal. Water/Ft 0.163

1x Well Vol 1.49 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time —

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1205

Additional Comments:

Evacuated Well w/ Disposable Bailer on 5/17/93 @ 1630 hrs. Let Recover Overnight.

Sampled w/ Same Bailer @ 1205 hrs. 5/18/93

Sampled by:

R. Prigge / M. McKenzie

Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS - E Date 5/18/93

Casing Diameter 2" Casing Depth 18.63 Pump Setting —

Purging Data

SWL 12.98' Feet Of Water In Well 5.65 Gal. Water/Ft 0.163

1x Well Vol 0.92 2x Well Vol ____ 3x Well Vol ____ 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time —

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped ____ Sample Time 1210

Additional Comments:

Evacuated well w/ Disposable Bailer on 5/17/93 @1645 hrs. Let Recover overnight

Sampled w/ Same Bailer @1210 hrs. 5/18/93

Sampled by:

R. Prigge / M. McKenzie
Print Signature

[signature] / Mike McKenzie
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS - 31 Date 5/18/93

Casing Diameter 2" Casing Depth 30.43' ~~Pump Setting~~ Bail Dry 30'

Purging Data

SWL 14.65' Feet Of Water In Well 15.78' Gal. Water/Ft 0.163

1x Well Vol 2.6 2x Well Vol 5.2 3x Well Vol 7.8 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading — Start Time 1815

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						Bailed Dry w/ SS Bailer – Fine
1x Vol						Sand + Gravel in Bailer!!!
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped — Sample Time 1850

Additional Comments:

Evacuated Well w/ Stainless Steel Bailer. Let Recover 10 mins. + Sampled w/ Disposable Bailer

— Do not use Redi-Flo 2 Pump... Fine Sand Locks pump up – Bail Dry!!!

Sampled by:

R. Pregge / M. McKenzie
Print Signature

[signature] / Mike McKenzie
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-63 Date 5/18/93

Casing Diameter 4" Casing Depth 23.27 Pump Setting 23'

Purging Data

SWL 6.27 Feet Of Water In Well 17.00' Gal. Water/Ft 0.653

1x Well Vol 11 2x Well Vol 22 3x Well Vol 33 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time 1237

Instrument Calibration

Std	7.0	10.0
pH	7.01	10.04

Std	1000	10,000
pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 gals	12,630	7.3	17.3	~5	Stained Yellow
1x Vol	11 gals	12,750	7.3	17.4	~5	" "
2x Vol	22 gals					Pumped Dry @ ≅21 gals
3x Vol	33 gals					
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped ____ Sample Time 1250

Additional Comments:

Evacuated Well w/ Redi Flo 2 Env. Pump Let Recover 5 mins. + Sampled w/ Disposable Bailer

Pump Decontaminated Between Wells w/ Liquinox + Demin. H_2O

Volumes measured w/ 5 gal. Bucket

Sampled by:

R. Pringle / M. McKenzie — Print Signature

[signature] / Mike McKenzie — Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-66 Date 5/18/93

Casing Diameter 4" Casing Depth 30.08' Pump Setting 30'

Purging Data

SWL 14.46' Feet Of Water In Well 15.62 Gal. Water/Ft 0.653

1x Well Vol 11 2x Well Vol 22 3x Well Vol 33 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading — Start Time 1413

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.04	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 Gals.	5950	7.6	22.0		H_2O CLEAR
1x Vol	11 Gals.	8850	7.5	19.5		SLIGHT yellow TINT
2x Vol	22 Gals.	9040	7.5	19.3		" " "
3x Vol	33 Gals.	9240	7.5	19.3		" " "
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped 35 Sample Time 1430

Additional Comments:

Purged Well w/ Rem. Flo 2 Env. Pump. Volumes measured w/ 5 gal. Bucket. Sampled w/ Disposable Bailer.

Volumes measured w/ 5 gal. Bucket.

Sampled by:

R. Pringle / M. McKenzie — Print Signature

[signature] / Mike McKenzie — Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-71 Date 5/18/93

Casing Diameter 4" Casing Depth 24.82' Pump Setting 24'

Purging Data

SWL 16.04' Feet Of Water In Well 8.78' Gal. Water/Ft 0.653

1x Well Vol 6 2x Well Vol 12 3x Well Vol 18 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading — Start Time 1625

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.01	10.04	pH	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 Gals	3860	7.9	23.6		Very Slight Yellow Tint
1x Vol	6 Gals	6610	7.8	20.4		" " " "
2x Vol	12 Gals					Pumped Dry after 11 Gals.
3x Vol	18 Gals.					
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped 11 Sample Time 1635

Additional Comments:

Purged Well w/ Redi-Flo 2 Env. Pump. Sampled w/ Disposable Bailer.
Volumes measured w/ 5 gal. Bucket.
Let Recover 5 minutes ... then Sampled

** This well does not Recover Good!

Sampled by:

R. Pringle / M. McKenzie
Print Signature

[illegible] / Mike McKenzie
Signature

ATTACHMENT 4

NGS Shallow Wells
May 18, 1993
Laboratory Data and Chain of Custody

Westech Laboratories Inc.
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Since 1955

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Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • 602-774-2312 • fax 774-6469
El Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS	
SRP	PO Box 52025 Phx. Az. 85072-2025	
TELEPHONE: 236-4130	PROJECT: NGS	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature] IV; [signature] McKenzie
SAMPLER (PLEASE PRINT): R. Prigge; M. McKenzie

SAMPLE TYPE CODES: S – SOIL; O – OIL; T – TRAVEL BLANK; W – WATER; G – SLUDGE; F – FIELD BLANK; X – OTHER (SPECIFY)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: HEX. CHROMIUM	COMMENTS	LABORATORY IDENTIFICATION
NGS-DW-1	5/18/93	0905			✓	W	1		✓		9312435
NGS-DW-2		1100			✓	W	1		✓		2436
GSMWNS-D		1205			✓	W	1		✓		2437
GSMWNS-E		1210			✓	W	1		✓		2438
GSMWNS-C		1220			✓	W	1		✓		2439
GSMWNS-63		1250			✓	W	1		✓		2440
GSMWNS-66		1430			✓	W	1		✓		2441
NGS-DW-3		1520			✓	W	1		✓		2442
NGS-DW-33		1520			✓	W	1		✓		2443

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	REMARKS
[signature] IV	R. Prigge	5/18/93/1550	Mrs. Skywest		
Sky West	Mel	5-19-93 7:50	Steve Donoghue	Steve Donoghue	Mel
					SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

White - Testing Laboratory; Yellow - Department Job File; Pink - Client

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Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • 602-774-2312 • fax 774-6469
El Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
SRP	PO Box 52025
	PHx Az. 85072-2025
TELEPHONE: 236-4130	PROJECT: NGS / JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature] / [signature]
SAMPLER (PLEASE PRINT): R. Prigge / M. McKenzie

SAMPLE TYPE CODES: S – SOIL, O – OIL, T – TRAVEL BLANK, W – WATER, G – SLUDGE, F – FIELD BLANK, X – OTHER (SPECIFY)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: Hex. Chromium	COMMENTS	LABORATORY IDENTIFICATION
GSMWNS-71	5/18/93	1635			✓	W	1		✓		93124775
GSMWNS-A		1715			✓	W	1		✓		93124776
GSMWNS-B		1755			✓	W	1		✓		93124777
GSMWNS-EB		1805			✓	W	1		✓		93124778
GSMWNS-31		1850			✓	W	1		✓		93124779

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE/TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	REMARKS
[signature]	R Prigge	5/19/93 1240	[signature]	[signature]	5-19-93 1240
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE/TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE/TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312476
INVOICE NO.: 22131769
REPORT DATE: 05-24-93
REVIEWED BY: ACW
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-A
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

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M. Wright
Managing Director

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WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312477
INVOICE NO.: 22131769
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-B
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	0.012	mg/L	0.005	05-19-93

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Managing Director

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WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312439
INVOICE NO.: 22131753
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-C
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

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Managing Director

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P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312437
INVOICE NO.: 22131753
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-D
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	0.010	mg/L	0.005	05-19-93

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Managing Director

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CLIENT SALT RIVER PROJECT
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ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312438
INVOICE NO.: 22131753
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-E
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

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ATTN: DON WHITMER
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PHOENIX, AZ 85072

SAMPLE NO. : 9312479
INVOICE NO.: 22131769
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-31
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

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M. Enright
Managing Director

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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312440
INVOICE NO.: 22131753
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-63
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312441
INVOICE NO.: 22131753
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-66
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

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ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312475
INVOICE NO.: 22131769
REPORT DATE: 05-24-93
REVIEWED BY: AEN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-71
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

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M. Engel
Managing Director

ATTACHMENT 5

NGS Shallow Wells
June 14, 1993
Groundwater Monitoring Field Data

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-A Date 6/14/93

Casing Diameter 2" Casing Depth 32.13' Pump Setting ~~32'~~ BAILED DRY

Purging Data

SWL 23.30 Feet Of Water In Well 8.83 Gal. Water/Ft 0.163

1x Well Vol 1.5 2x Well Vol 3.0 3x Well Vol 4.5 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1605

Additional Comments:

EVACUATED WELL W/ DISPOSABLE BAILER @ 1530 HRS. 6/14/93. LET RECOVER FOR 30 MINS. SAMPLED W/ SAME BAILER.

** RE-SAMPLE PER D. SHIRLEY **

Sampled by:

R. PRIGGE / M. FOWL
Print Signature

[signature] / M. Fowl
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-B Date 6/14/93

Casing Diameter 2" Casing Depth 27.20' Pump Setting 2
BAILED DRY

Purging Data

SWL 18.88' Feet Of Water In Well 8.32 Gal. Water/Ft 0.163

1x Well Vol 1.4 2x Well Vol 2.8 3x Well Vol 4.2 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time ____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						AFTER SITTING FOR 4 HOURS THIS
1x Vol						WELL only PRODUCED ABOUT 1000mls
2x Vol						** SUGGEST OVERNIGHT RECOVERY!!
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped ____ Sample Time 1900 HRS

Additional Comments:

EVACUATED WELL w/ DISPOSABLE BAILER @ 1500 HRS 6/14/93 LET RECOVER FOR 240 mins. SAMPLED w/ SAME BAILER.

→ DUPLICATE SAMPLE TAKEN HERE → GSMWNS-F (1900 HRS) (BELLS TIME of 1800 HRS on COC)
** RE-SAMPLE PER D. SHIRLEY **

Sampled by:

R. TRIGGE / M. FOWL
Print Signature

[signature] / M. Fowl
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-C Date 6/15/93

Casing Diameter 2" Casing Depth 19.59' Pump Setting –

Purging Data

SWl 10.94 Feet Of Water In Well 8.65 Gal. Water/Ft 0.163

1x Well Vol 1.4 2x Well Vol ____ 3x Well Vol ____ 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time ____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped ____ Sample Time 0540

Additional Comments:

Evacuated Well w/ Disposable Bailer on 6/14/93 @1330 hrs. Let Recover overnight.

Sampled w/ Same Bailer @0540 hrs. 6/15/93

** Re-Sample per D. Shirley **

Sampled by:

R. Prigge / M. Fowl
Print Signature

[signature] / M. Fowl
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-D Date 6/15/93

Casing Diameter 2" Casing Depth 21.41' Pump Setting —

Purging Data

SWL 12.56' Feet Of Water In Well 8.85 Gal. Water/Ft 0.163

1x Well Vol 1.45 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 05:30

Additional Comments:

EVACUATED WELL W/ DISPOSABLE BAILER ON 6/14/93 1300 HRS. LET RECOVER OVERNIGHT

SAMPLED W/ SAME BAILER @ 0530 HRS 6/15/93

→ DUPLICATE SAMPLE TAKEN HERE → GSMWNS-H (BOGUS TIME OF 0515 HRS)

** RE-SAMPLE PER D. SHIRLEY **

Sampled by:

R. PRIGGE / M FOWL. — Print Signature

[signature] / Mark Fowl — Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS - E Date 6/15/93

Casing Diameter 2" Casing Depth 18.63 Pump Setting —

Purging Data

SWL 12.95 Feet Of Water In Well 5.68 Gal. Water/Ft 0.163

1x Well Vol 0.93 2x Well Vol ____ 3x Well Vol ____ 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time ____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped ____ Sample Time 0535

Additional Comments:

Evacuated well w/ Disposable Bailer on 6/14/93 @ 1315 hrs. Let Recover overnight.

Sampled w/ Same Bailer @ 0535 hrs 6/15/93

** Re-Sample per D. Shirley **

Sampled by:

R. Trigge / M. Fowl
Print Signature

[signature] / M. Fowl
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-31 Date 6/14/93

Casing Diameter 2" Casing Depth 30.43' Pump Setting —
Bail Dry!

Purging Data

SWL 15.76' Feet Of Water In Well 14.67 Gal. Water/Ft 0.163

1x Well Vol 2.4 2x Well Vol 4.8 3x Well Vol 7.2 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start						Do not use Redi-Flo 2 Env. Pump. Fine Sand in Well Locks Pump up!!!
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1620

Additional Comments:

Evacuated Well w/ Stainless Steel Bailer. Sampled w/ Disposable Bailer
Bailed Dry @1555 hrs. 6/14/93. Let Recover for 20 mins. + Sampled

Sampled by:

R. Trigge / M. Fowl
Print Signature

Signature / M. Fowl

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-63 Date 6/14/93

Casing Diameter 4" Casing Depth 23.27' Pump Setting 23'

Purging Data

SWL 7.00 Feet Of Water In Well 16.27 Gal. Water/Ft 0.653

1x Well Vol 11 2x Well Vol 22 3x Well Vol 33 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time 1400

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.0	pH	1000	10,000

	Meterread	EC	pH	C°	Q (GPM)	Remarks
Start	0 Gals	13060	7.4	22.8	~4	H_2O yellow Stained
1x Vol	11 Gals	12180	7.2	20.1	~4	" " "
2x Vol	22 Gals					
3x Vol	33 Gals					Pumped Dry After ≅ 21 Gals.
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 1410

Additional Comments:

Evacuated Well w/ Redi-Flo 2 Env. Pump. Let Recover 5 mins. & Sampled w/ Disposable Bailer.

Pump Decontaminated Between Wells w/ Liquinox & DI H_2O from Xcut Lab

Volumes measured w/ 5 gal. Bucket.

Sampled by:

R. Trigle / M. Fowl

Print Signature

[signature] / M. Fowl

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-66 Date 6/14/93

Casing Diameter 4" Casing Depth 30.08' Pump Setting 30'

Purging Data

SWL 14.44' Feet Of Water In Well 15.64' Gal. Water/Ft 0.653

1x Well Vol 11 2x Well Vol 22 3x Well Vol 33 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time 1635

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.0	pH	1000	10,000

	Meterread	EC	pH	C°	Q (GPM)	Remarks
Start	0 Gals	8910	7.4	26.5	~4	Clear
1x Vol	11 Gals	10,350	7.4	22.0	~4	"
2x Vol	22 Gals	10,640	7.4	20.9	~4	"
3x Vol	33 Gals.	10,670	7.4	20.6	~4	"
4x Vol						Pumped Dry @ 1645 ≅ 4 gpm
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped 40 Sample Time 1650

Additional Comments:

Purged Well w/ Redi-Flo 2 Env. Pump Volumes measured w/ 5 Gal. Bucket.
Sampled w/ Disposable Bailer.

Took Sample of Demineralized Water @ 1700 hrs → GSMWNS-DMW

Decontaminated Pump w/ Liquinox + DI H_2O from X-cut Lab

Sampled by:

R. Trigge / M. Fowl
Print Signature

L. Trigge IV / M. Fowl
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-71 Date 6/14/93

Casing Diameter 4" Casing Depth 24.82' Pump Setting 24'

Purging Data

SWL 16.15' Feet Of Water In Well 8.67 Gal. Water/Ft 0.653

1x Well Vol 6 2x Well Vol 12 3x Well Vol 18 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time 1723

Instrument Calibration

Std	7.0	10.0
pH	7.0	10.0

Std	1000	10,000
pH	1000	10,000

	Meterread	EC	pH	C°	Q (GPM)	Remarks
Start	0 Gals	7400	7.6	25.7		Clear
1x Vol	6 Gals	7450	7.7	22.2		"
2x Vol	12 Gals					
3x Vol	18 Gals					Pumped Dry after 11 Gals. 1730 hrs.
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped 11 Sample Time 1845

Additional Comments:

Purged Well w/ Redi-Flo 2 Env. Pump. Sampled w/ Disposable Bailer.

Volumes measured w/ 5 gal. Bucket.
Duplicate Sample Taken Here → GSMWNS-G (Bottle Time of 1820 on COC)
Equip Blank Taken after Decon. Pump → GSMWNS-EB 1735 hrs.
Decontaminated Pump w/ Liquinox + DI H_2O from X-cel Lab

Sampled by:

R. Trigle / M. Fowl
Print Signature

[illegible] / M. Fowl
Signature

ATTACHMENT 6

NGS Shallow Wells
June 14, 1993
Laboratory Data and Chain of Custody

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lagstaff • 2400 E. Huntington Dr. • AZ 86004 • 602-774-2312 • fax 774-6469
l Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

Rick Ruger-X-cut 310

CLIENT	ADDRESS	
SRP	PO Box 52025	
	PHx. Az. 85072-2025	
TELEPHONE 236-4130	PROJECT NGS	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature] / [signature]
SAMPLER (PLEASE PRINT): R. PRIGGE / MARK FOWL

SAMPLE TYPE CODES: S – SOIL, O – OIL, T – TRAVEL BLANK, W – WATER, G – SLUDGE, F – FIELD BLANK, X – OTHER (SPECIFY)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: HEX. CHROMIUM	COMMENTS	LABORATORY IDENTIFICATION
GSMWNS-63	6/14/93	1410	NGS		✓	W	1		✓		9314030
GSMWNS-A		1605			✓	W	1		✓		4031
GSMWNS-31		1620			✓	W	1		✓		4032
GSMWNS-66		1650			✓	W	1		✓		4033
GSMWNS-DMW		1700			✓	W	1		✓		4034
GSMWNS-EB		1735			✓	W	1		✓		4035
GSMWNS-F		1800			✓	W	1		✓		4036
GSMWNS-G		1820			✓	W	1		✓		4037
GSMWNS-71		1845			✓	W	1		✓		4038
GSMWNS-B		1900			✓	W	1		✓		4039
GSMWNS-H	6/15/93	0515			✓	W	1		✓		4040
GSMWNS-D		0530			✓	W	1		✓		4041
GSMWNS-E		0535			✓	W	1		✓		4042
GSMWNS-C		0540			✓	W	1		✓		4043

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE/TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
[signature]	R. PRIGGE	6/15/93 1210	[signature]	Melody Miller
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE/TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE/TIME	RECEIVED BY (SIGNATURE)	PRINT NAME

REMARKS: 6-15-93 12:10
Need QC per client 6-16-93 [signature]

SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314031
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-A
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314039
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-B
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

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Managing Director

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314043
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-C
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-15-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

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WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314041
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-D
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-15-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	0.020	mg/L	0.005	06-15-93

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WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314042
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-E
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-15-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

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WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314032
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: ALN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-31
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

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M. Angel
Managing Director

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314030
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-63
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

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Managing Director

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WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314033
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-66
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

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WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314038
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-71
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	0.49	mg/L	0.005	06-15-93

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M. Gusfil
Managing Director

ATTACHMENT 7

QA/QC Samples
May 18, 1993

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gstaff • 2400 E. Huntington Dr. • AZ 86004 • 602-774-2312 • fax 774-6469
Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS	
SRP-	PO Box 52025 PHx. Az 85072-2025	
TELEPHONE: 236-4130	PROJECT: NGS	JOB / P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature] IV, [signature] McKenzie

SAMPLER (PLEASE PRINT): R. Prigge, M. McKenzie

SAMPLE TYPE CODES: S – SOIL, O – OIL, T – TRAVEL BLANK, W – WATER, G – SLUDGE, F – FIELD BLANK, X – OTHER (SPECIFY)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: HEX CHROMIUM	COMMENTS	LABORATORY IDENTIFICATION
NGS-DW-1	5/18/93	0905			✓	W	1		✓		931243[illegible]
NGS-DW-2		1100			✓	W	1		✓		243[illegible]
GSMWNS-D		1205			✓	W	1		✓		243[illegible]
GSMWNS-E		1210			✓	W	1		✓		2438
GSMWNS-C		1220			✓	W	1		✓		2439
GSMWNS-63		1250			✓	W	1		✓		2440
GSMWNS-66		1430			✓	W	1		✓		2441
NGS-DW-3		1520			✓	W	1		✓		2442
NGS DW-33		1520			✓	W	1		✓		2443

LINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	REMARKS
[signature] IV	R. Prigge	5/18/93/1550	+RS. Skywest		
Sky West	Mel	5-19-93 9:50	Steve Donoghue	Steve Donoghue-Mel	
					SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

3 (8/92) White - Testing Laboratory; Yellow - Department Job File; Pink - Client

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Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • 602-774-2312 • fax 774-6469
El Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS	
SRP	PO Box 52025 PHx. Az. 85072-2025	
TELEPHONE: 236-4130	PROJECT: NGS	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature] IV; [signature] McKenzie

SAMPLER (PLEASE PRINT): R. PRIGGE; M. McKenzie

SAMPLE TYPE CODES: S – SOIL; O – OIL; T – TRAVEL BLANK; W – WATER; G – SLUDGE; F – FIELD BLANK; X – OTHER (SPECIFY)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: HEX. CHROMIUM	COMMENTS	LABORATORY IDENTIFICATION
GSMWNS-71	5/18/93	1635			✓	W	1		✓		9312475
GSMWNS-A		1715			✓	W	1		✓		9312476
GSMWNS-B		1755			✓	W	1		✓		9312477
GSMWNS-EB		1805			✓	W	1		✓		9312478
GSMWNS-31		1850			✓	W	1		✓		9312479

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE/TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	REMARKS
[signature] IV	R PRIGGE	5/19/93 1240	[signature]	[signature]	5-19-93 1240
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE/TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE/TIME	RECEIVED BY (SIGNATURE)	PRINT NAME	SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

[illegible] White - Testing Laboratory; Yellow - Department Job File; Pink - Client

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312478
INVOICE NO.: 22131769
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-EB
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	0.43	mg/L	0.005	05-19-93

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9312443
INVOICE NO.: 22131753
REPORT DATE: 05-24-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-33
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 05-18-93
SUBMITTAL DATE : 05-19-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	05-19-93

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
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Since 1955

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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-051993-23
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 10

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 05-19-93

TEST DESCRIPTION ..: Chromium, Hexavalent
TEST METHOD .....: 3500-Cr-D

SAMPLES IN THIS RUN: 9312461 9312462 9312475 9312476 9312477 9312478 9312479 9312502 9312503

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Chromium, Hexavalent	mg/L	0.100	.1040	104.0
Chromium, Hexavalent	mg/L	0.500	.5011	100.2

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9312478	Chromium, Hexavalent	mg/L	0.43	0.43	0.0

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9312503	Chromium, Hexavalent	mg/L	<0.01	.5	.5182	103.6

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Chromium, Hexavalent	mg/L	<0.005

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-051993-23
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 10

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 05-19-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Diane Westcott
DATE: 6/10/93

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-051993-5
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 9

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 05-19-93

TEST DESCRIPTION ..: Chromium, Hexavalent
TEST METHOD .....: 3500-Cr-D

SAMPLES IN THIS RUN: 9312435 9312436 9312437 9312438 9312439 9312440 9312441 9312442 9312443

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Chromium, Hexavalent	mg/L	0.100	.09744	97.4
Chromium, Hexavalent	mg/L	0.500	.4615	92.3
Chromium, Hexavalent	mg/L	0.100	.0948	94.8

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9312436	Chromium, Hexavalent	mg/L	<0.005	<0.005	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9312435	Chromium, Hexavalent	mg/L	<0.005	.5	.4879	97.6

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Chromium, Hexavalent	mg/L	<0.005

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-051993-5
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 9

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 05-19-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Neckes
6/10/93

ATTACHMENT 8

QA/QC Samples
June 14, 1993

Westech Laboratories Inc.
The Quality People
Since 1955

nix • 3737 E. Broadway Rd. • AZ 85040 • 602-437-1080 • fax 437-8706
taff • 2400 E. Huntington Dr. • AZ 86004 • 602-774-2312 • fax 774-6469
so • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

Rick Prigge-X-cut 310

CLIENT	ADDRESS	
SRP	PO Box 52025 PHx. Az. 85072-2025	
TELEPHONE: 236-4130	PROJECT: NGS	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Prigge IV, Mark Fowl

SAMPLER (PLEASE PRINT): R. PRIGGE, Mark Fowl

SAMPLE TYPE CODES: S – SOIL, O – OIL, T – TRAVEL BLANK, W – WATER, G – SLUDGE, F – FIELD BLANK, X – OTHER (SPECIFY)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: HEX. CHROMIUM	COMMENTS	LABORATORY IDENTIFICATION
MWNS-63	6/14/93	1410	NGS		✓	W	1		✓		9314030
MWNS-A		1605			✓	W	1		✓		4031
MWNS-31		1620			✓	W	1		✓		4032
MWNS-66		1650			✓	W	1		✓		4033
MWNS-DMW		1700			✓	W	1		✓		4034
MWNS-EB		1735			✓	W	1		✓		4035
MWNS-F		1800			✓	W	1		✓		4036
MWNS-G		1820			✓	W	1		✓		4037
MWNS-71		1845			✓	W	1		✓		4038
MWNS-B		1900			✓	W	1		✓		4039
MWNS-H	6/15/93	0515			✓	W	1		✓		4040
MWNS-D		0530			✓	W	1		✓		4041
MWNS-E		0535			✓	W	1		✓		4042
MWNS-C		0540			✓	W	1		✓		4043

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
Prigge IV	R. PRIGGE	6/15/93 1210	Melody Miller	Melody Miller 6-15-93 12:10

REMARKS: Need QC per client 6-16-93 Mel

SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

/92) White - Testing Laboratory; Yellow - Department Job File; Pink - Client

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314035
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-EB
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314034
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-DMW
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314036
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AEN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-F
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

(1) Copy to Client

M. Gingrich
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314037
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-G
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	0.50	mg/L	0.005	06-15-93

(1) Copy to Client

Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: RICK PRIGGE X-CUT 310
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9314040
INVOICE NO.: 22132096
REPORT DATE: 06-16-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-H
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. PRIGGE/M. FOWL
SUBMITTED BY ....: R. PRIGGE
SAMPLE SOURCE ...: NGS

AUTHORIZED BY : R. PRIGGE
CLIENT P.O. : --
SAMPLE DATE ...: 06-15-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium, Hexavalent .....:	<0.005	mg/L	0.005	06-15-93

(1) Copy to Client

Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-061593-15
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 39

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-15-93

TEST DESCRIPTION ..: Chromium, Hexavalent
TEST METHOD .....: 3500-Cr-D

SAMPLES IN THIS RUN: 9314025 9314026 9314027 9314028 9314030 9314031 9314032 9314033 9314034 9314035 9314036 9314037 9314038 9314039 9314040 9314041 9314042 9314043

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Chromium, Hexavalent	mg/L	0.100	.09349	93.5
Chromium, Hexavalent	mg/L	0.500	.4853	97.1
Chromium, Hexavalent	mg/L	0.100	.0948	94.8
Chromium, Hexavalent	mg/L	0.500	.4879	97.6

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314038	Chromium, Hexavalent	mg/L	0.49	0.496	1.2
9314042	Chromium, Hexavalent	mg/L	<0.005	<0.005	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314034	Chromium, Hexavalent	mg/L	<0.005	.5	.4642	92.8
9314035	Chromium, Hexavalent	mg/L	<0.005	.5	.4747	94.9

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Chromium, Hexavalent	mg/L	<0.005

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-061593-15
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 39

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-15-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

$$RPD = \frac{0.020 - 0.005}{0.025/2} \times 100 =$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Nichols

SALT RIVER PROJECT
POST OFFICE BOX 52025
PHOENIX, ARIZONA
85072-2025
(602) 236-5900

Via Overnight Express Delivery

December 29, 1992

Latha Rajagopalan
Hazardous Waste Management Division
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Re: First Quarterly Groundwater Monitoring Report
Navajo Generating Station (RCRA 009-90-001)

Dear Ms. Rajagopalan:

Pursuant to requirements specified in the Modifications to the Consent Agreement and Final Order (CA/FO) executed on August 14, 1992, attached is the first quarterly monitoring report of the investigation of hexavalent chromium contamination in shallow and deep monitor wells at the Navajo Generating Station located near Page, Arizona. The groundwater samples were collected on November 20-21, 1992. SRP received the results of the hexavalent chromium determination on December 2, 1992.

The results of the sampling indicate no detectable concentration of hexavalent chromium in the three existing deep wells. The data also show that, with the exception of monitor well #71, there is no detectable concentration of hexavalent chromium in the shallow monitor wells. Groundwater in monitor well #71 was shown to have 0.98 mg/l hexavalent chromium.

SRP will conduct the second round of sampling at NGS in February 1993 and we anticipate submitting the second quarterly monitoring report by April 1, 1993.

Sincerely,

Dennis H. Shirley
Environmental Services Department

DHS:dg
Attachment

WW-09773.122

cc: Sadie Hoskie, Navajo Environmental Protection Administration

FIRST QUARTERLY MONITORING REPORT

INVESTIGATION FOR HEXAVALENT CHROMIUM CONTAMINATION IN SHALLOW AND DEEP MONITOR WELLS

NAVAJO GENERATING STATION
PAGE, ARIZONA

Overview:

During November 16-21, 1992, SRP Environmental Services Department collected samples from three deep wells and nine shallow monitor wells at the Navajo Generating Station (NGS). The samples were transferred to Westech Laboratories, Incorporated of Phoenix, Arizona and analyzed for hexavalent chromium. Laboratory results of the analysis were submitted to Salt River Project on December 2, 1992.

Summary of Deep Groundwater Monitoring Activities:

Field and laboratory procedures for monitoring the deep groundwater monitor wells were specified in a Sampling and Analysis Plan (SAP) that was submitted to EPA Region IX on September 14, 1992 as an amendment to the May 1991 "Sampling and Analysis Plan for Determining Potential Chromium Contamination at the Navajo Generating Station". EPA approval of the SAP was documented in a letter dated November 17, 1992. The locations of the deep wells are shown in Figure 1.

As specified in the SAP, dedicated pumps were to be installed in the three existing deep wells for well purging and sample collection. Deep wells #1 and #3 were equipped with the dedicated well pumps according to plans. A dedicated pump could not be placed in deep well #2 because of an obstruction at the bottom of an inner casing sleeve encountered at a depth of 660 feet below land surface. Completion details for the pump installation is provided in Attachment 1.

Prior to sampling, measurements of the depth to groundwater were taken in each well. The measured groundwater elevations relative to a Mean Sea Level (MSL) datum are as follows:

Well I.D.	Measuring Point Elevation (feet above MSL)	Depth to Water (feet)	Groundwater Elevation (feet above MSL)
DW #1	4,298.0	906.0	3,392.0
DW #2	4,366.2	949.9	3,416.3
DW #3	4,424.1	980.0	3,444.1

Groundwater samples were collected from deep wells #1 and #3 following well purging. A groundwater sample was collected from deep well #2 using a two inch stainless steel bailer lowered to below static water level via wireline. Field records of deep well groundwater sampling are provided in Attachment 2.

The groundwater samples were submitted to Westech Laboratories Incorporated of Phoenix, Arizona for hexavalent chromium analysis. The results of the laboratory analysis are shown below and indicate there is no detectable concentration of hexavalent chromium in any of the deep well samples.

Well I.D.	Sample I.D.	Location	Hexavalent Chromium
DW #1	NGS-DW-1	north plant site	< 0.05 mg/l
DW #2	NGS-DW-2	railroad loop at plant site	< 0.05
DW #3	NGS-DW-3	ash disposal area	< 0.05

Laboratory certificates of analysis and chain of custody records for the deep well sample analyses are provided in Attachment 3.

Summary of Shallow Groundwater Monitoring Activities:

Field and laboratory procedures for monitoring the shallow groundwater monitor wells were stated in the "Sampling and Analysis Plan for Determining Potential Chromium Contamination at the Navajo Generating Station" submitted to the EPA in May 1991. EPA approval of the SAP was documented in a letter dated July 17, 1991. In further refinement of sampling procedures, SRP and EPA agreed that samples would be collected from the shallow wells as soon as sufficient water had entered the well following well purging. This provision was included in the EPA letter dated November 17, 1992. Figure 2 shows the locations of the shallow monitor wells that were sampled.

Groundwater samples were collected in all shallow wells designated for monitoring. Prior to sampling, the wells were pumped or bailed dry. Samples of groundwater were collected when a sufficient volume of water had entered the well. The amount of time required to yield the 250 milliliter sample volume ranged from a few minutes to approximately 12 hours. Field records of groundwater sampling in the shallow wells are provided in Attachment 4.

The groundwater samples were submitted to Westech Laboratories of Phoenix, Arizona for hexavalent chromium analysis. The results of the laboratory analysis indicate, with the exception of monitor well #71, there is no detectable concentration of hexavalent chromium in the shallow monitor well samples. Monitor well #71 was found to have 0.98 mg/l hexavalent chromium. The results of the analysis are as follows:

Well ID	Sample ID	Approximate Plant Coordinates		Screened Interval (feet)	Hexavalent Chromium (mg/l)
		North	East		
A	GSMWNS-A	N6704	E4807	10-30	< 0.05
B	GSMWNS-B	N6697	E4506	5-25	< 0.05
C	GSMWNS-C	N7067	E4319	7.5-17.5	< 0.05
D	GSMWNS-D	N7007	E4044	9-19	< 0.05
E	GSMWNS-E	N7431	E4018	6.5-16.5	< 0.05
31	GSMWNS-31	N6990	E4960	0-33	< 0.05
63	GSMWNS-63	N7980	E4028	3-21	< 0.05
66	GSMWNS-66	N6400	E6050	17-28	< 0.05
71	GSMWNS-71	N6480	E5070	16-22	0.98

Laboratory certificates of analysis and chain of custody records for the shallow well sample analyses are provided in Attachment 5.

Quality Assurance/Quality Control:

SRP followed the protocol documented in the SAP for quality assurance/quality control (QA/QC) of the sample collection and handling. The protocol included measures for decontaminating sampling equipment, purging the well, obtaining well and quality control samples, documenting the samples and sampling procedure, and transferring the samples to the analytical laboratory. Two samples were collected during the November 20-21, 1992 sampling event to provide a quality control check of the field sampling and laboratory analyses. The samples include a duplicate sample collected from NGS deep well #3 and a field blank also collected during the sampling of NGS deep well #3. The duplicate sample is designated as SRP sample NGS-DW-33 and the blank sample as NGS-SRP-EB. Documentation of the quality control samples are provided in the groundwater monitoring field data reports in Attachment 2. Both samples were analyzed by Westech Laboratories in conjunction with the other NGS groundwater samples. The results of laboratory analysis indicate there is no detectable concentration of hexavalent chromium in either of the quality control samples. Laboratory certificates of analysis and chain of custody records for the quality control sample analyses are provided in Attachment 6.

Westech Laboratories performed the hexavalent chromium determination according to Method 3500 of the Standard Methods For the Examination of Water and Wastewater (17th Edition) rather than EPA Method 7196 documented in SW-846, Test Methods for Evaluating Solid Waste, as stated in the SAP. Method 3500 is considered essentially equivalent to EPA Method

7196 in that dissolved hexavalent chromium is determined colorimetrically by reaction with diphenylcarbazide in an acid solution. The detection limit for both methods is 0.05 mg/l hexavalent chromium.

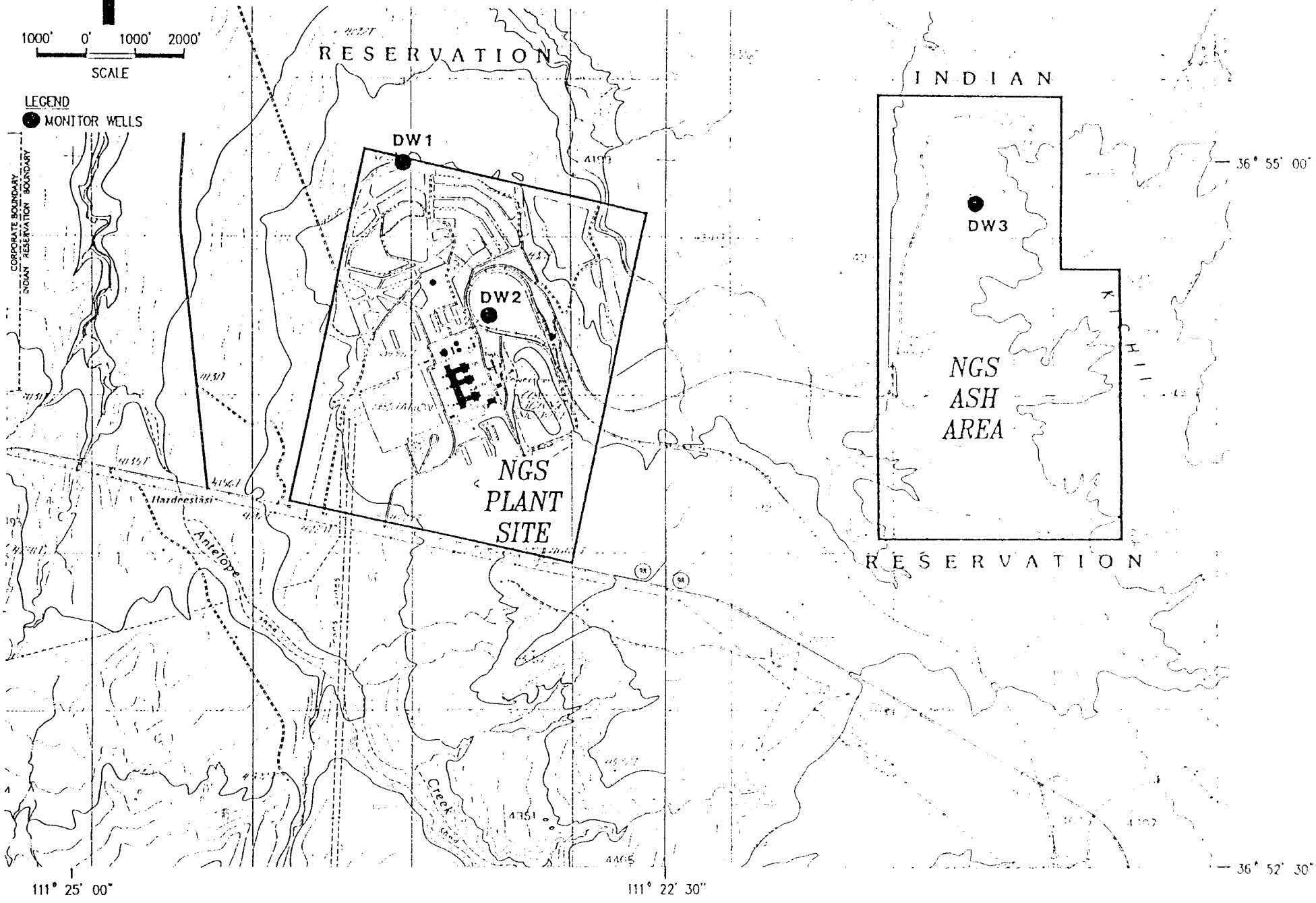
Westech Laboratories performed quality control testing during the analysis of the NGS water samples as specified in their quality assurance manual. The quality control program included analysis of laboratory spike, duplicate, blank, and control samples. The results of the quality control testing indicate that the laboratory testing was within acceptable precision and accuracy limits for the methodology. The Westech Laboratories quality control report for the NGS water sample analyses is provided in Attachment 7.

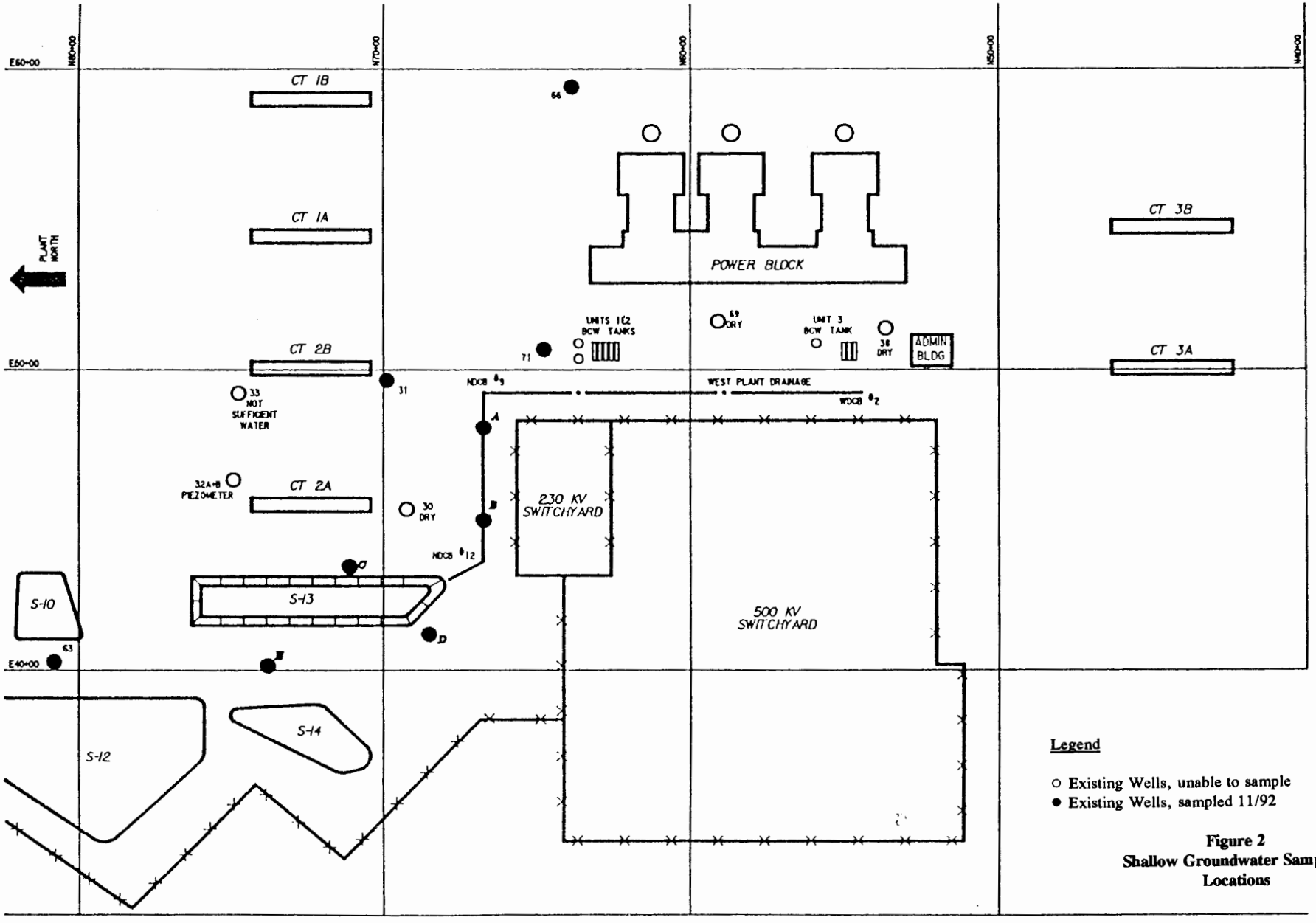
A review of the chain-of-custody (COC) documentation that was issued with the Westech Laboratories analytical data reports indicated that the laboratory did not analyze one set of NGS water samples within the 24 hour holding time for the hexavalent chromium determination. According to the COC form that transferred the sample set consisting of NGS-DW-1, NGS-DW-3, NGS-DW-33, NGS-SRP-EB, GSMWNS-31, GSMWNS-66, and GSMWNS-71, these samples were received at 11:00 a.m. on November 21, 1992. SRP had transferred the samples to Westech via air freight delivery the previous evening. A copy of this COC is provided in Attachment 8. As shown on the COC form, the time of receipt is over 24 hours after four of the samples were collected.

SRP requested Westech Laboratories to explain why the samples had not been analyzed within the required 24 hour holding time. Westech Laboratories responded by indicating they had incorrectly logged the time of sample receipt on the COC form. According to their records, Westech Laboratories actually collected the samples at 8:00 a.m. on November 21st and analyzed the samples for hexavalent chromium at approximately 9:30 a.m. on the same morning. The samples were, thus, analyzed within the required 24 hour holding time for hexavalent chromium. The letter documenting the Westech Laboratories explanation is also given in Attachment 8.

FIGURES

FIGURE 1
DEEP GROUNDWATER MONITOR WELLS
NGS PLANT SITE AND ASH DISPOSAL AREA





Legend

○ Existing Wells, unable to sample
● Existing Wells, sampled 11/92

Figure 2
Shallow Groundwater Sampling Locations

ATTACHMENT 1

NGS DEEP WELL PUMP SPECIFICATIONS

MONITOR WELL # - DW - 1

WELL DEPTH - DRILLED TO 1200 FT.
8" STEEL SURFACE CASING TO 60 FT. OPEN HOLE TO 1200 FT.

STATIC WATER LEVEL - 906 FT. BELOW TOP OF 1" SOUNDING PIPE. (11/18/92).

PUMP SPECIFICATIONS - GRUNDFOS DEEP SET , MODEL 10S50 - 58 , 5 HP, 460 VOLT , 3 PHASE . ~ 4 5/16 " DIAMETER , 86" LENGTH. PURCHASED 10/92 , INSTALLED 11/92.
TOP OF PUMP SET AT 940' , INTAKE IS AT 946', BOTTOM OF MOTOR IS AT 948'. PUMP WAS SET INSIDE 5" PVC SHROUD , 10'1" LONG.
INSTALLED ~ 1000 FT. OF 10/4 SUBMERSIBLE PUMP CABLE TAPED AND BANDED TO DROP PIPE.

DROP PIPE - TOTAL OF 940 FT. OF 1 1/4" STEEL PIPE. BOTTOM 100 FT. (5 JOINTS) IS 304 STAINLESS STEEL. NEXT 19 JOINTS (399 FT.) ARE GALVANIZED W/ REGULAR GALV. COUPLINGS. UPPER 21 JOINTS (441 FT.) ARE GALVANIZED W/ HEAVY DUTY GALV. COUPLINGS. TOTAL OF FOUR CHECK VALVES (3 ARE SIMMONS 504 BRASS, 1 BUILT INTO PUMP) WERE INSTALLED AT 483', 693', 920', & 940 (TOP OF PUMP).

SOUNDING PIPE - 939 FT. OF 1" SCH 40 PVC PIPE WAS INSTALLED FOR SOUNDING WATER LEVELS. BOTTOM OF PVC IS ~ 1 FT. ABOVE TOP OF PUMP. SOUNDING PIPE AND ELECT. CABLE ARE TAPED TO DROP PIPE EVERY 10 FT. AND BANDED W/STAINLESS STEEL EVERY 100 FT.

WELL SEAL - PIPE AND PUMP SET ON SANITARY WELL SEAL (8" X 1 1/4").

PUMPING INFO. - PUMP RATE WAS ~ 9.5 GPM . DRAWDOWN WAS ~ 13 FT. AFTER ONE HOUR OF PUMPING. PUMPING WATER LEVEL (PWL) WAS 919.3 FT AND STILL DROPPING AT ~ 0.1 FT/ 5 MIN.

NGS DEEP WELL PUMP SPECIFICATIONS

MONITOR WELL # - DW - 2

WELL DEPTH - DRILLED TO 1500 FT.
4" STEEL LINER TO 660 FT.(10/89) , OPEN HOLE TO 1500 FT.
8" STEEL SURFACE CASING TO 56 FT.

STATIC WATER LEVEL - 949.9 FT. BELOW TOP OF SURFACE CASING. 11/20/92.

PUMP INFO. - TRIED TO PUT 4" PUMP INTO THIS WELL BUT HUNG UP AT BOTTOM OF 4" LINER (660'). SAMPLE WITH 2" BAILER W/NO PURGING.

NGS DEEP WELL PUMP SPECIFICATIONS

MONITOR WELL # - DW - 3

WELL DEPTH - DRILLED TO 1500 FT.
8" STEEL SURFACE CASING TO 20 FT., OPEN HOLE TO 1500 FT.

STATIC WATER LEVEL - 980 FT. BELOW TOP OF 1" SOUNDING PIPE. (11/19/92).

PUMP SPECIFICATIONS - GRUNDFOS DEEP SET , MODEL 10S50-58 , 5 HP, 460 VOLT , 3 PHASE , ~ 4 5/16" DIAMETER , 86" IN LENGTH. PURCHASED 10/92 (GRAND CANYON PUMP, PHX.) , INSTALLED 11/92.
TOP OF PUMP SET AT 1024' , INTAKE IS AT 1030' , BOTTOM OF MOTOR IS AT 1032' . PUMP WAS SET INSIDE 5" PVC SHROUD , 9'6" LONG.
APPROX. 1100 FT. OF 10/4 SUBMERSIBLE PUMP CABLE WAS INSTALLED WHICH WAS TAPED AND BANDED W/ STAINLESS STEEL TO DROP PIPE .

DROP PIPE - TOTAL OF 1024 FT. OF 1 1/4" STEEL PIPE. BOTTOM 100 FT. (5 JOINTS) IS 304 STAINLESS STEEL. NEXT 19 JOINTS (399 FT.) IS GALVANIZED W/ REGULAR COUPLINGS. UPPER 25 JOINTS (525 FT.) ARE GALVANIZED W/ HEAVY DUTY COUPLINGS. TOTAL OF FOUR CHECK VALVES (3 ARE SIMMONS 504 BRASS, 1 BUILT INTO PUMP) WERE INSTALLED AT 504' , 756' , 1004 , & 1024'(TOP OF PUMP).

SOUNDING PIPE - 1023 FT. OF 1" SCH 40 PVC PIPE WAS INSTALLED FOR SOUNDING WATER LEVELS. BOTTOM OF PVC IS ~ 1 FT. ABOVE TOP OF PUMP. PIPE IS TAPED TO DROP PIPE EVERY 10 FT. AND BANDED W/ STAINLESS STEEL EVERY 100 FT.

WELL SEAL - PIPE AND PUMP SET ON SANITARY WELL SEAL (8" X 1 1/4").

PUMPING INFO. - PUMP RATE WAS ~ 8.6 GPM . DRAW DOWN WAS ~ 11'.

ATTACHMENT 2

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-1 Date 11/20/92

~~Casing~~ Borehole Diameter 6.75' ~~Casing~~ Total Depth 1200 Pump Setting 945'

Purging Data

SWL 906' Feet Of Water In Well 294 Gal. Water/Ft 1.859

1x Well Vol 547 2x Well Vol 1094 3x Well Vol 1641 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading 42900 Start Time 1115

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.0	EC	1000	

	Meterread	EC	pH	T°c	Q (GPM)	Remarks
Start	42900	174	8.7	16.9	9.6	Clear
1x Vol	43447	164	7.9	21.5	9.5	Clear
2x Vol	43994	160	8.0	21.7	8.6	Cloudy
3x Vol	44541	214	8.1	21.8	8.2	Cloudy
4x Vol						
5x Vol						

Ending Flowmeter Reading 44600 Gallons Pumped 1700 Sample Time 1425

Additional Comments:

Purged w/ Dedicated pump and sampled after 3 borehole volumes. (Hex Chromium)

Sampled by:

D. WHITMER / R. PRIGGE
Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site NGS-DW-2 Date 11/20/92

Casing Diameter 4" to 660'; 6.75" open hole to 1500' Casing Depth _____ Pump Setting No Pump

Purging Data

SWL 949.9 Feet Of Water In Well 550.1 Gal. Water/Ft 1.859

1x Well Vol 1022.6 2x Well Vol _____ 3x Well Vol _____ 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading — Start Time —

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped _____ Sample Time 2035 HRS.

Additional Comments:

NO PURGING DUE TO NO PUMP IN WELL. ATTEMPT TO INSTALL PUMP FAILED DUE TO 4" LINER. (PUMP HUNG UP).
SAMPLED W/ STAINLESS STEEL BAILER.

Sampled by:

D. WHITMER / _____ Signature

Print Signature

Figure 5

Groundwater Monitoring Field Data

Site N6S - DW - 3 Date 11/20/92

Surface casing = 8" (to 20').

~~Borehole~~ ~~Casing~~ Diameter Borehole = 6.75 Total ~~Casing~~ Depth 1500' Pump Setting 1029

Purging Data

SWI 980 Feet Of Water In Well 520 Gal. Water/Ft 1.859 (6.75" borehole ~~casing~~)

1x Well Vol 967 2x Well Vol 1934 3x Well Vol 2901 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading 39990 Start Time 0500

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.1	EC	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	39990	178	8.8	16.9	8.6	Clear
1x Vol	40957	178	7.5	21.7	8.9	Clear
2x Vol	41924	176	7.9	21.0	8.9	"
3x Vol	42891	170	7.9	21.9	8.9	"
4x Vol						
5x Vol						

Ending Flowmeter Reading 42900 Gallons Pumped 2910 Sample Time 1030 HR.

Additional Comments:

Purged + Sampled w/ Dedicated Submersible pump. (Hex. Chromium)

Took Duplicate Sample here. - (SRP-N6S-DW-33)

Took Equipment blank here. D.I H_2O. (SRP-EB)

Sampled by:

D. WHITMER / R. FRIGGE
Print Signature

Signature

ATTACHMENT 3

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218869
INVOICE NO.: 22122857
REPORT DATE: 11-23-92
REVIEWED BY: D. Miller
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. Engelhart
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218910
INVOICE NO.: 22122858
REPORT DATE: 11-23-92
REVIEWED BY: [illegible]
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. Englisl
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218870
INVOICE NO.: 22122857
REPORT DATE: 11-23-92
REVIEWED BY:
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-3
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

Managing Director

Westech Laboratories Inc.

Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706
Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469
El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS	
SRP	P.O. BOX 52025	
	PHX., AZ. 85072-2025	
TELEPHONE: 236-4130	PROJECT: NGS	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): D. Whitmer, R. Pringle

SAMPLER (PLEASE PRINT): D. WHITMER, R. PRINGLE

SAMPLE TYPE CODES: S – SOIL, W – WATER, O – OIL, G – SLUDGE, T – TRAVEL BLANK, F – FIELD BLANK, X – OTHER

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: HEX. CHROME	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
NGS-DW-2	11/20/92	2035				✓	W	1	✓		9218910
GSMWNS-A	11/20/92	1800				✓	W	1	✓		" 8911
GSMWNS-B	11/20/92	1830				✓	W	1	✓		" 8912
GSMWNS-C	11/21/92	0805				✓	W	1	✓		" 8913
GSMWNS-D	11/21/92	0745				✓	W	1	✓		" 8914
GSMWNS-E	11/21/92	0755				✓	W	1	✓		" 8915
GSMWNS-63	11/20/92	1725				✓	W	1	✓		" 8916

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
D. Whitmer	Carol Kouzilkovic	11/21/92	1435	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

Westech Laboratories Inc.

oenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706
gstaff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469
Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS	
SRP	P.O. Box 52025	
	Phx., Az. 85072-2025	
TELEPHONE 236-2685	PROJECT NGS	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): D. Whitmer, R. Pringle IV

SAMPLER (PLEASE PRINT): D. Whitmer, R. Pringle

SAMPLE TYPE CODES: S – Soil, W – Water, O – Oil, G – Sludge, T – Travel Blank, F – Field Blank, X – Other

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: HEX CHROME							COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
NGS-DW-1	11/20/92	1425				X	W	1	✓								9218869
NGS-DW-3	11/20/92	1030				X	W	1	✓								9218870
NGS-DW-33	11/20/92	1030				X	W	1	✓								9218871
~~NGS-DW~~																	
NGS-SRP-EB	11/20/92	1030				X	W	1	✓								9218872
SMWNS-31	11/20/92	1410				X	W	1	✓								9218873
SMWNS-66	11/20/92	1000				X	W	1	✓								9218874
SMWNS-71	11/20/92	1345				X	W	1	✓								9218875

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
D. Whitmer (11/20/92)	Skywest			FAXED COC 11/20/92 @ 1630 HRS.
Skywest	Grace A Gret	11/21/92	11:00	SAMPLES SENT VIA SKY WEST FROM PAGE, AZ.
				NOTIFIED KIM ST. CLAIR OF ARRIVAL TIME OF 5:45 PM. 11/20/92.

White - Testing Laboratory; Yellow - Department Job File; Pink - Client

ATTACHMENT 4

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS - A Date 11/20/92

Casing Diameter 2" ~~Casing~~ Total Depth 32.13' Pump Setting 31'

Purging Data

SWL 23.39 Feet Of Water In Well 8.74 Gal. Water/Ft 0.163

1x Well Vol 1.4 2x Well Vol 2.8 3x Well Vol 4.2 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.0	EC	1000	

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped ~1.5 Sample Time 1800

Additional Comments:

Evacuated wellbore w/ Redi-Flow 2" Env. Pump. + Disposable Bailer.

SAMPLED w/ Disposable Bailer.

Sampled by:

D. WHITMER / R. PRIGGE
Print Signature

D. Whitmer / R. Prigge IV
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-B Date 11/20/92

Casing Diameter 2" ~~Casing~~ Total Depth 27.20' Pump Setting _____

Purging Data

SWL 19.17' Feet Of Water In Well 8.03' Gal. Water/Ft 0.163

1x Well Vol 1.3 2x Well Vol 2.6 3x Well Vol 3.9 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			EC		

	Meterread	EC	pH	T°C	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped ~ 1.3 Sample Time 1830

Additional Comments:

Evacuated & Sampled w/ 2" disposable bailer. (Let recover ~ 5 min.).

Sampled by:

D. Whitmer / R. Priggs
Print Signature

D Whitmer / R Priggs IV
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWN5-C Date 11/20/92

Casing Diameter _____ ~~Casing~~ Total Depth 19.59 Pump Setting _____

Purging Data

SWL 13.61' Feet Of Water In Well 5.98' Gal. Water/Ft 0.163

1x Well Vol 1.0 2x Well Vol 2.0 3x Well Vol 3.0 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			EC		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped ~1 GAL. Sample Time 11/21/92 0805

Additional Comments:

EVACUATED W/ DISPOSABLE BAILER ON 11/20/92 2100 HRS. LET RECOVER OVERNIGHT. SAMPLED 11/21/92 0805 HRS. (NEEDED TO RECOVER OVERNIGHT TO HAVE ENOUGH SAMPLE.).

Sampled by:

D. WHITMER / R. PRIGGE
Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-D Date 11/20/92

Casing Diameter 2" Casing Depth 21.41' Pump Setting _____

Purging Data

SWL 17.63' Feet Of Water In Well 3.78 Gal. Water/Ft 0.163

1x Well Vol 0.6 2x Well Vol 1.2 3x Well Vol 1.8 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped ~0.5 Sample Time 0745 HRS. 11/21/92

Additional Comments:

EVACUATED WELL W/ DISPOSABLE BAILER ON 11/20/92 2030 HRS., LET RECOVER OVERNIGHT. SAMPLED ON 11/21/92 @ 0745 HRS. (VERY LITTLE H2O IN WELL.).

Sampled by:

D. WHITMER / R. PRIEGE
Print Signature

D. Whitmer / R. Priege IV
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-E Date 11/20/92

Casing Diameter 2" Casing Depth 18.63' Pump Setting —

Purging Data

SWL 15.71' Feet Of Water In Well 2.92 Gal. Water/Ft 0.163

1x Well Vol 0.5 2x Well Vol 1.0 3x Well Vol 1.5 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH			pH		

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start						
1x Vol						
2x Vol						
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped ~0.5 Sample Time 0755 HRS. 11/21/

Additional Comments:

EVACUATED WELL W/ DISPOSABLE BAILER ON 11/20/92 2000 HRS., LET RECOVER OVERNIGHT.
SAMPLED W/ DISPOSABLE BAILER 11/21/92 @ 0755 HRS.

Sampled by:

D. WHITMER / R. PRIEBE
Print Signature

Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-31 Date 11/20/92

Casing Diameter 2" Total ~~Casing~~ Depth 30.43' Pump Setting 29'

Purging Data

SWL 15.64' Feet Of Water In Well 14.79' Gal. Water/Ft 0.163

1x Well Vol 2.4 2x Well Vol 4.8 3x Well Vol 7.2 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading 5 GAL BUCKET Start Time 1403

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.0	EC	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 GAL	4130	7.9	15.1		Cloudy
1x Vol	2.4	9480	7.6	18.2		" Pumped dry - Let recover and Sampled.
2x Vol	4.8					
3x Vol	7.2					
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped ~4 Sample Time 1410

Additional Comments:

Purged w/ REDIFLO 2 ENV. PUMP.

SAMPLED W/ DISPOSABLE BAILER.

Sampled by:

D. WHITMER / R. PRIGGE
Print Signature

D. Whitmer / R. Prigge IV
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-63 Date 11/20/92

Casing Diameter 4" Casing Depth 23.27' Pump Setting 22'

Purging Data

SWL 12.62' Feet Of Water In Well 10.65 Gal. Water/Ft 0.653

1x Well Vol 7 2x Well Vol 14 3x Well Vol 21 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time 1715

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.0	pH	1000	10,000

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 GALLON	9470	7.0	16.1		H_2O STAINED GREY
1x Vol	7 GAL	12,580	6.8	18.5		" " " PUMPED DRY, LET RECOVER & SAMPLED.
2x Vol	14 GAL					
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped 12 Sample Time 1725

Additional Comments:

PURGED W/ "REDIFLO 2" ENV. PUMP.
SAMPLED W/ DISPOSABLE BAILER.

Sampled by:

D. WHITMER / R. PRIGGE
Print Signature

D. Whitmer / [illegible]
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS-66 Date 11/20/92

Casing Diameter 4" Casing Depth 30.08 Pump Setting 29.0

Purging Data

SWL 14.83' Feet Of Water In Well 15.25 Gal. Water/Ft .653

1x Well Vol 10 2x Well Vol 20 3x Well Vol 30 4x Well Vol ____ 5x Well Vol ____

Beginning Flowmeter Reading ____ Start Time 0945

Instrument Calibration

Std	7.0	10.0
pH	7.0	10.0

Std	1000	10,000
EC	1000	

	Meterread	EC	pH	1°	Q (GPM)	Remarks
Start	0 GAL.	2050	7.4	20.6		
1x Vol	10 GAL	5070	7.5	23.4		
2x Vol	20 GAL	5310	7.5	23.8		PUMPED DRY @ 2 VOLUMES LET RECOVER & SAMPLED.
3x Vol						
4x Vol						
5x Vol						

Ending Flowmeter Reading ____ Gallons Pumped 20 Sample Time 1000

Additional Comments:

MEASURED W/ 5 GAL. BUCKET

SAMPLED W/ DISPOSABLE BAILER.

Sampled by:

D. WHITMER / R. PRIGGE
Print Signature

D. Whitmer / R. Prigge IV
Signature

Figure 5

Groundwater Monitoring Field Data

Site GSMWNS - 71 Date 11/20/92

Casing Diameter 4" Casing Depth 24.82' Pump Setting ~24'

Purging Data

SWL 16.73 Feet Of Water In Well 8.09 Gal. Water/Ft 0.653

1x Well Vol 5.3 2x Well Vol 10.6 3x Well Vol 15.9 4x Well Vol _____ 5x Well Vol _____

Beginning Flowmeter Reading _____ Start Time _____

Instrument Calibration

Std	7.0	10.0	Std	1000	10,000
pH	7.0	10.0	EC	1000	

	Meterread	EC	pH	T°	Q (GPM)	Remarks
Start	0 GAL	6720	7.2	18.1		Clear
1x Vol	5.3 GAL	6700	7.3	21.1		Clear - pumped dry, let recover + sampled.
2x Vol	10.6 GAL.					
3x Vol	15.9 GAL.					
4x Vol						
5x Vol						

Ending Flowmeter Reading _____ Gallons Pumped ~6 GAL Sample Time 1345

Additional Comments:

Purged w/ "Rediflo 2" Env. Pump - Sampled w/ DISPOSABLE BAILER.

Sampled by:

D. WHITMER / R. PRIGGE
Print Signature

Signature

ATTACHMENT 5

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218911
INVOICE NO.: 22122858
REPORT DATE: 11-23-92
REVIEWED BY: [illegible]
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-A
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. Angelil
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218912
INVOICE NO.: 22122858
REPORT DATE: 11-23-92
REVIEWED BY: D. Miller
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-B
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. Engelil
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218913
INVOICE NO.: 22122858
REPORT DATE: 11-23-92
REVIEWED BY: D. Whitmer
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-C
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-21-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. English
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218914
INVOICE NO.: 22122858
REPORT DATE: 11-23-92
REVIEWED BY: D. Whitmer
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-D
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-21-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. Engel
Managing Director

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Since 1955

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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218915
INVOICE NO.: 22122858
REPORT DATE: 11-23-92
REVIEWED BY: D Miller
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-E
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-21-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. Engelil
Managing Director

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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218873
INVOICE NO.: 22122857
REPORT DATE: 11-23-92
REVIEWED BY: B. Miller
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-31
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

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Managing Director

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Since 1955

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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218916
INVOICE NO.: 22122858
REPORT DATE: 11-23-92
REVIEWED BY: B. Miller
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-63
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. English
Managing Director

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Since 1955

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Phoenix, Arizona 85040
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CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218874
INVOICE NO.: 22122857
REPORT DATE: 11-23-92
REVIEWED BY: B. Miller
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-66
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218875
INVOICE NO.: 22122857
REPORT DATE: 11-23-92
REVIEWED BY: D. Miller
PAGE : 1 OF 1

CLIENT SAMPLE ID : GSMWNS-71
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	0.98	mg/L	0.05	11-21-92

(1) Copy to Client

M. Englnil
Managing Director

Westech Laboratories Inc.

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Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469
El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS	
SRP	P.O. BOX 52025 PHX., AZ. 85072-2025	
TELEPHONE: 236-4130	PROJECT: NGS	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): D Whitmer

SAMPLER (PLEASE PRINT): D. WHITMER, R. PRIGGE

SAMPLE TYPE CODES: S – SOIL, G – SLUDGE, X – OTHER, W – WATER, T – TRAVEL BLANK, O – OIL, F – FIELD BLANK

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: HEX. CHROME	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
NGS-DW-2	11/20/92	2035				✓	W	1	✓		9218910
GSMWNS-A	11/20/92	1800				✓	W	1	✓		" 8911
GSMWNS-B	11/20/92	1830				✓	W	1	✓		" 8912
GSMWNS-C	11/21/92	0805				✓	W	1	✓		" 8913
GSMWNS-D	11/21/92	0745				✓	W	1	✓		" 8914
GSMWNS-E	11/21/92	0755				✓	W	1	✓		" 8915
GSMWNS-63	11/20/92	1725				✓	W	1	✓		" 8916

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
D Whitmer	[signature]	11/21/92	1435	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

Westech Laboratories Inc.

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staff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469
eso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS	
SRP	P.O. Box 52025	
	Phx., Az. 85072-2025	
TELEPHONE 236-2685	PROJECT NGS	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): D. Whitmer, R. Prigge IV

SAMPLER (PLEASE PRINT): D. Whitmer, R. Prigge

SAMPLE TYPE CODES: S – Soil, G – Sludge, X – Other, W – Water, T – Travel Blank, O – Oil, F – Field Blank

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: HEX. CHROME	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
GS-DW-1	11/20/92	1425				X	W	1	✓		9218869
GS-DW-3	11/20/92	1030				X	W	1	✓		9218870
GS-DW-33	11/20/92	1030				X	W	1	✓		9218871
~~GS-DW~~											
GS-SRP-EB	11/20/92	1030				X	W	1	✓		9218872
GMWNS-31	11/20/92	1410				X	W	1	✓		9218873
GMWNS-66	11/20/92	1000				X	W	1	✓		9218874
GMWNS-71	11/20/92	1345				X	W	1	✓		9218875

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
D. Whitmer (11/20/92)	Skywest			FAXED COC 11/20/92 @ 1630 HRS.
Skywest	Grace A Gret	11/21/92	11:00	SAMPLES SENT VIA SKY WEST FROM PAGE, AZ.
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	NOTIFIED KIM ST. CLAIR OF ARRIVAL TIME OF 5:45 PM. 11/20/92.
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

White - Testing Laboratory; Yellow - Department Job File; Pink - Client

ATTACHMENT 6

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218872
INVOICE NO.: 22122857
REPORT DATE: 11-23-92
REVIEWED BY: B. Miller
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-SRP-EB
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. Engel
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT SALT RIVER PROJECT
WATER QUALITY & GEOHYDROLOGY
ATTN: DON WHITMER
P.O. BOX 52025
PHOENIX, AZ 85072

SAMPLE NO. : 9218871
INVOICE NO.: 22122857
REPORT DATE: 11-23-92
REVIEWED BY: D. Meier
PAGE : 1 OF 1

CLIENT SAMPLE ID : NGS-DW-33
SAMPLE TYPE .....: WATER
SAMPLED BY .....: D. WHITMER/R. PRIGGE
SUBMITTED BY ....: D. WHITMER
SAMPLE SOURCE ...: --

AUTHORIZED BY : D. WHITMER
CLIENT P.O. : --
SAMPLE DATE ...: 11-20-92
SUBMITTAL DATE : 11-21-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chromium,Hexavalent .....:	<0.05	mg/L	0.05	11-21-92

(1) Copy to Client

M. Engelhardt
Managing Director

Westech Laboratories Inc.

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staff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469
so • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS	
SRP	P.O. Box 52025	
	Phx., Az. 85072-2025	
TELEPHONE 236-2685	PROJECT NGS	JOB/P.O. NO.

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): [signature]

SAMPLER (PLEASE PRINT): D. Whitmer, R. Pringle

SAMPLE TYPE CODES: S – SOIL, G – SLUDGE, X – OTHER, W – WATER, T – TRAVEL BLANK, O – OIL, F – FIELD BLANK

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: HEX. CHROME	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
GS-DW-1	11/20/92	1425				X	W	1	✓		9218869
S-DW-3	11/20/92	1030				X	W	1	✓		9218870
S-DW-33	11/20/92	1030				X	W	1	✓		9218871
~~S-DW~~											
GS-SRP-EB	11/20/92	1030				X	W	1	✓		9218872
MWNS-31	11/20/92	1410				X	W	1	✓		9218873
MWNS-66	11/20/92	1000				X	W	1	✓		9218874
MWNS-71	11/20/92	1345				X	W	1	✓		9218875

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
[signature] (11/20/92)	Skywest			FAXED COC 11/20/92 @ 1630 HRS.
Skywest	[signature]	11/21/92	11:00	SAMPLES SENT VIA SKY WEST FROM PAGE, AZ.
				NOTIFIED KIM ST. CLAIR OF ARRIVAL TIME OF 5:45 PM. 11/20/92.

White - Testing Laboratory; Yellow - Department Job File; Pink - Client

ATTACHMENT 7

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-112192-13
REFERENCE NOTEBOOK : WW-073
REFERENCE PAGE ....: 43

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 11-21-92

TEST DESCRIPTION ..: Chromium,Hexavalent
TEST METHOD .....: 3500-Cr-D

SAMPLES IN THIS RUN: 9218869 9218870 9218871 9218872 9218873 9218874 9218875
9218910 9218911 9218912 9218913 9218914 9218915 9218916

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
INITIAL:				
Chromium,Hexavalent	mg/L	0.100	.1040	104.0
CONTINUING:				
Chromium,Hexavalent	mg/L	0.500	.5327	106.5
Chromium,Hexavalent	mg/L	0.100	.1067	106.7
Chromium,Hexavalent	mg/L	0.500	.5262	105.2
FINAL:				
Chromium,Hexavalent	mg/L	0.100	.1027	102.7

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9218872	Chromium,Hexavalent	mg/L	<0.05	<0.05	NC
9218913	Chromium,Hexavalent	mg/L	<0.05	<0.05	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVER
9218871	Chromium,Hexavalent	mg/L	<0.05	.500	.542	108.4
9218910	Chromium,Hexavalent	mg/L	<0.05	.500	.5209	104.2

WESTECH LABORATORIES INC.

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 7-112192-13
REFERENCE NOTEBOOK : WW-073
REFERENCE PAGE ....: 43

INSTRUMENT : Hitachi V-2000 Spectrophotometer
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 11-21-92

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Chromium,Hexavalent	mg/L	<0.05

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

ATTACHMENT 8

Westech Laboratories Inc.

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eso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
SRP	P.O. Box 52025
	Phx., Az. 85072-2025
TELEPHONE: 236-2685	PROJECT: NGS

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): D. Whitmer, R. Pringle

SAMPLER (PLEASE PRINT): D. Whitmer, R. Pringle

SAMPLE TYPE CODES: S – Soil, G – Sludge, X – Other, W – Water, T – Travel Blank, O – Oil, F – Field Blank

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	REQUESTED ANALYSES: HEX. CHROME	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
GS-DW-1	11/20/92	1425				X	W	1	✓		9218869
GS-DW-3	11/20/92	1030				X	W	1	✓		9218870
GS-DW-33	11/20/92	1030				X	W	1	✓		9218871
~~GS-DW~~											
GS-SRP-EB	11/20/92	1030				X	W	1	✓		9218872
SMWNS-31	11/20/92	1410				X	W	1	✓		9218873
SMWNS-66	11/20/92	1000				X	W	1	✓		9218874
SMWNS-71	11/20/92	1345				X	W	1	✓		9218875

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
D. Whitmer (11/20/92)	Skywest			FAXED COC 11/20/92 @ 1630 HRS.
Skywest	Grace A Gret	11/21/92	11:00	SAMPLES SENT VIA SKY WEST FROM PAGE, AZ.
				NOTIFIED KIM ST. CLAIR OF ARRIVAL TIME OF 5:45 PM. 11/20/92.

White - Testing Laboratory; Yellow - Department Job File; Pink - Client

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

December 24, 1992

Ms. Linda Johnson
Salt River Project
P.O. Box 52025
Phoenix, AZ 85072

Dear Linda:

I would first like to apologize for any inconvenience this confusion has caused you. For Invoice No. 22122857, one of our Client Services Representatives confused the sample receipt time with the time sample information was processed.

Sample Nos. 9218869 through 9218875 were picked up from Sky Harbor airport at 8:00 am on Saturday morning, November 21, 1992. The Chain of Custody for this sample set indicates that samples were received at 11:00 am on the 21st of November; that is incorrect. The paperwork for the sample set was processed and logged into the computer at 11:00 am. The time the sample set was actually received is 8:00 am, November 21st, 1992.

The samples were subsequently analyzed for Hexavalent Chromium at approximately 9:30 on the morning of Saturday, November 21st. Therefore, the samples were analyzed within the 24 hour hold time.

Quality Control reports for Invoice Nos. 22122858 and 22122857 were not included with the final report, but should have been. I have prepared the reports for both invoices. They were faxed to your office on December 22nd by Jennifer MacSweeney, our Marketing Director. The hard copies of these reports are attached to this letter.

Again, I apologize for any inconvenience this may have caused you or your department. In the future, I will insure that QA/QC reports are included with the final report. In addition, Chain of Custody documentation havs been reviewed with our Client Services Representatives. Please do not hesitate to contact me if I can be of further assistance.

Have a happy holiday season from all of us at Westech Laboratories!

Sincerely,
WESTECH LABORATORIES INC

Anne Nichols

Anne Nichols
Quality Control Officer

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105-3901

NOV 17 1992

Mr. Dennis Shirley
Environmental Services Dept.
Salt River Project
P. O. Box 52025
Phoenix, AZ 85072-2025

Subject: Navajo Generating Station, Page, Arizona
RCRA Docket No. 09-90-0001

Dear Mr. Shirley:

This is to confirm our phone conversation of November 16, 1992 and to give formal approval to the "Amendments to Sampling and Analysis Plan" specified by your letter of September 14, 1992. Other than the amendments in that letter, all other work will be performed as stated in the originally approved sampling and analysis plan.

I understand that work will begin immediately on sampling both the shallow and the deep wells. We had agreed that due to the importance of getting a representative sample, samples will be taken from the shallow wells as soon as sufficient water has entered the well after the completion of purging.

Please contact me at (415) 744-2029 if any issues arise during the sampling process.

Sincerely,

Latha

Latha Rajagopalan
Environmental Engineer

cc: Ms. Deborah Jamieson
Salt River Project
P. O. Box 52025
Phoenix, AZ 85072-2025

Printed on Recycled Paper

Ms. Sadie Hoskie, Acting Director
Navajo EPA
Division of Natural Resources
P. O. Box 308
Window Rock, AZ 86515

Thelma

NOV 17 1992

Mr. Dennis Shirley
Environmental Services Dept.
Salt River Project
P. O. Box 52025
Phoenix, AZ 85072-2025

Subject: Navajo Generating Station, Page, Arizona
RCRA Docket No. 09-90-0001

Dear Mr. Shirley:

This is to confirm our phone conversation of November 16, 1992 and to give formal approval to the "Amendments to Sampling and Analysis Plan" specified by your letter of September 14, 1992. Other than the amendments in that letter, all other work will be performed as stated in the originally approved sampling and analysis plan.

I understand that work will begin immediately on sampling both the shallow and the deep wells. We had agreed that due to the importance of getting a representative sample, samples will be taken from the shallow wells as soon as sufficient water has entered the well after the completion of purging.

Please contact me at (415) 744-2029 if any issues arise during the sampling process.

Sincerely,

Latha Rajagopalan
Environmental Engineer

cc: Ms. Deborah Jamieson
Salt River Project
P. O. Box 52025
Phoenix, AZ 85072-2025

Ms. Sadie Hoskie, Acting Director
Navajo EPA
Division of Natural Resources
P. O. Box 308
Window Rock, AZ 86515

SYMBOL	4-2-2					
SURNAME	Rajagopalan					
DATE	11/16/92					

G R A N D C A N Y O N T R U S T

"The Homestead"
Route 4, Box 718
Flagstaff, Arizona 86001
(602) 774-7488

March 26, 1992

Latha Rajagopalan
USEPA Region 9
MC H-2-2
75 Hawthorn Street
San Francisco, CA 94117

SUBJECT: Soil and ground water investigation at Navajo Generating Station.

Dear Ms. Rajagopalan:

Thank you for providing the Grand Canyon Trust with information that we requested under Freedom of Information Act Request number RIN-9-0218092.

The Grand Canyon Trust has several concerns and requests regarding the "Soil and Groundwater Investigation for Determining Potential Chromium Contamination" at Navajo Generating Station.

1. <u>Soil sampling in the west plant drainage</u>.

Approximately 200,000 gallons of bearing cooling water (BWC) containing 130-350 mg/L of chromium was discharged through the unlined west plant drainage ditch between 1982 and 1988. The Final Report states that "any chromium contamination would have been expected to be found at the base of the ditch or at some distance laterally from the ditch" (p.4-6).

The original ditch was approximately five to eight feet deep at the point where the BCW was initially discharged. Between 1988 and 1989, the ditch was replaced with a drain pipe, and a 20 inch pipe for cooling tower make-up water was installed approximately 4.5 feet east of the new 30 inch drain pipe. To prepare for the piping, the ditch was "deepened slightly" and widened by approximately four feet.

"The investigation for soil contamination in the west plant drainage obviously needed to take into consideration changes caused by reconstruction of the drainage system" (p.4-6).

However, the investigation did not sample undisturbed soil "at the base of the ditch or at some distance laterally from the ditch" (p. 4-6). Instead, soil samples were taken from backfilled soil and from clean fill-sand that was brought in to cover the new drainage pipe between WDCB #3 and NDCB #9.

The investigation assumed that all "potential soil contamination that may have existed in the unlined ditch was excavated during the installation of the drain pipe" (p. 4-6). However, it seems likely that soil contamination could have occurred outside the approximately 8X8 foot section of soil that was excavated.

The investigation should have followed standard procedures which are taken in locating and removing contaminated soil surrounding leaky underground storage tanks. **Therefore, the Grand Canyon Trust requests that additional samples be taken from undisturbed soil beneath the original ditch and from undisturbed soil distributed laterally at distances and depths which could reveal the extent of contamination.**

2. Disposition of potentially contaminated soil.

A change in procedures was made in December of 1989. Soil that was excavated between WDCB #3 and NDCB #9 (including soil from the original trench at the point where BCW discharges most likely occurred from Units 1 and 2) was moved to a soil accumulation area (Area C). Soil from the west drainage ditch was dumped with soil that was excavated at the S-14 impoundment. Approximately 40,000 cubic yards of soil from the accumulation area was removed in 1989 and used in the construction of the east coal pile terrace (Area D). The report does not indicate if records were kept to distinguish the origination points of soil that was being rotated through the stockpile (Area C).

The Final Report states that soil which was excavated from the original west drainage ditch was being used to backfill the trench made for the new drainage pipe. But when the last section of pipe was being installed between WDCB #3 and NDCB #9, procedures changed.

"The change in specification was made in December, 1989, following issuance of the EPA Determination of Violation. At this time it was recognized that the excavated material from the unlined ditch should be removed and stockpiled to assess the extent of any chromium contamination" (p.4-7).

The report does not indicate who made the decision to change procedures. If EPA made the decision, then the stockpiled soil should have been placed in a protected area and precautions should have been taken to assure that precipitation did not wash chromium into uncontaminated soil or water. Also, given the quality assurance procedures that are followed after samples are taken (see Appendix D in the Final Report), it seems only prudent to follow similar precautions to protect the integrity of the evidence before it is tested for contamination.

Potentially contaminated soil was allowed to sit in an unprotected area between December, 1989 and July, 1991. During this time, the soil was allowed to be saturated with precipitation and the soil was moved.

In the May, 1991 Sampling and Analysis Plan, Figure 21 indicates a sampling design for soil stockpiled in Area C which contained approximately 9,000 cubic yards of excavated material. The pile of soil that was surveyed for sampling was assumed to be from S-14 and from the west plant drainage ditch. In the Final Report, Figure 15 indicates that the soil pile that was actually surveyed in Area C was located north and west of where the soil was piled when preparing the Sampling and Analysis Plan. It was assumed that the samples taken in July, 1991 were from potentially contaminated soil even though the pile had moved a considerable distance. Also, there was no indication about the amount of material that was in the soil pile that was sampled in July, 1991 or whether it was even the same pile of soil that was surveyed for the Sampling Plan.

Given these uncertainties about whether the soil that was tested for chromium contamination was actually the soil which was potentially contaminated, the Grand Canyon Trust requests that EPA continue its investigation.

Initially, it should be determined who decided that soil from the west plant drainage ditch should be removed from its point of contamination. Next, EPA should determine why the potentially contaminated soil was moved between the time it was surveyed for sampling and the time when samples were actually taken. If these decisions were not made by EPA, then the investigation should examine whether the soil was intentionally moved by NGS employees for the purpose of avoiding a complete and accurate sample of potentially contaminated soil.

3. <u>Indications of undocumented chromium discharges</u>.

The Environmental Protection Agency began the investigation of possible chromium contamination at Navajo Generating Station because samples taken during the site inspection on November 14 and 15, 1989 indicated possible chromium contamination in BCW Tanks 1 and 2, at the west side drainage ditch, and storage pond S-14.

An investigation of plant records found that four releases of BCW had occurred from Unit 1 and 2 bearing cooling water systems. Apparently, investigators found no other records (or were given no other records) indicating that BCW had been discharged at other times or locations. Soil and water samples taken during the investigation show the likelihood of unreported or

undocumented discharges of chromium.

First, soil samples that were taken in the upper end of the west side drainage ditch show chromium levels which were many times the level of chromium found in background samples. Table 4-1 of the Final Report indicates that samples SS-01 through SS-05 contained chromium levels which were as high as 25.8 mg/kg as contrasted to the highest background level of 3.8 mg/kg. Samples SS-01 through SS-05 were taken at least 400-800 feet uphill from where bearing cooling water from Units 1 and 2 were most likely to have been discharged into the ditch. In addition, the highest levels of chromium found in the west drainage were contained in the three soil samples taken from the upper end of the unlined ditch (see Table 4-1). **These findings indicate that undocumented discharges of BCW were also made from Unit 3.**

An elevated level of chromium was also found in groundwater samples taken from Well 71. Its water contained chromium that was over 200 times the amount found in the background sample from Well 66 and which greatly exceeded the amount of chromium that is legally acceptable for drinking water.

Well 71 is located approximately 200 feet north of where discharges of BCW most likely occurred from Units 1 and 2 and approximately 200 feet east of the west drainage ditch that transported the contaminated water. The Final Report predicted that the depth of chromium contamination would be restricted for two reasons:

> **"First, the ditch was constructed to transport, not store, water. Any water that entered the ditch, including the BCW discharges, was conveyed to the S-13 or S-14 impoundments. Thus, the temporary flows would not cause appreciable seepage into the subsurface. In addition, the Carmel formation underlies most of the drainage area and would have significantly restricted seepage of the ephemeral flows" (p. 4-6).**

If the Final Report's conclusions are correct about the improbability of chromium contamination occurring at any distance below or away from the ditch, how did the chromium get into water sampled from Well 71? **It seems highly likely that chromium discharges from some other undocumented source or sources have contaminated at least some of the groundwater.**

4. <u>Additional investigation is needed</u>.

The Grand Canyon Trust requests that EPA continue its investigation into chromium and other hazardous waste contamination at Navajo Generating Station.

Water monitoring should continue at Well 71, and attempts should be made to sample water from Wells 69, 38, 70, 64, 65, and other wells that were dry during the time of the study. Soil saturation from natural sources may occur in the winter or in the late summer. Water samples should be taken from well-known seeps on the north side of the plant, one of which is located approximately 50 yards west of the service building. Additional soil samples should also be taken from around the bearing cooling water tanks and cooling towers where BCW leaks may have occurred over extended periods of time.

Because there is evidence that unreported discharges of chromium have occurred, water and soil samples should be analyzed for other hazardous materials that are used at the plant. If plant managers were not honest about chromium discharges, EPA should not assume that they have been honest about releases of other wastes which include sulfuric acid, hydrazine, trace metals, anion resin, cation resin, formic acid, hydroascetic acid, perchloroethylene, polyoxyethylene, and 1,1,1-trichloroethane.

It is our understanding that evidence of chromium contamination was found after EPA investigators' escort, Craig Hiserote, had left for the day. We have been told that Hiserote was reprimanded for allowing EPA investigators to explore the facility without an escort.

The Environmental Protection Agency determined that there were at least four discharges of BCW containing chromium between 1982 and 1988. The Grand Canyon Trust was told that in 1980, John Rich, Assistant General Manager of Power Operations, had instructed NGS managers to phase out the use of chromium in bearing cooling water. Despite this order, chromium was still in use in 1988 and it was being disposed of in an illegal manner.

These events indicate that a few NGS managers may have intentionally concealed illegal and irresponsible activities from EPA and Salt River Project for more than a decade.

The Grand Canyon Trust is concerned about the potential for long-term contamination of soil and water at Navajo Generating Station and its implications for the future of people and resources of the Navajo Nation, Glen Canyon National Recreation Area, Lake Powell, the City of Page, and Grand Canyon National Park.

The Environmental Protection Agency should place a high priority on investigating documented and undocumented hazardous waste violations at NGS, on properly disposing of contaminated soil and water, and on prosecuting those who are responsible.

Thank you for your careful consideration of our requests. The Grand Canyon Trust looks forward to your response.

Sincerely,

Roger Clark

Roger Clark
Director of Research

cc: Daniel Mcgovern, Environmental Protection Agency
Sadie Hoskie, Navajo Tribal Office
Harley Hiett, Arizona Department of Environmental Quality

G R A N D C A N Y O N T R U S T

MEMORANDUM

TO: Latha Rajogopalan, EPA
FROM: Roger Clark RWC
DATE: March 23, 1992
RE: Hazardous waste leaks at Navajo Generating Station

The following description about hazardous waste leaks at Navajo Generating Station (NGS) was provided to the Grand Canyon Trust by sources who wish to remain anonymous. Our primary source is a single individual who worked at the plant for fourteen years. Information about current operations at NGS was provided by current employees who are in infrequent contact with our primary source. This description is derived from two, three-hour interviews on September 4, 1991 and March 16, 1992 and from over a dozen phone conversations between the times of personal interviews. Our sources have not provided any written evidence or other documentation of their allegations.

Liquid Wastes from Bottom Ash

During the 1970's and 1980's, bottom ash from the boilers of all three units accumulated to the point where drains in the removal system became clogged. Rocks and other unburned materials impeded the normal flow of the hot and corrosive ash through pipes that would transport the ash to containment ponds. Routine operations would periodically remove accumulated bottom ash through large steel doors. During such occasions, huge volumes of hot bottom ash would spew onto the floor and overflow the capacity of floor drains to carry away the waste. Consequently, corrosive liquids from the bottom ash would spread into the surrounding soil.

The practice of ground dumping bottom ash was discontinued during the late 1980's due to burns to employees who opened the steel doors to release the pressurized waste. Also, a program was developed to minimize the accumulation of bottom ash in the removal system. However, we have been told that the program was discontinued in the 1990's, and NGS managers have returned to the practice of ground dumping bottom ash.

A major problem occurred in Unit 1 as a direct result of the practice of ground dumping bottom ash. In the late 1970's, employees began to notice that liquids from bottom ash were being sucked into expansion joints in the concrete floor of Unit 1. The problem was first noticed near the most southerly pulverizer and the sucking seemed increase with floor vibrations caused by the pulverizer. Finally in 1981 or 1982, a hole was cut in the floor of Unit 1 just north of the Anion and Cation Tanks and

SKETCH MAP OF UNIT I

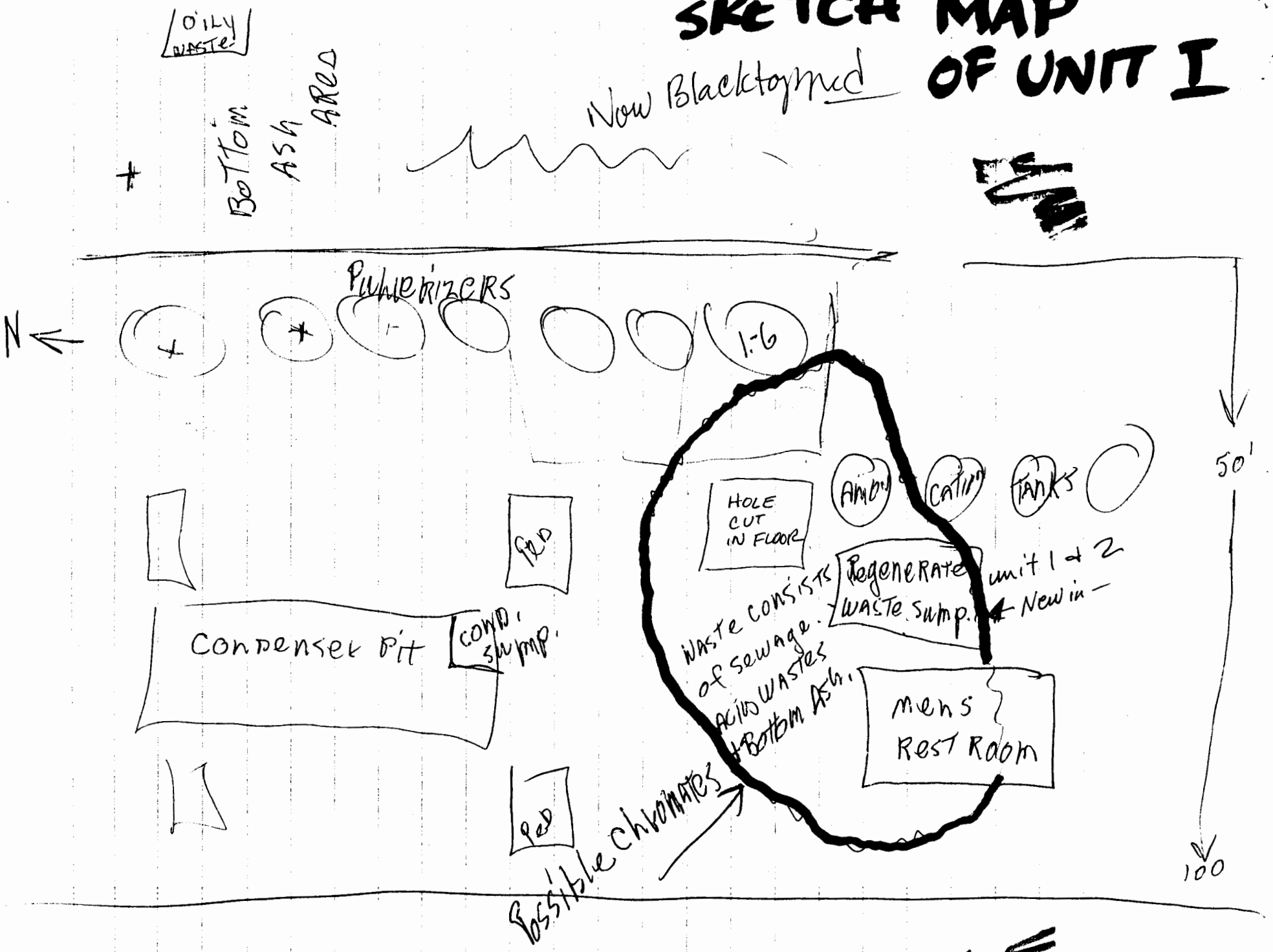
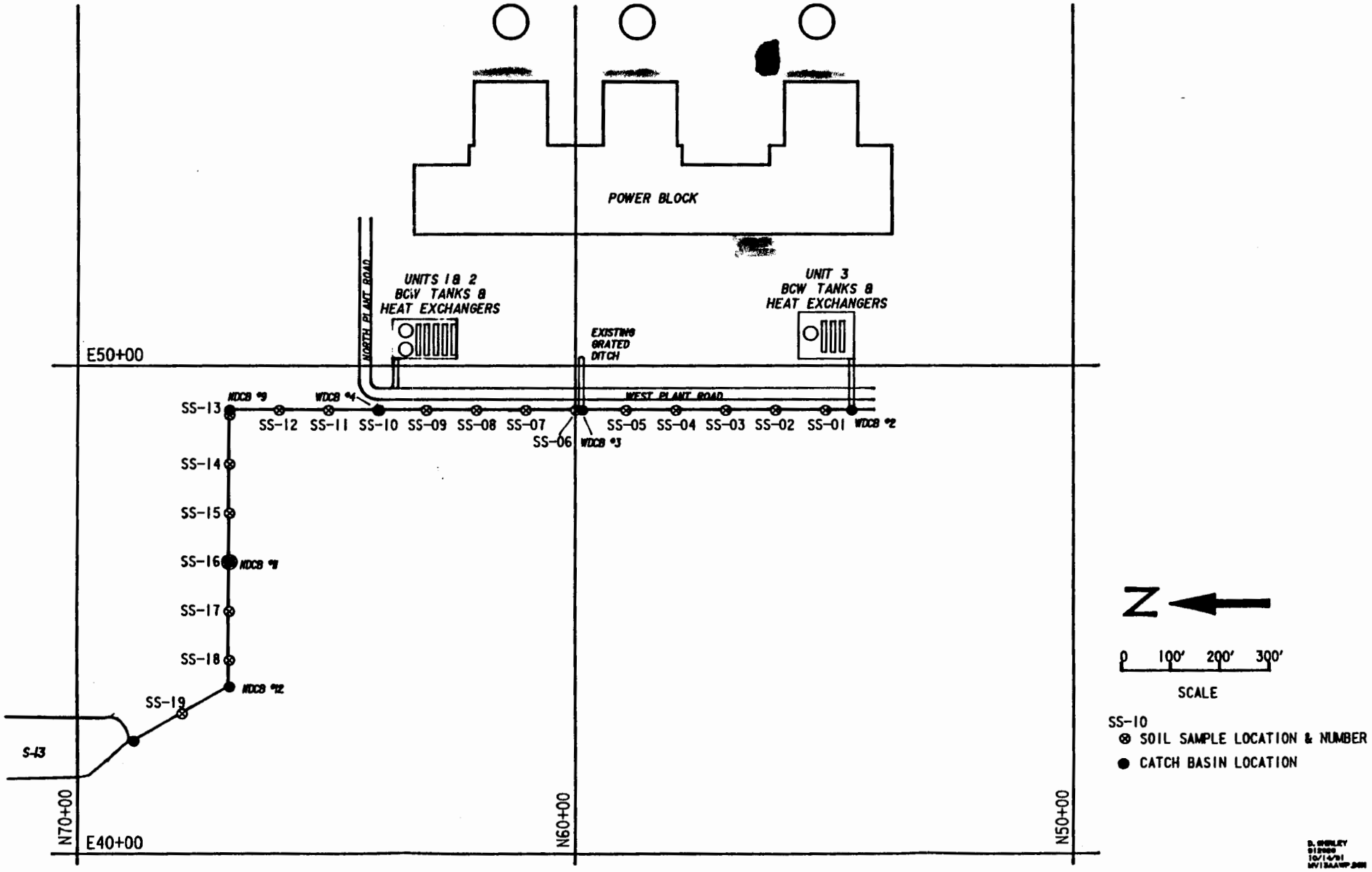
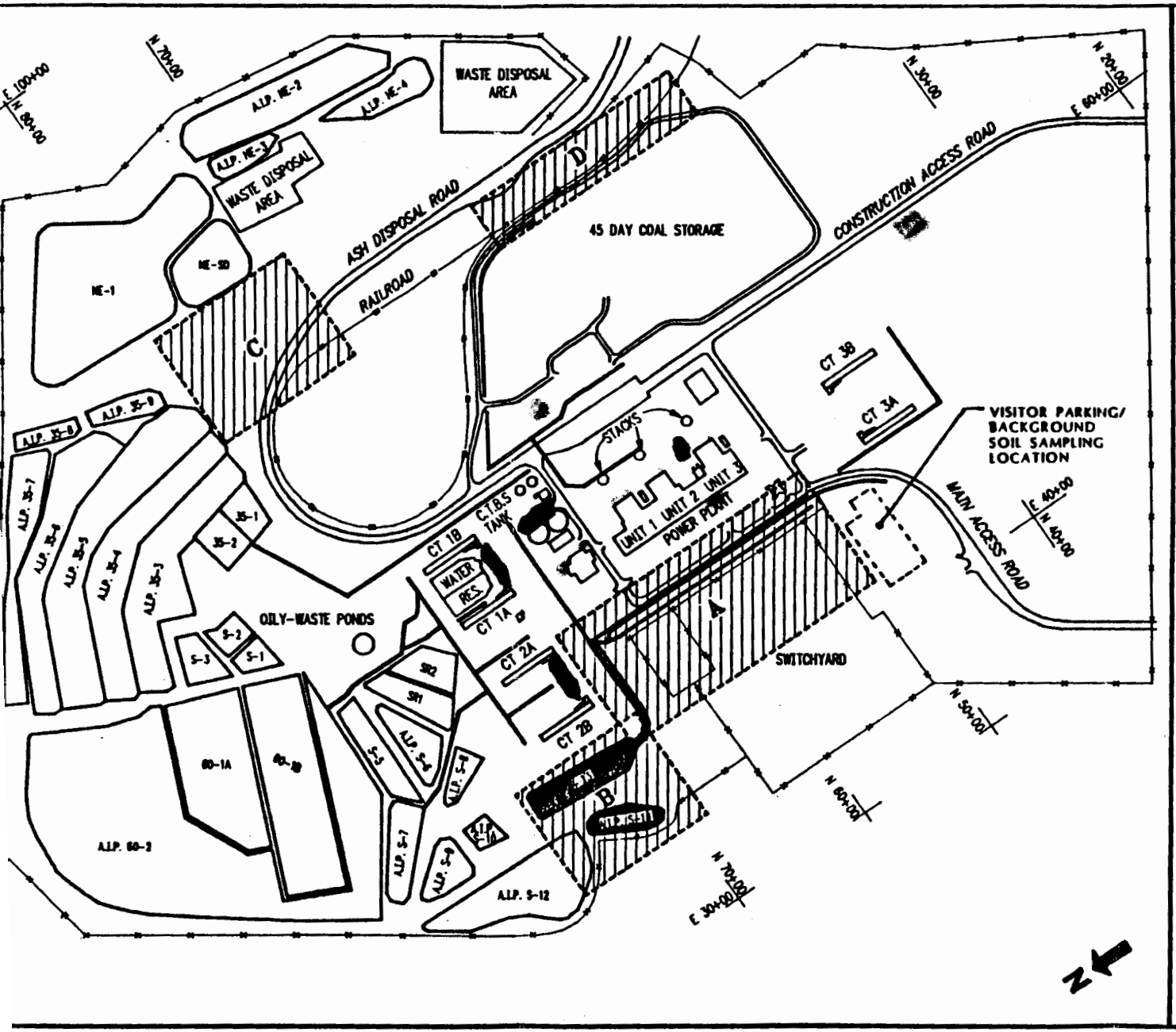


FIGURE 13
SOIL SAMPLE LOCATIONS
AREA A WEST PLANT DRAINAGE





EXPLANATION

- DITCHES/DRAIN
- ACCESS ROADS (PAVED AND DIRT SURFACES)
- FENCE
- RAILROAD TRACK (COAL TRAIN)
- A.I.P. ABANDONED-IN-PLACE
- CT COOLING TOWER

SOIL SAMPLING AREAS:

- **A** WEST PLANT DRAINAGE, SEE FIGURE 13
- **B** OVERFLOW DRAINAGE & S-14, SEE FIGURE 14
- **C** SOIL ACCUM. AREA, SEE FIGURE 15
- **D** EAST COAL PILE TERRACE, SEE FIGURE 16
- AREAS RECEIVING BCW RELEASES

200 0 200 400 600 800 1000
SCALE-FEET

FIGURE 11
SOIL SAMPLING AREAS
NGS PLANT SITE

0 9 MAR 1992

Roger Clark
Grand Canyon Trust
The Homestead
Route 4, Box 718
Flagstaff, AZ 86001

Dear Mr. Clark:

I am writing in response to your letter of February 24, 1992, concerning Navajo Generating Station, Page, Arizona. Your Freedom of Information Act request RIN-9-0218-92 has been processed, and your request for fee waiver has been granted. The information you requested will be sent to you under separate cover.

Sincerely,

ORIGINAL SIGNED BY
DANIEL W. McGOVERN

Daniel W. McGovern
Regional Administrator

H-2-2:Rajagopalan:amr:03/06/92:4-2029

SYMBOL	H-2-2	H-2-2	H-2	H-1-W	H-1	
SURNAME	Rajagopalan	Bussin	EKfervaille	[illegible]	[illegible]	
DATE	3/6/92	3/6/92	3/6/92	3/6/92	3/6	

U.S. EPA CONCURRENCES OFFICIAL FILE COPY

G R A N D C A N Y O N T R U S T

"The Homestead"
Route 4, Box 718
Flagstaff, Arizona 86001
(602) 774-7488

February 24, 1992

Sharon A. Jang
Freedom of Information Act Assistant
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

RE: Freedom of Information Act Request RIN-9-0218-92

Dear Ms. Jang:

Regarding your letter of 10 February about my Freedom of Information Act Request of 27 January, I am submitting the following responses:

(i) The Grand Canyon Trust is a regional conservation organization dedicated to the protection and wise management of natural resources on the Colorado Plateau. The Trust was one of the principal negotiators in the recent EPA ruling to control sulfur dioxide emissions at Navajo Generating Station (NGS) in Page, Arizona.

The Grand Canyon Trust is interested in reviewing all documents and reports pertaining to EPA's investigation and subsequent fine of Salt River Project (SRP) for the improper storage and disposal of hazardous wastes because we are concerned about the long-term ecological and human health consequences of chromium and other hazardous elements that were illegally released into the soil and water by operators of the power plant.

After reviewing the requested documents, the Grand Canyon Trust will evaluate the adequacy of EPA's investigation of hazardous waste violations that have been documented since 1982 and will review the soil and water contamination study agreed to as part of the fine and settlement between SRP and EPA. Our evaluation and review will include information that has come to us from an anonymous source about undocumented violations and efforts to avoid detection by managers of NGS.

The Grand Canyon Trust will not derive any income or other benefit from our use of the requested information. In fact, the Trust will incur substantial expense in staff time to review and evaluate the information.

(ii) The public will benefit in two ways as a result of the Grand Canyon Trust's review of information pertaining to documented hazardous waste violations at NGS.

First, the historic record of government assurances about the extent and acceptability public risks in the Four Corners region has been less than perfect. We respect the integrity of skilled professionals at EPA and the consulting firm hired by SRP to conduct the contamination study. However, if the findings have been negative as reported to the Grand Canyon Trust in phone conversations with Latha Rajagopalan at EPA, then EPA should welcome public scrutiny of their investigation of the violations and the subsequent scientific studies. It is in the public interest to have some reassurance that the EPA, SRP, and hired consultants have, in fact, served the public interest.

Secondly, the public will benefit from an independent review of the violations and EPA's regulatory actions because the EPA did not include undocumented cases of hazardous waste disposal in their investigation. The Grand Canyon Trust has information about such undocumented cases as well as alleged attempts by NGS operators to avoid detection and prosecution that will be used to identify where the EPA may have been led to overlook serious episodes of soil and water contamination. It is the Trust's intent to share our findings with EPA and, if appropriate, to make recommendations for additional investigation. Because the Trust's sources are unwilling to risk costly career consequences resulting from their directly revealing to EPA information about covert and illegal operations at NGS, EPA and the public may never be allowed to assess these allegations unless our sources are allowed to anonymously review results from EPA's hazardous waste investigation.

(iii) The Grand Canyon Trust does not contemplate "specialized use of the documents or information" that we have requested. If we have specific questions about the collection and analysis of scientific data, we will consult independent scientists if necessary. At this point, we do not anticipate the need to use legal consultants in our review of the requested information. Nonetheless, the Grand Canyon Trust is well-qualified to evaluate complex scientific and legal information as was demonstrated in our negotiations with SRP and EPA in the recent ruling to control sulfur dioxide emissions from Navajo Generating Station. You may wish to contact William Rosenberg, EPA Assistant Administrator for Air and Radiation, for his assessment of our qualifications and capabilities.

(iv) The Grand Canyon Trust has no immediate plans to disseminate any of the requested information. We intend to review the documents with people who have an intimate knowledge of NGS operations in order to identify inconsistencies between EPA's investigation and the timing and location of specific events which may not have been known to EPA. Following this

review, we intend to communicate specific concerns to EPA and may suggest additional investigations into possible violations and locations where hazardous spills may have occurred. It is not our intent to have these allegations reported in the media before the EPA has been able to investigate (in fact, media reports may exacerbate any future investigations due to alleged propensities to cover-up violations). We may eventually report our findings to members of the Grand Canyon Trust and make documents available to interested parties.

(v) In the interest of cutting unnecessary expenses, the Grand Canyon Trust is willing to reduce the extent of our initial request to items #2 and #3 in our FOIA request of 27 January. Therefore, we specifically request a fee waiver for:

> "2. Salt River Project's plan submitted to EPA for sampling soil and groundwater for possible contamination by chromium and other hazardous wastes at Navajo Generating Station;
> 3. Salt River Project's [or their consultant's] interim and final reports of findings from the study of possible soil and water contamination by hazardous wastes including maps showing sampling locations;"

However, after reviewing these documents we may again request all or part of the records contained in items #1, #4, and #5 in our original request.

Thank you for your careful review of our request and for recognizing that it is legitimately based on a concern for the long-term health and safety of the people and resources of the Colorado Plateau.

Sincerely,

Roger Clark

Roger Clark
Director of Research

cc: Daniel W. McGovern

SALT RIVER PROJECT
POST OFFICE BOX 52025
PHOENIX, ARIZONA
85072-2025
(602) 236-5900

W&W-9617

via Overnight Mail Delivery

May 1, 1992

Lahta Rajagopalan
Project Coordinator, H-2-2
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 95105

Re: Deep Well Groundwater Monitoring
Navajo Generating Station

Dear Ms. Rajagopalan:

As indicated to you via telephone conversation on April 30, 1992, the Salt River Project has existing data on groundwater quality in the Navajo aquifer that includes analysis of total chromium. The data is derived from three deep wells completed in the Navajo aquifer as shown in the accompanying figure. The deep wells were sampled on August 13-14, 1991, by SRP Environmental Services Department.

Prior to sampling, the static water level was measured at each well and the results are as follows:

Well ID	*Measuring Point Elevation*	*Depth to Water (feet)*	*Water Elevation (feet)*
Deep Well #1	4,298.0	894.6	3,403.5
Deep Well #2	4,366.2	936.9	3,429.3
Deep Well #3	4,424.1	968.9	3,455.2

Three samples were collected at each well at 5, 50, and 100 feet below the static water level using a remote controlled, depth specific stainless steel bailer. The multi-level samples were collected to assess whether there was any variation in water quality with depth that might be attributed to lateral accretion of groundwater originating from Lake Powell. The samples were submitted to the SRP Environmental Laboratory for analysis of general inorganic

parameters, nitrate, and total metals. A summary of the analytical data is provided in an accompanying table. Please note that two samples were collected from a depth of 988 feet in deep well #2 to provide a duplicate to assess laboratory QA/QC. Laboratory certificates of analysis and chain of custody records are provided as an attachment to this letter.

The recent monitoring indicates that groundwater in the Navajo aquifer underlying the Navajo Generating Station does not contain chromium at the detection limit of 10 ug/l. Furthermore, we believe the groundwater monitoring data is representative of indigenous water quality of the Navajo aquifer and does not show any indication of impact from other sources such as NGS process waters or infiltrating groundwater from Lake Powell.

If you have any questions or comments regarding the groundwater monitoring, please do not hesitate to contact me at (602) 236-2685.

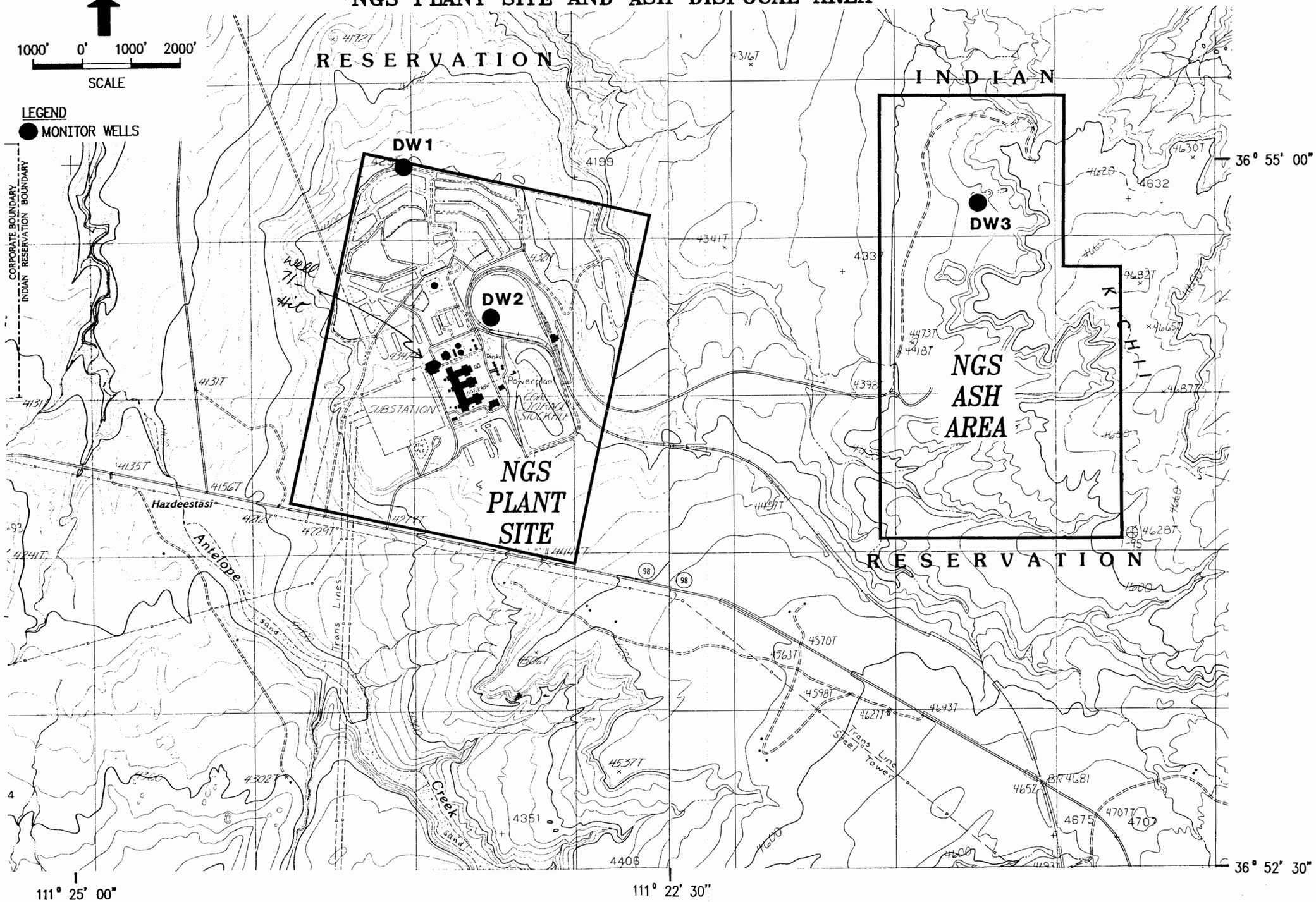
Sincerely,

Dennis Shirley
Environmental Services

DHS:dg
Attachments

cc: S. Sawtelle, Piper & Marbury

DEEP GROUNDWATER MONITOR WELLS
NGS PLANT SITE AND ASH DISPOCAL AREA



Navajo Generating Station Deep Wells
Summary Ground Water Quality

General Inorganics

No.	Sample I.D.	Ca	Mg	Na	K	Cl	S04	HC03	Al	B	F	Fe	Si02	N03
1	GSMWNADW1-900	23.4	9.83	5.74	<1.0	14.20	15.50	30.5	0.27	<0.06	<0.10	0.92	13.3	18.4
2	GSMWNADW1-945	21.4	9.35	5.27	2.60	10.60	10.30	22.0	0.16	<0.06	<0.10	1.07	12.7	17.6
3	GSMWNADW1-995	21.3	9.46	5.19	2.10	10.60	9.23	26.8	0.13	<0.06	<0.10	1.42	12.6	18.0
4	GSMWNADW2-943	19.0	9.14	5.72	<1.0	10.60	7.45	26.2	<0.08	<0.06	<0.10	1.20	12.4	28.9
5	GSMWNADW2-988	19.6	9.34	5.20	1.30	10.60	6.30	26.2	0.11	<0.06	<0.10	1.79	12.2	16.5
6	GSMWNADW2-988 Dup	19.2	9.74	5.32	<1.0	10.60	6.86	25.6	0.11	0.10	<0.10	0.89	12.4	15.7
7	GSMWNADW2-1038	19.4	9.36	5.37	0.16	10.60	6.31	23.8	0.16	0.09	<0.10	1.52	12.4	15.1
8	GSMWNADW3-974	31.2	12.00	10.50	2.50	10.60	9.83	27.5	0.71	0.07	<0.10	3.62	16.6	13.7
9	GSMWNADW3-1019	18.9	8.93	8.97	<1.0	10.60	6.77	23.2	<0.08	<0.06	<0.10	1.11	13.1	13.3
10	GSMWNADW3-1069	18.5	8.81	8.79	<1.0	7.09	7.52	25.6	<0.08	<0.06	<0.10	1.39	13.1	13.5

Note: All units in mg/l
< indicates the value is below the specified detection limit

Total

Total Metals

No.	Sample I.D.	As	Ba	Cd	Cr	Pb	Hg	Se	Ag
1	GSMWNADW1-900	4	330	0.8	<10	4	<0.2	<2	<1
2	GSMWNADW1-945	4	10	0.2	<10	2	<0.2	<2	<1
3	GSMWNADW1-995	4	10	0.2	<10	2	<0.2	<2	<1
4	GSMWNADW2-943	<80	219	28	<10	<40	<0.2	<40	<1
5	GSMWNADW2-988	<4	219	3.3	<10	8	<0.2	<2	<1
6	GSMWNADW2-988 Dup	<4	217	0.9	<10	4	<0.2	<2	<1
7	GSMWNADW2-1038	<4	202	1.9	<10	12	<0.2	<2	<1
8	GSMWNADW3-974	6	239	2.6	<10	120	<0.2	<2	<1
9	GSMWNADW3-1019	<4	188	1.2	<10	12	<0.2	<2	<1
10	GSMWNADW3-1069	<40	195	4	<10	20	<0.2	<2	<1

Note: All units in ug/l
> indicates the value is below the specified detection limit

Holding Times

ATTACHMENT 1

Received: 08/15/91 10/04/91 09:37:26

REPORT WATER QUALITY/WASTE MANAGEMEN
TO ENVIRONMENTAL MANAGEMENT SERV
SRP

PREPARED BY

CERTIFIED BY

ATTEN

ATTEN
PHONE

CONTACT JOHNSON

CLIENT GSSEEPAGE SAMPLES 12
COMPANY SRP
FACILITY CORONADO AND NAVAJO GEN STA

WORK ID NGS SEEPAGE MONITORING
TAKEN LEE WATTS/RICK PRIGGE
TRANS 2-9-2407-134
TYPE 16520
P.O. #
INVOICE under separate cover

SAMPLE IDENTIFICATION

01 GSMWNADW1-900'
02 GSMWNADW1-945'
03 GSMWNADW1-995'
04 GSMWNADW2-943'
05 GSMWNADW2-988'
06 GSMWNADW2-988'
07 GSMWNADW2-1038'
08 GSMWNADW3-974'
09 GSMWNADW3-1019'
10 GSMWNADW3-1069'
11 GSRSNAPL
12 GSRSNA60-1B

TEST CODES and NAMES used on this workorder

AG1	SILVER	RCRA1	PRIMARY DRINKING WATER MET
AL4	ALUMINUM	SE1	SELENIUM
ALK	ALKALINITY	SIO2	SIO2
AS1	ARSENIC	SO4WC	SULFATE (BY WET CHEM)
B1	BORON		
BA1	BARIUM		
BICARB	HCO3 (BICARBONATE)		
CA1	CALCIUM		
CARB	CO3 (CARBONATE)		
CD1	CADMIUM		
CLIWET	CHLORIDE (BY ALPKEM)		
COND	conductivity		
CR1	CHROMIUM		
F	FLUORIDE		
FDATA	FIELD DATA		
FE4	IRON		
HARD	HARDNESS		
HG1	MERCURY		
K1	POTASSIUM		
MG1	MAGNESIUM		
NA1	SODIUM		
NCO3HD	NONCARBONATE HARDNESS		
NO3WC	NITRATE (AS NO3)		
PB1	LEAD		
PH	pH		
PO4WC	PHOSPHATE (WET CHEMISTRY)		

RECEIVED
APR - 2 1992
WATER & WASTE DIVISION
Environmental Services

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW1-900' SAMPLE # 01 FRACTIONS: A

Date & Time Collected 08/13/91 08:10:00 Category

AL4	0.27	ALK	50	B1	-0.06	BICARB	30.5	CA1	23.4	CARB	0
MG/L DISSOLVED		MG/L AS CACO3		MG/L AS TOTAL		MG/L		MG/L		MG/L	
CL1WET	14.2	COND	240	F	-0.10	FE4	0.92	HARD	98.8	K1	-1.0
MG/L		umhos		MG/L		MG/L DISSOLVED		MG/L AS CACO3		MG/L	
MG1	9.83	NA1	5.74	NCO3HD	49	PH	8.0	PO4WC	-0.08	SIO2	13.3
MG/L		MG/L		MG/L AS CACO3		units		MG/L		MG/L	
SO4WC	15.5										
MG/L											

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW1-900'

SAMPLE # 01 FRACTIONS: B

Date & Time Collected 08/13/91 08:10:00 Category

NO3WC	18.4	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW1-900' FRACTION 01C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/13/91 08:10:00 Category

METALS

SAMPLE IDENTIFICATION GSMWNADW1-900'

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	4	1	4
Barium	Ba	330	1	10
Cadmium	Cd	0.8	1	0.2
Chromium	Cr	BDL	1	10
Lead	Pb	4	1	2
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	1	2
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW1-900' SAMPLE # 01 FRACTIONS: C

Date & Time Collected 08/13/91 08:10:00 Category

AG1 -1	AS1 4	BA1 330	CD1 0.8	CR1 -10	HG1 -0.2
UG/L AS TOTAL	UG/L AS TOTAL	UG/L AS TOTAL	UG/L AS TOTAL	UG/L AS TOTAL	UG/L AS TOTAL
PB1 4	SE1 -2				
UG/L AS TOTAL	UG/L AS TOTAL				

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW1-945' SAMPLE # 02 FRACTIONS: A

Date & Time Collected 08/13/91 09:15:00 Category

AL4 0.16 MG/L DISSOLVED	ALK 36 MG/L AS CACO3	B1 -0.06 MG/L AS TOTAL	BICARB 22.0 MG/L	CA1 21.4 MG/L	CARB 0 MG/L
CL1WET 10.6 MG/L	COND 200 umhos	F -0.10 MG/L	FE4 1.07 MG/L DISSOLVED	HARD 91.8 MG/L AS CACO3	K1 2.6 MG/L
MG1 9.35 MG/L	NA1 5.27 MG/L	NCO3HD 56 MG/L AS CACO3	PH 7.9 units	PO4WC -0.08 MG/L	SIO2 12.7 MG/L
SO4WC 10.3 MG/L					

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW1-945' SAMPLE # 02 FRACTIONS: B
Date & Time Collected 08/13/91 09:15:00 Category

NO3WC	17.6	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW1-900' FRACTION 01D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/13/91 08:10:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	21.5
EC (UMHOS)	420
PH	8.4
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW1-945' FRACTION 02D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/13/91 09:15:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	21.4
EC (UMHOS)	333
PH	8.4
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW1-945' FRACTION 02C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/13/91 09:15:00 Category

METALS

SAMPLE IDENTIFICATION GSMWNADW1-945'

ANALYST R.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	4	1	4
Barium	Ba	329	1	10
Cadmium	Cd	0.6	1	0.2
Chromium	Cr	BDL	1	10
Lead	Pb	3	1	2
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	1	2
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW1-995' SAMPLE # 03 FRACTIONS: A

Date & Time Collected 08/13/91 10:15:00 Category

AL4	0.13	ALK	44	B1	-0.06	BICARB	26.8	CA1	21.3	CARB	0
MG/L DISSOLVED		MG/L AS CACO3		MG/L AS TOTAL		MG/L		MG/L		MG/L	
CL1WET	10.6	COND	210	F	-0.10	FE4	1.42	HARD	92.1	K1	2.1
MG/L		umhos		MG/L		MG/L DISSOLVED		MG/L AS CACO3		MG/L	
MG1	9.46	NA1	5.19	NCO3HD	48	PH	8.0	PO4WC	-0.08	SIO2	12.6
MG/L		MG/L		MG/L AS CACO3		units		MG/L		MG/L	
SO4WC	9.23										
MG/L											

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW1-995' SAMPLE # 03 FRACTIONS: B
Date & Time Collected 08/13/91 10:15:00 Category

NO3WC	18.0	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW1-995' FRACTION 03C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/13/91 10:15:00 Category

METALS

SAMPLE IDENTIFICATION GSMWNADW1-995'

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	4	1	4
Barium	Ba	339	1	10
Cadmium	Cd	0.6	1	0.2
Chromium	Cr	BDL	1	10
Lead	Pb	7	1	2
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	1	2
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW1-995' FRACTION 03D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/13/91 10:15:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	22.1
EC (UMHOS)	350
PH	8.2
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW2-943' SAMPLE # 04 FRACTIONS: A

Date & Time Collected 08/13/91 13:10:00 Category

AL4 -0.08 MG/L DISSOLVED	ALK 43 MG/L AS CACO3	B1 -0.06 MG/L AS TOTAL	BICARB 26.2 MG/L	CA1 19.0 MG/L	CARB 0 MG/L
CL1WET 10.6 MG/L	COND 200 umhos	F -0.10 MG/L	FE4 1.2 MG/L DISSOLVED	HARD 85 MG/L AS CACO3	K1 -1.0 MG/L
MG1 9.14 MG/L	NA1 5.72 MG/L	NCO3HD 42 MG/L AS CACO3	PH 8.2 units	PO4WC 0.33 MG/L	SIO2 12.4 MG/L
SO4WC 7.45 MG/L					

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-943' SAMPLE # 04 FRACTIONS: B
Date & Time Collected 08/13/91 13:10:00 Category

NO3WC	28.9	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-943' FRACTION 04C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/13/91 13:10:00 Category

METALS

SAMPLE IDENTIFICATION GSMWNADW2-943'

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	BDL	20	80
Barium	Ba	219	1	10
Cadmium	Cd	28	20	4
Chromium	Cr	BDL	1	10
Lead	Pb	BDL	20	40
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	20	40
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-943' FRACTION 04D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/13/91 13:10:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	22.1
EC (UMHOS)	347
PH	8.5
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW2-988' SAMPLE # 05 FRACTIONS: A

Date & Time Collected 08/13/91 14:10:00 Category

AL4	0.11	ALK	43	B1	-0.06	BICARB	26.2	CA1	19.6	CARB	0
MG/L DISSOLVED		MG/L AS CACO3		MG/L AS TOTAL		MG/L		MG/L		MG/L	
CL1WET	10.6	COND	190	F	-0.10	FE4	1.79	HARD	87.3	K1	1.3
MG/L		umhos		MG/L		MG/L DISSOLVED		MG/L AS CACO3		MG/L	
MG1	9.34	NA1	5.2	NCO3HD	44	PH	8.1	PO4WC	0.31	SIO2	12.2
MG/L		MG/L		MG/L AS CACO3		units		MG/L		MG/L	
SO4WC	6.30										
MG/L											

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW2-988'

SAMPLE # 05 FRACTIONS: B

Date & Time Collected 08/13/91 14:10:00 Category

NO3WC	16.5	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-988' FRACTION 05C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/13/91 14:10:00 Category

METALS

SAMPLE IDENTIFICATION GSMWNADW2-988'

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	BDL	1	4
Barium	Ba	219	1	10
Cadmium	Cd	3.3	1	0.2
Chromium	Cr	BDL	1	10
Lead	Pb	8	1	2
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	1	2
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-988' FRACTION 05D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/13/91 14:10:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	21.6
EC (UMHOS)	206
PH	8.4
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-988' SAMPLE # 06 FRACTIONS: B
Date & Time Collected 08/13/91 15:10:00 Category D

NO3WC	15.7	MG/L

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW2-988' SAMPLE # 06 FRACTIONS: A

Date & Time Collected 08/13/91 15:10:00 Category D

AL4 0.11 MG/L DISSOLVED	ALK 42 MG/L AS CACO3	B1 0.10 MG/L AS TOTAL	BICARB 25.6 MG/L	CA1 19.2 MG/L	CARB 0 MG/L
CL1WET 10.6 MG/L	COND 190 umhos	F -0.10 MG/L	FE4 0.89 MG/L DISSOLVED	HARD 87.9 MG/L AS CACO3	K1 -1.0 MG/L
MG1 9.74 MG/L	NA1 5.32 MG/L	NCO3HD 46 MG/L AS CACO3	PH 8.2 units	PO4WC 0.24 MG/L	SIO2 12.4 MG/L
SO4WC 6.86 MG/L					

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-988' FRACTION 06C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/13/91 15:10:00 Category D

METALS

SAMPLE IDENTIFICATION GSMWNADW2-988' DUP

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	BDL	1	4
Barium	Ba	217	1	10
Cadmium	Cd	0.9	1	0.2
Chromium	Cr	BDL	1	10
Lead	Pb	4	1	2
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	1	2
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-988' FRACTION 06D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/13/91 15:10:00 Category D

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	22.1
EC (UMHOS)	345
PH	8.4
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-1038' SAMPLE # 07 FRACTIONS: A

Date & Time Collected 08/13/91 16:10:00 Category

AL4 0.16 MG/L DISSOLVED	ALK 39 MG/L AS CACO3	B1 0.09 MG/L AS TOTAL	BICARB 23.8 MG/L	CA1 19.4 MG/L	CARB 0 MG/L
CL1WET 10.6 MG/L	COND 190 umhos	F -0.10 MG/L	FE4 1.52 MG/L DISSOLVED	HARD 86.9 MG/L AS CACO3	K1 2.0 MG/L
MG1 9.36 MG/L	NA1 5.37 MG/L	NCO3HD 48 MG/L AS CACO3	PH 8.1 units	PO4WC 0.15 MG/L	SIO2 12.4 MG/L
SO4WC 6.31 MG/L					

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-1038' SAMPLE # 07 FRACTIONS: B
Date & Time Collected 08/13/91 16:10:00 Category

NO3WC	15.1	MG/L

SAMPLE ID GSMWNADW2-1038' FRACTION 07C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/13/91 16:10:00 Category

METALS

SAMPLE IDENTIFICATION GSMWNADW2-1038'

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	BDL	1	4
Barium	Ba	202	1	10
Cadmium	Cd	1.9	1	0.2
Chromium	Cr	BDL	1	10
Lead	Pb	12	1	2
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	1	2
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW2-1038' FRACTION 07D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/13/91 16:10:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	22.1
EC (UMHOS)	197
PH	8.1
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-974' SAMPLE # 08 FRACTIONS: A

Date & Time Collected 08/14/91 08:00:00 Category

AL4 0.71 MG/L DISSOLVED	ALK 45 MG/L AS CACO3	B1 0.07 MG/L AS TOTAL	BICARB 27.5 MG/L	CA1 31.2 MG/L	CARB 0 MG/L
CL1WET 10.6 MG/L	COND 200 umhos	F -0.10 MG/L	FE4 3.62 MG/L DISSOLVED	HARD 127 MG/L AS CACO3	K1 2.5 MG/L
MG1 12.0 MG/L	NA1 10.5 MG/L	NCO3HD 82 MG/L AS CACO3	PH 8.0 units	PO4WC -0.08 MG/L	SIO2 16.6 MG/L
SO4WC 9.83 MG/L					

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-974' SAMPLE # 08 FRACTIONS: B

Date & Time Collected 08/14/91 08:00:00 Category

NO3WC	13.7	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-974' FRACTION 08C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/14/91 08:00:00 Category

METALS

SAMPLE IDENTIFICATION GSMWNADW3-974'

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	6	1	4
Barium	Ba	239	1	10
Cadmium	Cd	2.6	1	0.2
Chromium	Cr	BDL	1	10
Lead	Pb	120	10	20
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	1	2
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-974' FRACTION OBD TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/14/91 08:00:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	21.7
EC (UMHOS)	422
PH	8.4
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW3-1019' SAMPLE # 09 FRACTIONS: A

Date & Time Collected 08/14/91 08:50:00 Category

AL4 -0.08 MG/L DISSOLVED	ALK 38 MG/L AS CACO3	B1 -0.06 MG/L AS TOTAL	BICARB 23.2 MG/L	CA1 18.9 MG/L	CARB 0 MG/L
CL1WET 10.6 MG/L	COND 190 umhos	F -0.10 MG/L	FE4 1.11 MG/L DISSOLVED	HARD 83.9 MG/L AS CACO3	K1 -1.0 MG/L
MG1 8.93 MG/L	NA1 8.97 MG/L	NCO3HD 46 MG/L AS CACO3	PH 8.1 units	PO4WC -0.08 MG/L	SIO2 13.1 MG/L
SO4WC 6.77 MG/L					

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-1019' SAMPLE # 09 FRACTIONS: B
Date & Time Collected 08/14/91 08:50:00 Category

NO3WC	13.3	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-1019' FRACTION 09C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/14/91 08:50:00 Category

METALS

SAMPLE IDENTIFICATION GSMWNADW3-1019'

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	BDL	1	4
Barium	Ba	188	1	10
Cadmium	Cd	1.2	1	0.2
Chromium	Cr	BDL	1	10
Lead	Pb	12	1	2
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	1	2
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-1019' FRACTION 09D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/14/91 08:50:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	22.2
EC (UMHOS)	400
PH	8.3
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91

Results by Sample

SAMPLE ID GSMWNADW3-1069' SAMPLE # 10 FRACTIONS: A

Date & Time Collected 08/14/91 09:40:00 Category

AL4 -0.08 MG/L DISSOLVED	ALK 42 MG/L AS CACO3	B1 -0.06 MG/L AS TOTAL	BICARB 25.6 MG/L	CA1 18.5 MG/L	CARB 0 MG/L
CL1WET 7.09 MG/L	COND 190 umhos	F -0.10 MG/L	FE4 1.39 MG/L DISSOLVED	HARD 82.4 MG/L AS CACO3	K1 -1.0 MG/L
MG1 8.81 MG/L	NA1 8.79 MG/L	NCO3HD 40 MG/L AS CACO3	PH 8.0 units	PO4WC -0.08 MG/L	SIO2 13.1 MG/L
SO4WC 7.52 MG/L					

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-1069' SAMPLE # 10 FRACTIONS: B
Date & Time Collected 08/14/91 09:40:00 Category

NO3WC	13.5	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-1069' FRACTION 10C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/14/91 09:40:00 Category

METALS

SAMPLE IDENTIFICATION GSMWNADW3-1069'

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	BDL	10	40
Barium	Ba	195	1	10
Cadmium	Cd	4.0	10	2.0
Chromium	Cr	BDL	1	10
Lead	Pb	20	10	20
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	10	20
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSMWNADW3-1069' FRACTION 10D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/14/91 09:40:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	22.6
EC (UMHOS)	356
PH	8.3
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91

Results by Sample

SAMPLE ID GSRSNAPL SAMPLE # 11 FRACTIONS: A

Date & Time Collected 08/14/91 11:20:00 Category

AL4 -0.08 MG/L DISSOLVED	ALK 60 MG/L AS CACO3	B1 -0.06 MG/L AS TOTAL	BICARB 36.6 MG/L	CA1 64.8 MG/L	CARB 0 MG/L
CL1WET 49.0 MG/L	COND 850 umhos	F 0.19 MG/L	FE4 -0.02 MG/L DISSOLVED	HARD 278 MG/L AS CACO3	K1 4.5 MG/L
MG1 28.5 MG/L	NA1 81.5 MG/L	NCO3HD 218 MG/L AS CACO3	PH 8.2 units	PO4WC -0.08 MG/L	SIO2 6.74 MG/L
SO4WC 265 MG/L					

Received: 08/15/91

Results by Sample

SAMPLE ID GSRSNAPL SAMPLE # 11 FRACTIONS: B

Date & Time Collected 08/14/91 11:20:00 Category

NO3WC	2.22	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSRSNAPL FRACTION 11C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/14/91 11:20:00 Category

METALS

SAMPLE IDENTIFICATION GSRSNAPL

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	BDL	1	4
Barium	Ba	103	1	10
Cadmium	Cd	4.8	1	0.2
Chromium	Cr	BDL	1	10
Lead	Pb	BDL	1	2
Mercury	Hg	BDL	1	0.2
Selenium	Se	BDL	1	2
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSRSNAPL FRACTION 11D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/14/91 11:20:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	27.5
EC (UMHOS)	756
PH	8.4
SAMPLER	LW/RP
FIELD REMARKS	

Received: 08/15/91

Results by Sample

SAMPLE ID GSRSWA60-1B SAMPLE # 12 FRACTIONS: A

Date & Time Collected 08/14/91 12:15:00 Category

AL4 -0.08 MG/L DISSOLVED	ALK 34 MG/L AS CACO3	B1 1.54 MG/L AS TOTAL	BICARB 20.7 MG/L	CA1 224 MG/L	CARB 0 MG/L
CL1WET 871 MG/L	COND 15200 umhos	F 2.98 MG/L	FE4 0.2 MG/L DISSOLVED	HARD 847 MG/L AS CACO3	K1 57 MG/L
MG1 70.1 MG/L	NA1 3580 MG/L	NCO3HD 813 MG/L AS CACO3	PH 8.8 units	PO4WC 0.56 MG/L	SIO2 116 MG/L
SO4WC 9330 MG/L					

Received: 08/15/91 Results by Sample

SAMPLE ID GSRSNA60-1B SAMPLE # 12 FRACTIONS: B
Date & Time Collected 08/14/91 12:15:00 Category

NO3WC	35.5	MG/L

Received: 08/15/91 Results by Sample

SAMPLE ID GSRSNA60-1B FRACTION 12C TEST CODE RCRA1 NAME PRIMARY DRINKING WATER MET
Date & Time Collected 08/14/91 12:15:00 Category

METALS

SAMPLE IDENTIFICATION GSRSNA60-1B

ANALYST B.CHAMBERS/C.BONEFIELD

DATE PREPARED 08/19/91

DATE ANALYZED 09/09/91

UNITS UG/L AS TOTAL

MATRIX WATER

METAL		RESULT	DILUTION	DET LIMIT
Arsenic	As	BDL	25	100
Barium	Ba	146	1	10
Cadmium	Cd	2.5	1	0.2
Chromium	Cr	31	1	10
Lead	Pb	BDL	1	2
Mercury	Hg	0.4	1	0.2
Selenium	Se	BDL	25	50
Silver	Ag	BDL	1	1

Note: BDL = Below Detection Limit

NA = Not Analyzed

Received: 08/15/91 Results by Sample

SAMPLE ID GSRSNA60-1B FRACTION 12D TEST CODE FDATA NAME FIELD DATA
Date & Time Collected 08/14/91 12:15:00 Category

VER EH

	RESULT
DISCHARGE	-99
AIR TEMP (DEG. C)	-99
WATER TEMP (DEG. C)	29.7
EC (UMHOS)	1494
PH	9.2
SAMPLER	LW/RP
FIELD REMARKS	

CHAIN OF C. STODY RECORD/TRANSMITTAL

ENVIRONMENTAL MANAGEMENT SERVICES
ENVIRONMENTAL LAB

RIVER PROJECT
Post Office Box 52025
Phoenix, Arizona
85072-2025 (602) 236-2609

ect: NGS SEEPAGE MONITORING
Charge No.: 2-9-2407-134
ect Manager/Contact: DENNIS SHIRLEY
Phone: 2968
Cost Center: 16520
mplers (Signature): Lee Watts, Dennis IV

Sample ID	Date Collected	Time Collected	Matrix	Lab ID No.	No. of Containers	FLOW GPM___ CFS___	TEMP Degrees C Air	TEMP Degrees C H_2O	EC	pH	ROUTINE	NO_3	TOTAL METALS					
SMWNADW1-900'	8/13/91	0810	WATER	91-08-035 01	3	—	—	21.5	420	8.4	✓	✓	✓					
MWNADW-1945'		0915		02	3	—	—	21.4	333	8.4	✓	✓	✓					
MWNADW-1-995'		1015		03	3	—	—	22.1	350	8.2	✓	✓	✓					
MWNADW-2-943'		1310		04	3	—	—	22.1	347	8.5	✓	✓	✓					
MWNADW2-988'		1410		05	3	—	—	21.6	206	8.4	✓	✓	✓					
MWNADW2-988 DUP		1510		06	3	—	—	22.1	345	8.4	✓	✓	✓					
MWNADW2-1038'		1610		07	3	—	—	22.1	197	8.1	✓	✓	✓					
MWNADW3-974'	8/14/91	0800		08	3	—	—	21.7	422	8.4	✓	✓	✓					
MWNADW3-1019'		0850		09	3	—	—	22.2	400	8.3	✓	✓	✓					
MWNADW3-1069'		0940		10	3	—	—	22.6	356	8.3	✓	✓	✓					
RSNAPL		1120		11	3	—	—	27.5	756	8.4	✓	✓	✓					
RSNA60-1B		1215		12	3	—	—	29.7	1494	9.2	✓	✓	✓					

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time	Remarks:
Dennis IV	8/14/91	2000	Elaine Huneman	8/14/91	2000	
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time	
Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Date	Time	