Operation & Maintenance Manual

GWD Permit NEV2001515

Nevada Environmental Response Trust
Henderson, NV

March 2002
Revised: September 2006
Revised November 2011

Table of Contents

Section 1

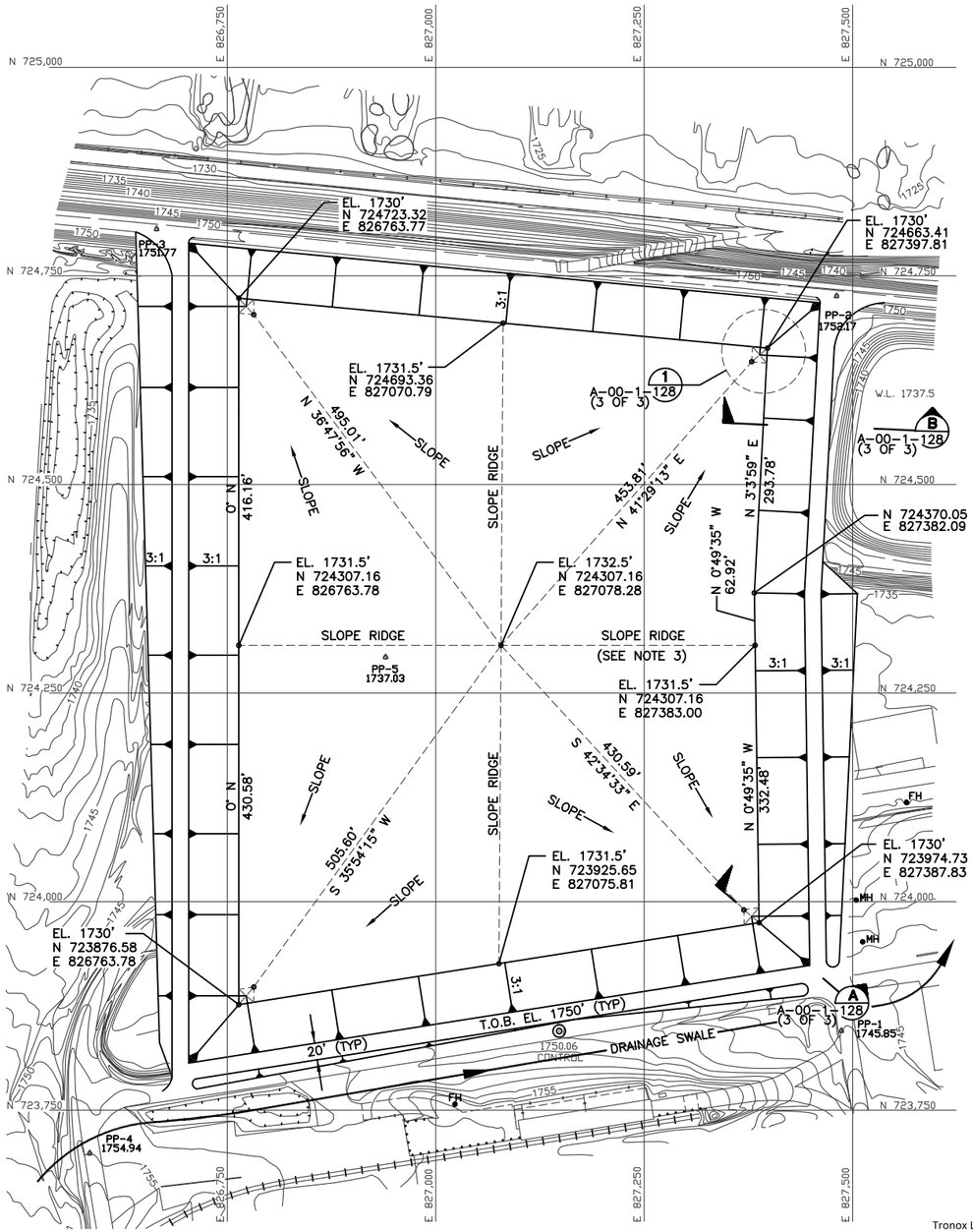
GW-11 Pond

Pond Description

GW-11 Pond

Capacity: 70,000,000 gallons
Surface Area: 479,160 ft^2
Liner:
- Bottom: 40 mil HDPE
- Side/Middle: geo-textile polypropylene HDPE netting
- Top: 60 mil HDPE

Pond Use(s): Holding Pond. This pond receives groundwater collected in anticipation of perchlorate and/or chromium remediation. In addition, this pond functions as a repository for the treated groundwater if treated water cannot be transferred to the wash via the discharge line from the perchlorate remediation process.



RETENTION BASIN PLAN

SCALE: 1" = 80'

GEOTECHNICAL REPORT:

REFER TO GEOTECHNICAL INVESTIGATION REPORT;
11-ACRE WASTEWATER RETENTION POND, NORTHWESTERN PORTION OF KERR-McGEE PLANT, HENDERSON, NEVADA - PREPARED BY ETEC TESTING LABORATORIES, INC. ETEC REFERENCE No. 81143, DATED MARCH 27, 1998.

SURVEY DATA:

BOTTOM OF RETENTION BASIN SURFACE AREA EQUALS 11 ACRES BASED ON DESIGN CONTROL POINTS.

PANEL POINTS DATA ARE GROUND COORDINATES SUPPLIED BY PENTACORE, 6763 WEST CHARLESTON BOULEVARD, LAS VEGAS, NEVADA - JOB No. 0194.0045. TOPOGRAPHICAL DATA SUPPLIED BY KERR-McGEE CONSISTING OF THE HENDERSON PLANT SITE AREA IN SEC. 12, T.22 S., R.62 E. ON 3/13/98.

PANEL POINTS	NORTHING	EASTING	ELEVATION
PP-1	723845.219	827486.668	1745.85
PP-2	724725.855	827480.842	1752.17
PP-3	724806.239	826665.344	1751.77
PP-4	723698.533	826585.076	1754.94
PP-5	724293.008	826939.891	1737.03

NOTES:

1. THE LEAK DETECTION SUMP AREAS ARE DEFINED BY 18 FOOT OFFSETS OF THE BERM TOE LINES RESULTING IN A NEAR RECTANGULAR SHAPE AT ALL FOUR CORNERS. THE SLOPE WILL MAINTAIN THE SAME 3 TO 1 RATIO TO THE CENTER OF THE SUMPS.

2. DIAGONAL DIMENSION VARIES AT EACH CORNER PER CONFIGURATION NOTED ABOVE.

3. SLOPE RIDGES DIVIDE THE BASIN INTO QUADRANTS, WITH EACH QUADRANT SLOPING TO A RESPECTIVE LEAK DETECTION CORNER. SLOPES VARY FROM .25% TO .5% AS THE BERM TOE LINE APPROACHES THE "SLOPE RIDGE" WHICH RISES TO THE CENTER HIGH POINT OF THE BASIN (NOTE ELEVATIONS ON PLAN).

EMBANKMENTS

4. THE BERMS ON THE EAST AND WEST WILL BE CONSTRUCTED OF SOIL REMOVED FROM THE BOTTOM, AND THE BERM ON THE SOUTH SIDE WILL CONSIST OF NATURAL SOIL LEFT IN PLACE AFTER REMOVALS ARE FINISHED. THE NORTH BERM IS EXISTING AT AN APPROXIMATE 1 TO 1 SLOPE RATIO AND WILL NEED COMPACTED SOIL TO MATCH THE 3 TO 1 RATIO OF THE OTHER BERMS.

5. THE SLOPE OF EMBANKMENTS CONSTRUCTED OF THE SILTY SAND CURRENTLY EXISTING ON THE SURFACE SHOULD BE LIMITED TO A RATIO OF 3:1 (3 HORIZONTAL TO 1 VERTICAL)

6. IN THE AREA OF THE EMBANKMENTS, THE TOP 1 1/2 FEET OF SOILS SHOULD BE REMOVED AND THE SURFACE SCARIFIED TO A DEPTH OF 6 INCHES AND WATERED TO SLIGHTLY OVER THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE ASTM D1557 "PROCTOR" TEST.

7. ALL EMBANKMENT FILL SHOULD BE PLACED IN 0'-6" LIFTS AND COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENISTY FOR GRANULAR SOILS AND A MINIMUM OF 90 PERCENT FOR CLAYEY SOILS. THE SIDES OF THE EMBANKMENT SHOULD BE EITHER COMPACTED OR OVERBUILT AND TRIMMED BACK TO COMPACTED SOIL.

SOIL MATERIALS

8. DRAINAGE FILL CONSISTS OF WASHED, EVENLY GRADED MIXTURE OF CRUSHED STONE, OR CRUSHED OR UNCRUSHED GRAVEL, ASTM D 448, COARSE AGGREGATE, SIZE NO. 57, WITH 100 PERCENT PASSING 1-1/2 INCH (37.5 MM) SIEVE AND NOT MORE THAN 5 PERCENT PASSING NO. 8 (2.36 MM) SIEVE.

9. SAND SHALL BE AS PER ASTM D2487 SOIL CLASSIFICATION GROUP SW AND SHALL BE FREE OF DEBRIS, FROZEN MATERIAL, VEGETATION AND OTHER DELETERIOUS MATERIAL. SAND SHALL BE WATERED SLIGHTLY OVER THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE ASTM D1557 "PROCTOR" TEST.

GEONET

10. THE GEONET SHALL BE COMPRISED OF A GEOSYNTHETIC CARRIER BONDED TO A LAYER OF LOW-PERMEABILITY SODIUM BENTONITE CLAY. THE FULLY HYDRATED SODIUM BENTONITE LAYER CAN HAVE A HYDRAULIC CONDUCTIVITY OF LESS THAN 1×10^{-9} cm/sec. USE CLAYMAX® 600SP BY CELLOID ENVIRONMENTAL TECHNOLOGIES COMPANY OR BETTER. INSTALL AS PER MANUFACTURER RECOMMENDATIONS.

APPROVED
FOR CONSTRUCTION

Western States
ENGINEERING TUCSON,AZ
PROJECT No. 98015

TOLERANCE UNLESS OTHERWISE SPECIFIED
FRACTIONS ±
0.00 ±
0.000 ±

REVISIONS (DESTROY ALL PRINTS OF AN EARLIER DATE THAN LATEST REVISION)

REV	DESCRIPTION	BY	DATE
01	INDEMNIFICATION CLAUSE ADDED	JEH	11/9/11

REV	DESCRIPTION	BY	DATE

KERR-M cGEE CHEMICAL CORP. P.O. BOX 55 HENDERSON, NEV. 89015-0055

AFE No. _____ JOB No. _____

APPROVED FOR CONSTRUCTION

	BY	DATE		BY	DATE
SAFETY	SEE PASSPORT APPROVAL ROUTE LIST		PROCESS ENGR.	SEE PASSPORT APPROVAL ROUTE LIST	
ENVIRONMENTAL			PROJECT ENGR.		
OPERATIONS MNGR.			ENGR. MNGR.		
PRODUCTION SUPT			PLANT MNGR.		
QLTY. CONTROL			INSTRUMENTATION		

DESIGN		DATE
DRAWN BY:	D.CALDWELL	4/3/98
PROJ. ENGR:	A.ZAMBOANGA	4/3/98
ENG. MNGR:	G.SAHYOUNI	4/3/98

AQUIFER RETENTION BASIN
CIVIL
OVERALL PLAN & DETAIL

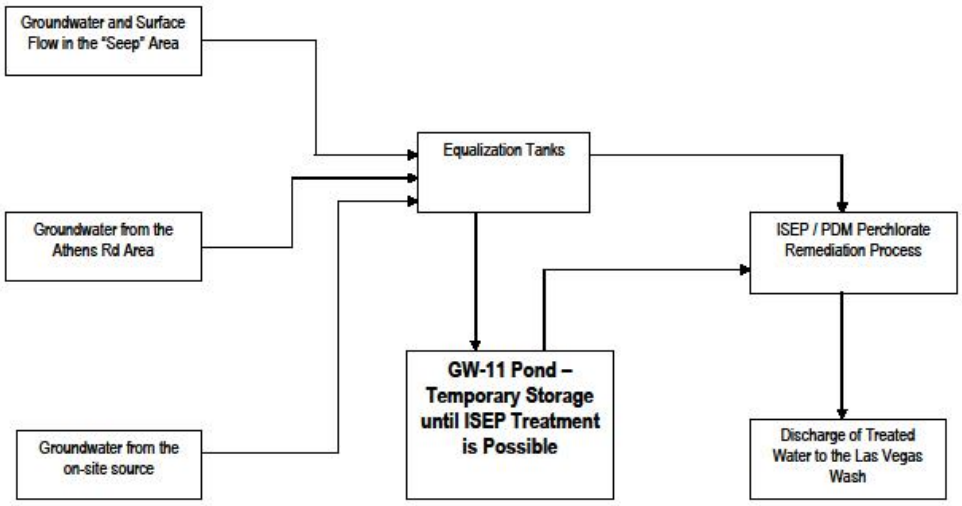
DATE: 4/15/98 SCALE: AS NOTED

DRAWING NO. A-00-1-128

SHEET 2 OF 3

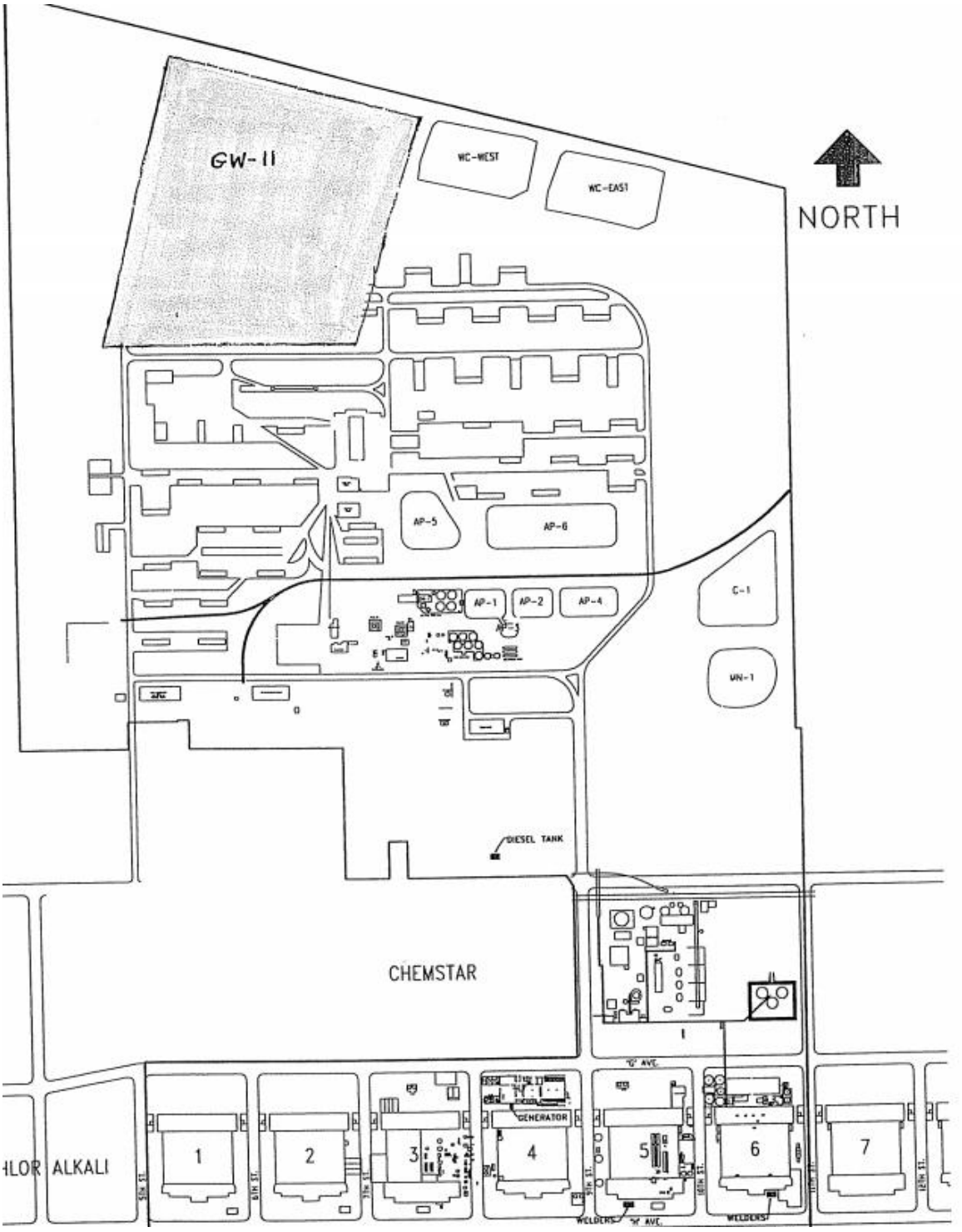
REVISION 01

Drawing: A0011282 / Date: 4/15/98 / Time:



GW-11 Pond - Process Flow Diagram
November 2011

GW-11 Pond 2010 Annual Photo – From the SW Corner Looking NE


GW-11
WC-WEST
WC-EAST
NORTH
AP-5
AP-6
AP-1
AP-2
AP-4
C-1
MN-1
DIESEL TANK
CHEMSTAR
GENERATOR
1
2
3
4
5
6
7
WELDERS
WELDERS

Storage Volume

Storage volume of the GW-11 pond is read, calculated and recorded twice per month. A measurement from a mark at the top of the pond down the wall to the liquid level is recorded. Since this is a slope measurement, the field measurement is then converted to a vertical measurement. From this vertical measurement the volume of the pond is calculated. Please see the following example spreadsheet used in determining the pond volume.

Example of GW-11 Pond Storage Volume Calculation Spreadsheet

GW-11 Pond Volume and Base Design

Pond has a contoured bottom, with corners (detection wells) at 2.5' below the center point of the pond.
The midpoint on each side is 1' below the center point of the pond.
The heel volume contained in the four major quadrants of the pond is 3,608,574 gallons.
The height of the berm of the pond is 20'
The maximum working vertical height of the pond is 17.5', allowing for wind and wave action
The side slope of the pond is 3:1
The calculations below include the heel volume as stated above.
At the 1' level (zero point) mid side of the pond, area is 10.97 acres.

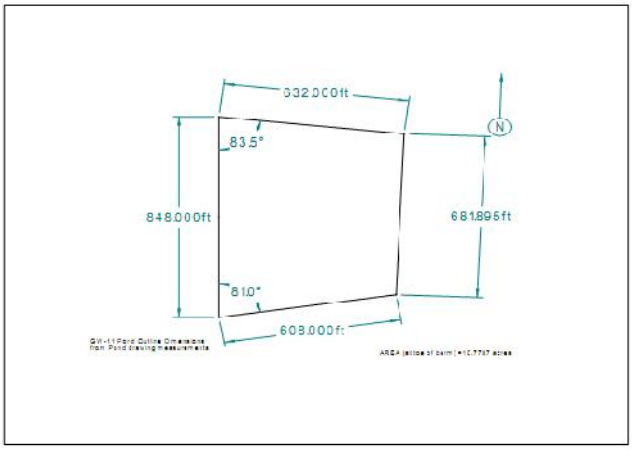
Water Height up the Side W		Side slope measurements are made directly above side mid point: (at 1' vert. Depth to toe ref. Center point of pond)		
Ft	Inches	Side slope meas., in	Vertical dist, ft above zero pt	Volume gallons
2.83		33.98	-0.11	3,232,763.43

Value less than heel minimum, and heel volume is 3,608,574 gallons

Enter field measurement below (in feet)

57.17

Read Pond volume in blue square above



Example of Storage Volume Monitoring Record

Date	GW-11	GW-11 Volume (gallons)	Volume Available	Days Available (@1000 GPM)
	inches from mark	Max Volume = 70,000M		
4/1/11	639	7,663	50,037	34.7
4/15/11	674	6,917	50,783	35.3
5/1/11	703	1,369	56,331	39.1
5/15/11	700	1,921	55,779	38.7
6/1/11	710	938	56,762	39.4
6/15/11	694	2,486	55,214	38.3
7/1/11	672	4,555	53,145	36.9
7/15/11	679	3,899	53,801	37.4
8/1/11	666	5,120	52,580	36.5
8/15/11	673	4,464	53,236	37.0
9/1/11	695	3,300	54,400	37.8
9/15/11	690	2,859	54,841	38.1

Leak Detection

The GW-11 pond has four leak detection wells, one in each of four corners.

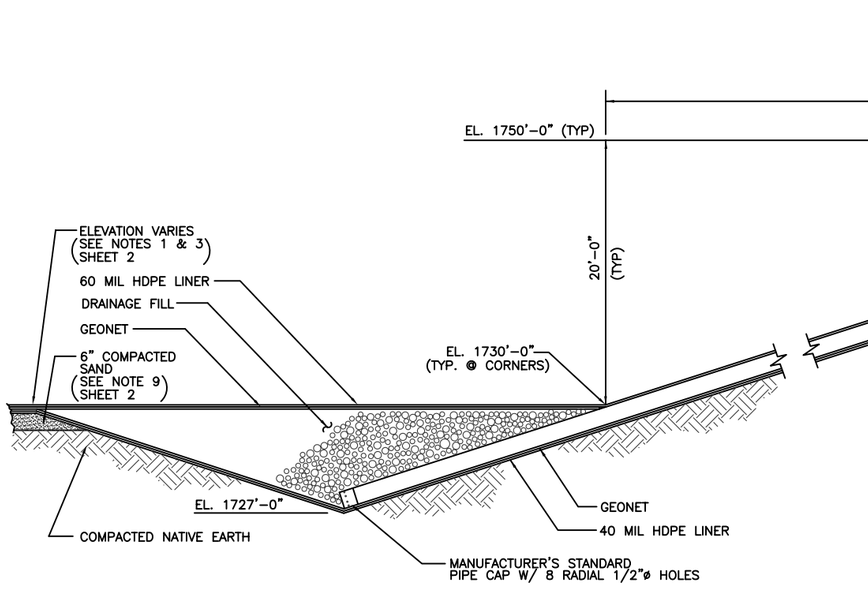
Each leak detection well consists of a large diameter HDPE pipe (~eight inch diameter) installed down the corner wall of the pond, between the top and bottom liner. The end of each pipe, or well, sits in its own depression, which is in a low spot in that area of the pond. If there is a leak in the top liner the liquid will migrate towards one of the depressions. Submersible pumps are installed inside the HDEP pipe, to the bottom of the wells. Twice each month, each pump is run to determine if any liquid has accumulated in its well. If any liquid is detected, the detection well is pumped and the volume removed is recorded. A sample is drawn of the removed liquid to determine its nature.

Pond Liner Inspections

The GW-11 pond is inspected twice each month as the pond water level is measured. The condition of the primary liner and leak detection system will be noted in the pond record.

Example of GW-11 Pond Leak Detection Monitoring Record

DATE	NORTHWEST GALLONS	NORTHEAST GALLONS	SOUTHWEST GALLONS	SOUTHEAST GALLONS
1/6/2011	0	0	0	0
1/20/2011	0	0	0	0
2/3/2011	0	0	0	0
2/17/2011	0	0	0	0
3/3/2011	0	0	0	0
3/17/2011	0	0	0	0
4/7/2011	0	0	0	0
4/21/2011	0	0	110	0
5/5/2011	0	0	0	0
5/19/2011	0	0	75	0
6/2/2011	0	0	0	0
6/16/2011	0	0	0	0
7/7/2011	0	0	0	0
7/21/2011	0	0	0	0
8/4/2011	0	0	0	0
8/18/2011	0	0	0	0
9/1/2011	0	0	0	0
9/15/2011	0	0	0	0



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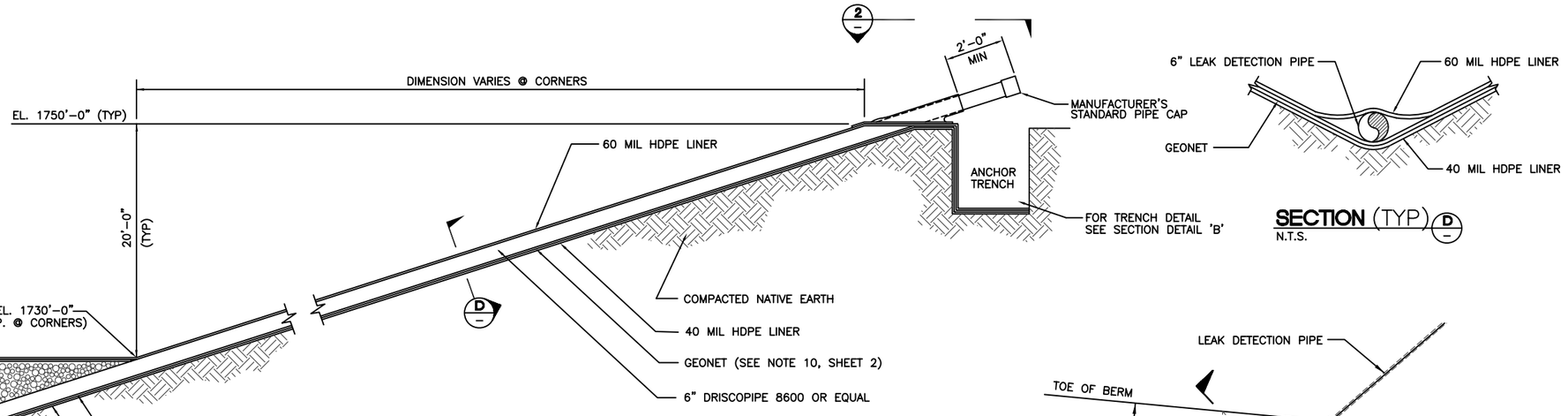

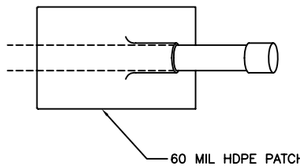

DETAIL (TYP) (2)
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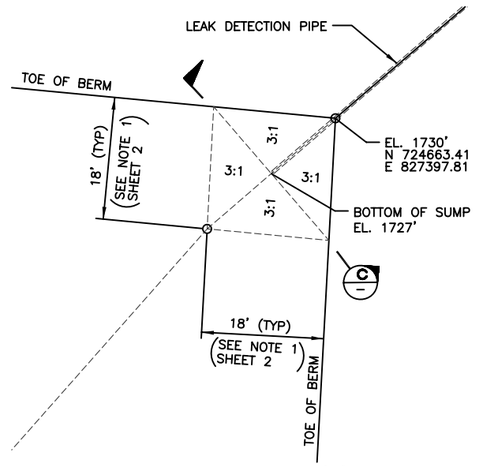
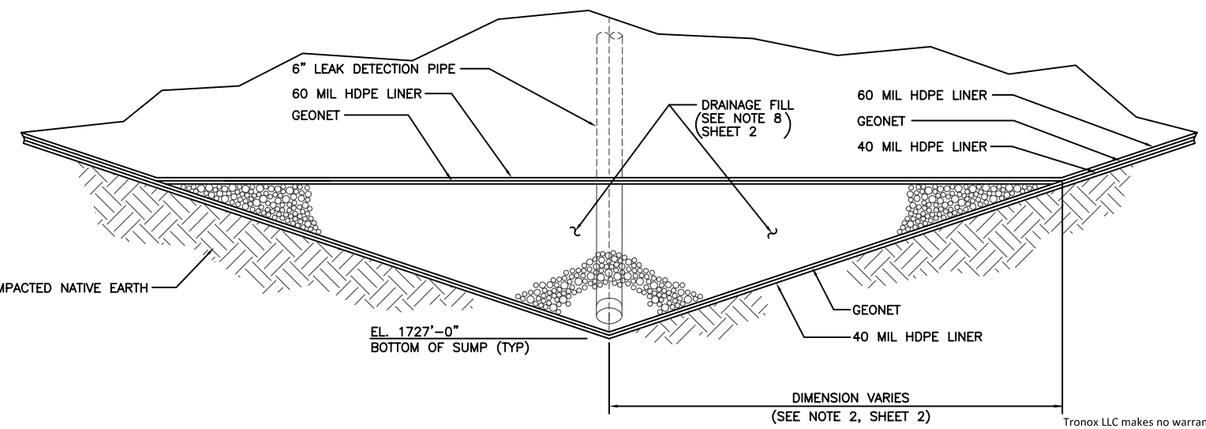
SECTION (TYP) (D)
N.T.S.



LEAK DETECTION SUMP (4) (1)
SCALE: 1" = 10'



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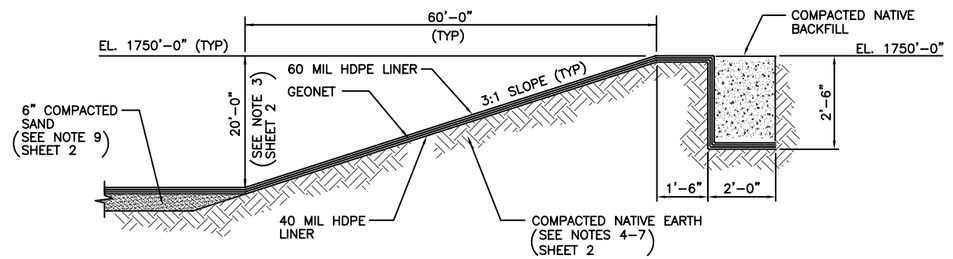


SECTION (TYP) (B)
N.T.S.

APPROVED
FOR CONSTRUCTION

Western States
ENGINEERING TUCSON, AZ
PROJECT No. 98015

TOLERANCE UNLESS OTHERWISE SPECIFIED
FRACTIONS ±
0.00 ±
0.000 ±

REVISIONS (DESTROY ALL PRINTS OF ALL VALUES DATE THAN LATEST REVISION)

REV	DESCRIPTION	BY	DATE
01	INDEMNIFICATION CLAUSE ADDED	JEH	11/9/11

REV	DESCRIPTION	BY	DATE

KERR-M cGEE CHEMICAL CORP. P.O. BOX 55 HENDERSON, NEV. 89015-0055

AFE No. _____ JOB No. _____

APPROVED FOR CONSTRUCTION	BY	DATE		BY	DATE
SAFETY	SEE TRANSPORT APPROVAL ROUTE LIST		PROCESS ENGR.	SEE TRANSPORT APPROVAL ROUTE LIST	
ENVIRONMENTAL			PROJECT ENGR.		
OPERATIONS MNGR.			ENGR. MNGR.		
PRODUCTION SUPT			PLANT MNGR.		
QLTY. CONTROL			INSTRUMENTATION		

DESIGN		DATE
DRAWN BY:	D.CALDWELL	3/27/98
PROJ. ENGR:	A.ZAMBOANGA	3/27/98
ENG. MNGR:	G.SAHYOUNI	3/27/98

AQUIFER RETENTION BASIN
DETAIL SHEET

DATE: 4/15/98 SCALE: AS NOTED

DRAWING NO. A-00-1-128

SHEET 3 OF 3

REVISION 01

Drawing: A0011283 / Date: 4/15/98 / Time:

Water Balance

GW-11 pond is associated with the perchlorate remediation process and the area operators complete the water balance calculations on a monthly basis. The water balance calculations take into account all flows into and out of the pond. Below is a sample water balance.

Example of GW-11 Pond Water Balance Spreadsheet

GW-11 Water Balance:		1-Jun-11	1-Jul-11	1-Aug-11
GWTP Totalizer Reading :00 first day of the month	gallons	41280927	43856768	46657381
GWTP Totalizer Reading 12:00 last day of the month	gallons	43856768	46657381	49450335
GWTP total effluent flow	Mgallons	2.58	2.80	2.79
GWTP flow to FBR (p-103)		3.08	3.147	2.32
GWTP discharge to GW-11 (calculated overflow back to pond)		-0.50	-0.35	0.47
GW-11 to FBR P-104(new)		2.09	1.76	2.43
This is the net taken out of GW-11 to the FBR for the month		2.59	2.11	1.96
Number of EQ TK101A & B overflow events/effleunt divertions		7	8	7
Total gallons Overflow of TK101 to GW-11	Mgallons	2.04	2.01	0.73
AP5 Transfer to GW-11 (total includes SLW dilution water)	Mgallons	2.11	0.118	1.41
Number of GAC column back wash events		3	4	8
~~Total of Backwash for all GAC columns (minutes)~~				
GAC Backwash stabilized lake used		0.335	0.379	0.687
~~GAC Backwash water to GW-11~~	Mgallons			
~~Sand filter and other tank hydrotesting to GW-11~~				
EQ Area Sump to GW-11	Mgallons	minimal	minimal	minimal
D-1 Sump Flow to GW-11	Mgallons			
Rain Fall	Mgallons			
Less Evaporation	Mgallons	2.78	2.54	2.81
Total Addition to GW-11	Mgallons	1.89	0.40	0.86
Average Daily Additions	MGD	0.063	0.013	0.028
Evap rate	in/month	9.4	8.6	9.5
Water Balance (in less out including evaporation)	Mgallons	-0.89	-2.14	-1.94
Comparison of net water addition to pond volume change	Mgallons	-2.96	-3.36	-0.78

Trench Flow beginning totalizer	791948
Trench Flow ending totalizer	791948
Trench gallons injected>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	0

Interceptor flow monthly total gallons	2,935,675

Stabilize Lake Water totalizer (EQ area) beginning	34673829
Stabilize Lake Water totalizer (EQ area) ending	34849681
Stabilized lake water usage>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	175,852

Section 2

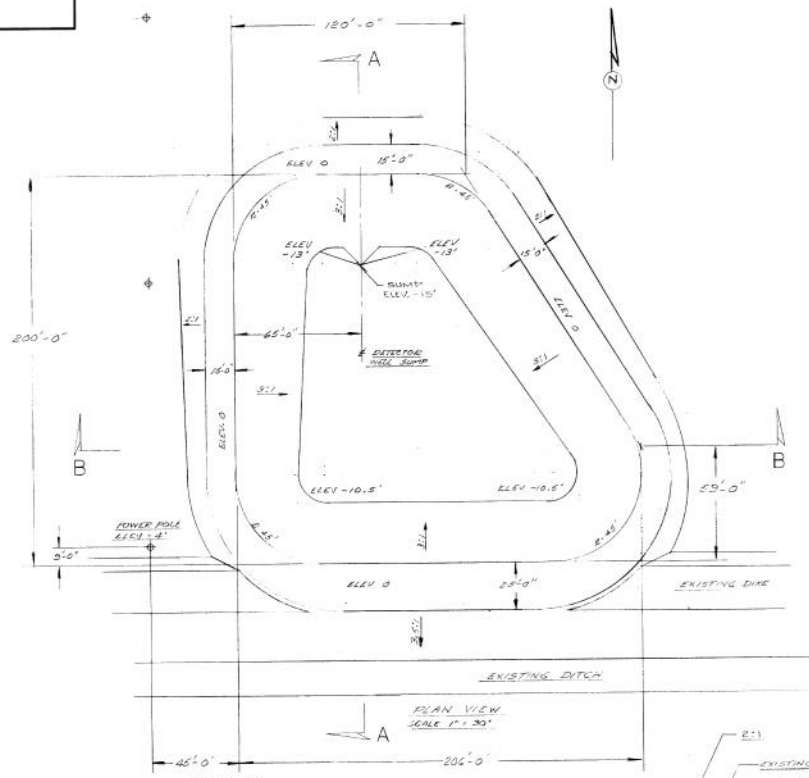
AP-5 Pond

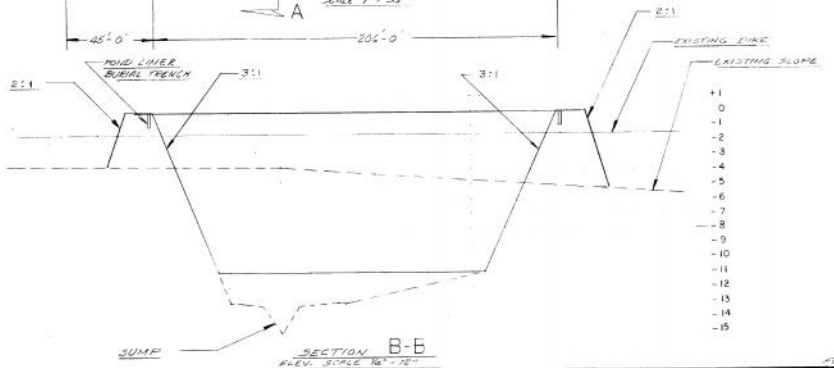
Pond Descriptions

AP-5 Pond

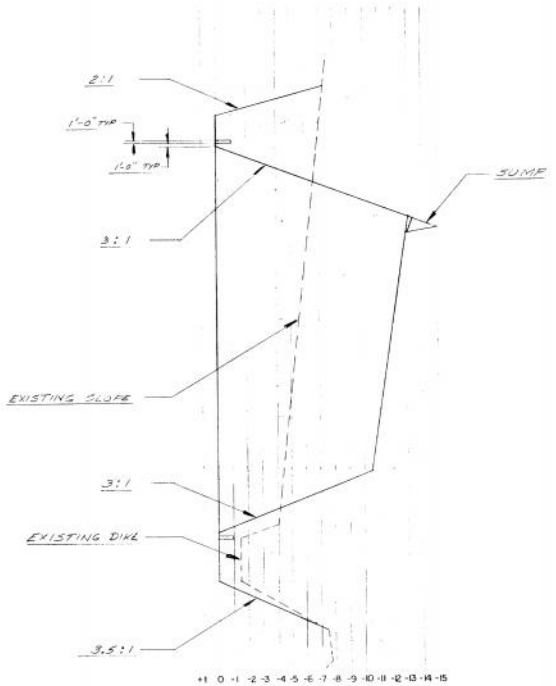
Pond Capacity: 1,817,000 gallons
Surface Area: 35,000 ft^2
Liner:
- Bottom: 40 mil HDPE
- Middle: geo-textile polypropylene
- Top: 60 mil HPDE

Pond Use(s): Pond contains process liquors and solids from historical ammonium perchlorate production. Currently the pond perchlorate content is being recovered. The remaining insoluble solids will ultimately be removed as well.





SECTION B-B
ELEV. SCALE 1" = 10'



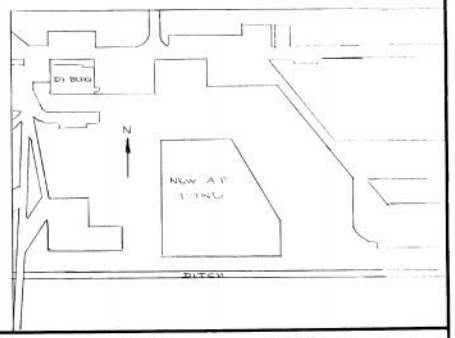
SECTION A-A
ELEV. SCALE 1" = 10'

REMOVE EXISTING DIKE

ALL NEW FILL TO BE COMPACTED 95% MIN IN LAYERS 6" EACH MAX.

ALL SURFACES OF POND TO BE REMOVED OF ALL ROCKS 1" & OVER

5:1 RAMP INTO & OUT OF POND PERMITTED LOCATION TO BE APPROVED BY PROJECT ENG.



FOR FINISHED POND SEE A-19-1-B5

KERR-McGEE CHEMICAL CORP. P. O. BOX 55 HENDERSON, NEV. 89015

AFE No. _____ JOB No. _____

REVISIONS (DESTROY ALL PRINTS OF AN EARLIER DATE THAN LATEST REVISION)			
Ref	DESCRIPTION	BY	DATE
A			

Ref	DESCRIPTION	BY	DATE

APPROVED FOR CONSTRUCTION	BY	TITLE	DATE
SAFETY			
PRODUCTION			
MAINTENANCE			
PROCESS			
MNMT.		PLT. MNGR.	

DESIGN	DATE
DRAWN BY JLR	8/6/83
PROJ. ENGR.	
ENGR. MNGR.	
OPER MNGR	
ENVIR ENG	

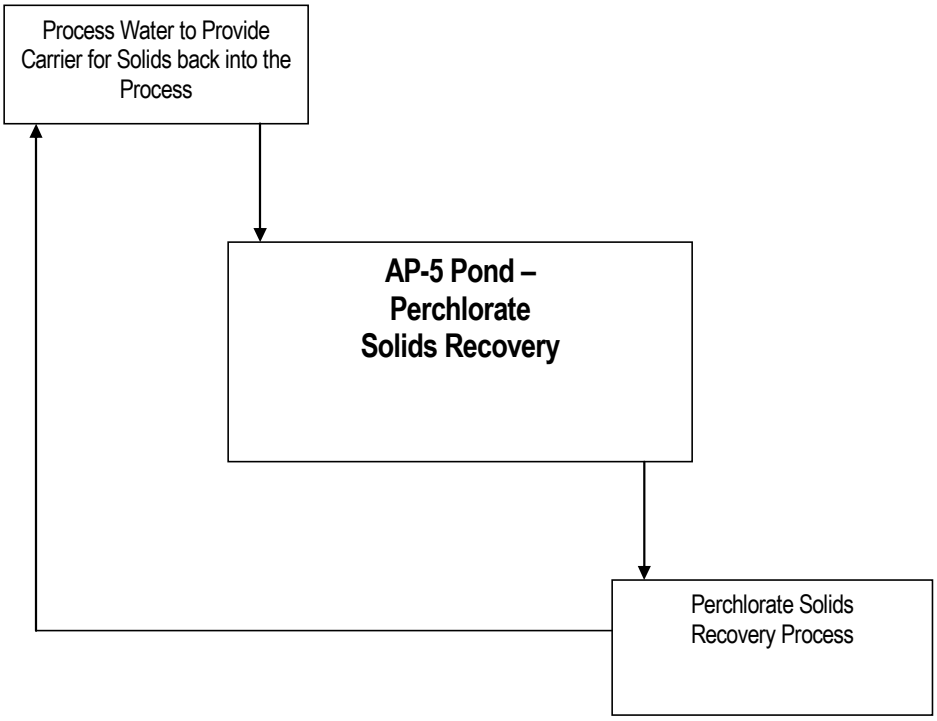
PLANNED A.P. POND
GRADING ONLY

DATE 8-12-83 SCALE AS NOTED

DRAWING NO. A-19-1-04

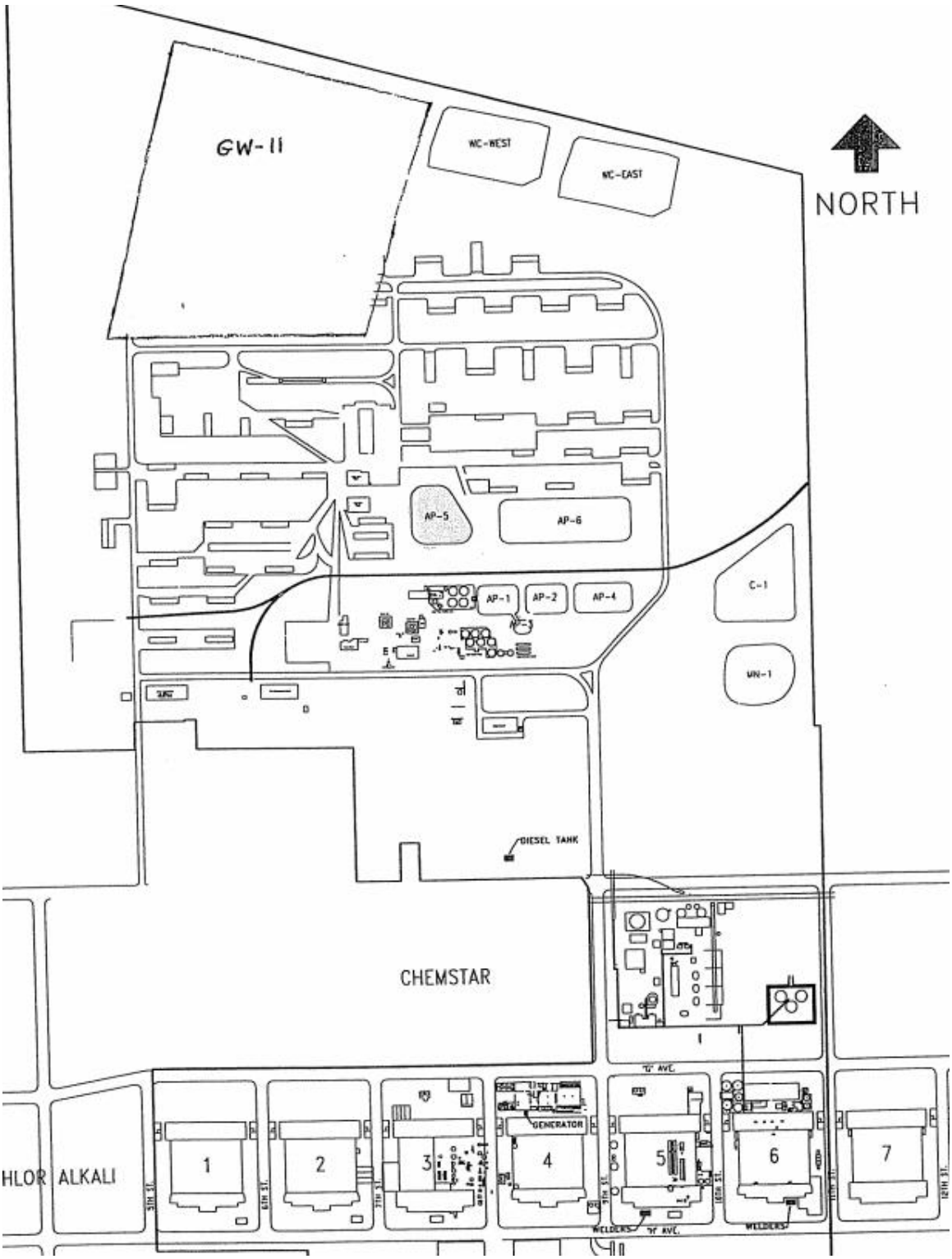
SHEET OF REVISION

DIETZGEN-POST CLEARPRINT 1000



AP-5 Pond – Process Flow Diagram

AP-5 Pond 2005 Annual Photo – Panorama North to South


GW-11
MC-WEST
MC-EAST
NORTH
AP-5
AP-6
AP-1
AP-2
AP-4
C-1
MN-1
DIESEL TANK
CHEMSTAR
GENERATOR
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HLOR ALKALI
WELDERS
WELDERS

Storage Volume

Storage volume of the AP-5 pond is read, calculated and recorded twice per month. A measurement from a mark at the top of the pond down the wall to the liquid level is recorded. Since this is a slope measurement, the field measurement is then converted to a vertical measurement. From this vertical measurement the volume of the pond is calculated. Included below is an example of the storage volume spreadsheet record.

Leak Detection

AP-5 has one leak detection well system.

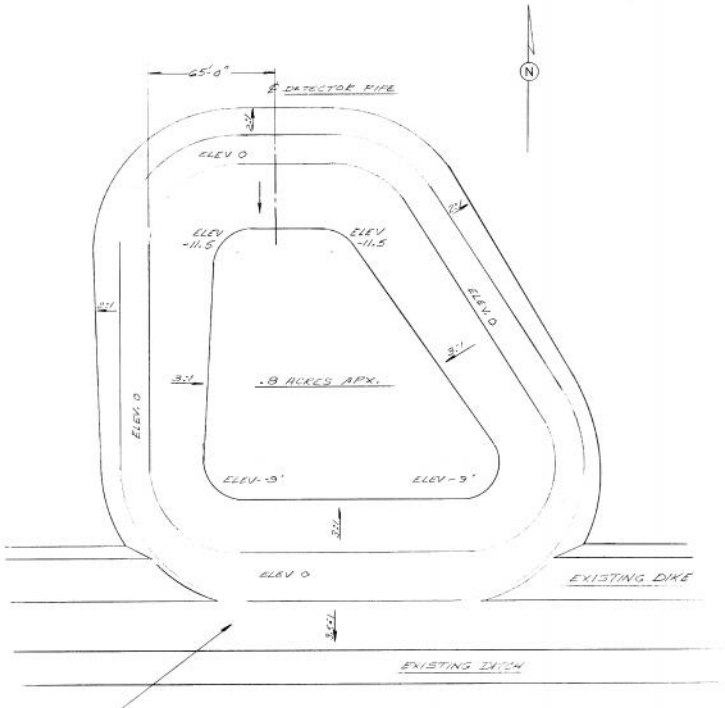
The leak detection system consists of a large diameter HDPE pipe (~6-inch diameter) installed down the wall of the pond between the two liners. The end of this pipe sits in a depression, which is the low spot of the pond. If there is a leak in the top liner the liquid will migrate towards the depression well. Twice per month the detection well is monitored to determine if there is any liquid detected. If there is liquid detected, it is removed by means of a pump and the volume is recorded. A sample of removed liquid is taken to determine its nature.

Pond Liner Inspection

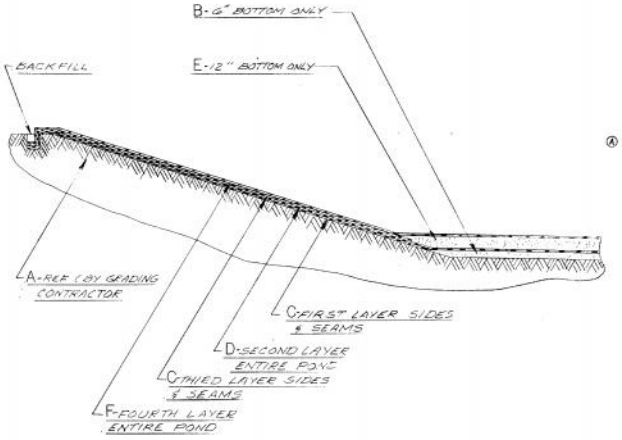
AP-5 pond liner is inspected twice monthly. Any unusual condition of the primary liner and leak detection system will be noted in the pond record.

Example of AP-5 Pond Monitoring Record

Date	AP-5	Comment	AP-5 Detect Well (gallons)	AP-5 DMR Data Monthly Volume Change	AP-5 Monthly Water Balance (gallons)
Max Volume	1,700,000				
6/1/2011	785,589		0	214	
6/15/2011	683,340		0	-102	
7/1/2011	770,733		0	87	0.03
7/15/2011	755,960		0	-15	
8/1/2011	741,272		0	-15	0.01
8/15/2011	598,895		0	-142	
9/1/2011	626,720		0	28	-0.02
9/15/2011	612,766		0	-14	

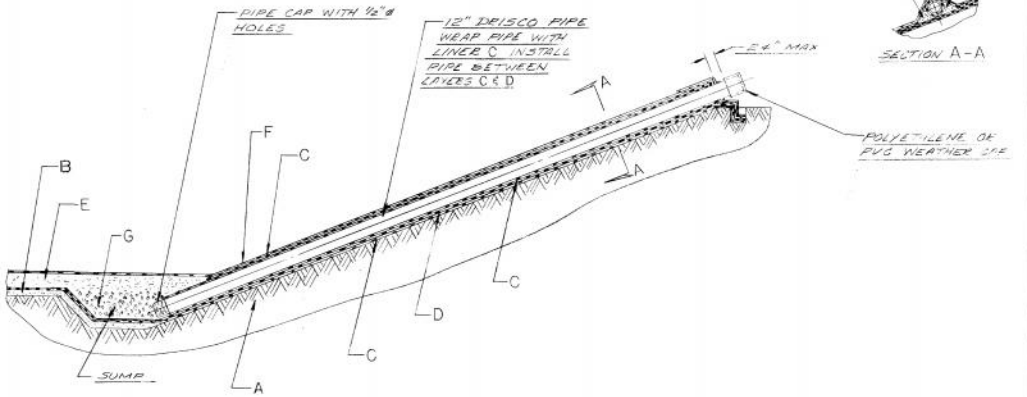


PLAN VIEW
1" = 30'



TYPICAL POND SECTION
SCALE 1/4" = 1'

A- NATIVE SOIL COMPACTED TO 95% WITH SURFACE ROCKS OVER 1" REMOVED
B COMPACTED SAND TO MEET SM OR SP IN U.S.C.S.
C GEOTEXTILE POLYPROPYLENE 400 GRAMS PER SQ METER
Ⓐ D 40 MIL HIGH DENSITY POLYETHYLENE
E SCREENED SAND $\pm 10^{-2}$ CM/SEC PERMEABILITY
F 60 MIL HIGH DENSITY POLYETHYLENE
G GRAVEL APPRX. 3/4" Ø



LEAK DETECTOR PIPE
SCALE 1/4" = 1'-0"

SEE DWG A-19-1-64 FOR GRADING

KERR–McGEE CHEMICAL CORP. P. O. BOX 55 HENDERSON, NEV. 89015

AFE No. _____ JOB No. _____

REVISIONS (DESTROY ALL PRINTS OF AN EARLIER DATE THAN LATEST REVISION)			
REV	DESCRIPTION	BY	DATE
A	Option Removed	BK	11/21

Rev	DESCRIPTION	BY	DATE

APPROVED FOR CONSTRUCTION	BY	TITLE	DATE
SAFETY			
PRODUCTION			
MAINTENANCE			
PROCESS			
MNMT.		PLT. MNGR.	

DESIGN	DATE
DRAWN BY JLE	9/6/83
PROJ. ENGR.	9/16/83
ENGR. MNGR.	9-15-83
O PER. MNGR.	
E.H.I.R. ENG.	

PLANNED A.P. POND
FINISHED POND

DATE 9-15-83 SCALE AS NOTED

DRAWING NO. A-19-1-85

SHEET 1 OF 1 REVISION

DIETZGEN-POST CLEARPRINT 5326

Water Balance

The water balance calculations take into account all flows in and out of AP-5 pond. Flows into and out of the pond are measured and recorded. Below is an example of water balance calculation spreadsheet.

	B	C	D	E	F	G	H	I	J	K	L
2			**Monthly AP5 Balance**								
3											
4		Water out		Water in	Water in						
5		AP5 to GW-11	AP-5 to GW-11	SLW to AP5 Area	AP-5 MISC	AP5 Mnthly Add	AP-5 Measuremnt	AP5 Volume			
6		Gallons	Tons	Gallons	Gallons	Gallons	Feet	Gallons			
7	Date	15006	15021	15008	15009	15031	15011	15013			
8	9/1/2011						18,800	525,720			
9	9/2/2011										
10	9/3/2011										
11	9/4/2011										
12	9/5/2011										
13	9/6/2011	163,532	1.2	110,000							
14	9/7/2011										
15	9/8/2011									Flow out first half	
16	9/9/2011									163,532	gallons
17	9/10/2011										
18	9/11/2011										
19	9/12/2011										
20	9/13/2011										
21	9/14/2011										
22	9/15/2011						19,200	512,786			
23	9/16/2011										
24	9/17/2011										
25	9/18/2011										
26	9/19/2011										
27	9/20/2011	164,174	1.4	150,000							
28	9/21/2011	164,174	1.4	160,700							
29	9/22/2011										
30	9/23/2011										
31	9/24/2011										
32	9/25/2011										
33	9/26/2011										
34	9/27/2011										
35	9/28/2011									flow out last half	
36	9/29/2011									325,348	gallons
37	9/30/2011					420,700					
38											
39											
40	Minimum	163,532	1.2	110,000		420,700	18,800	512,786			
41	Maximum	164,174	1.4	160,700		420,700	19,200	525,720			
42	Total	491,880	4.1	420,700		420,700	38,000	1,239,486		water balance	
43	Average	163,960	1.3	140,233		420,700	19,000	619,743		-23,727	gallons

Attachment 1

GW-11 and AP-5
Pond Permit NEV2001

2011 Permit NEV2001515

Nevada Division of Environmental Protection

AUTHORIZATION TO DISCHARGE

In compliance with Chapter 445A of the Nevada Revised Statutes,

Nevada Environmental Response Trust
Le Petomane XXVII, Inc.,
Not Individually, But Solely as the
Designated Nevada Environmental Response Trust Trustee
35 East Wacker Drive, Suite 1550
Chicago, Illinois, 60611

is authorized to discharge groundwater and other water from a facility located at:

8000 W. Lake Mead Parkway
Henderson, Clark County, Nevada 89015
Latitude: 36° 02′ 32″ N, Longitude: 114° 59′ 59″ W
Township 22S; Range 62E; Sections 12-13

and from well fields and collection systems located off of this facility

to two on-site double-lined holding pond, identified as

GW-11 and AP-5,

in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Part I, II, and III hereof.

This permit shall become effective on **July 10, 2011**.

This permit and the authorization to discharge shall expire at 12:01 AM, **July 10, 2016.**

Signed this 22nd day of June, 2011,

Janine O. Hartley

Janine O. Hartley, P.E.
Bureau of Water Pollution Control

PART I

I.A. EFFLUENT LIMITATIONS, MONITORING REQUIREMENTS AND CONDITIONS

I.A.1. During the period beginning on the effective date of this permit, and lasting until the permit expires, the Permittee is authorized to discharge groundwater and other water into two double-lined, leak-detected holding pond, identified as GW-11 and AP-5. This permit does not authorize discharge of water stored in GW-11 or AP-5 to the ground or surface waters of the State without prior treatment to remove contaminants. The ponds shall be limited and monitored by the Permittee as specified below:

Table 1: Holding Pond Limitations for AP-5 and GW-11

PARAMETER	DISCHARGE LIMITATIONS	MONITORING REQUIREMENTS	
		Measurement Frequency	Sample Type
Flow, MGD (Influent)	Monitor & Report, Each Pond	Monthly	Flow Meter
Leak Detection System (between primary & secondary liners), gallons of liquid accumulated in sump	Monitor & Report, Each Pond	Twice/Month	Discrete – Field Measurement
Pond Water Level, feet	Monitor & Report, Each Pond	Twice/Month	Discrete – Field Measurement
Storage Volume, gallons	GW-11: 70,000,000 AP-5: 1,817,000	Twice/Month	Calculation
Discharge to FBR, gallons	Monitor & Report	Twice/Month	Flow Meter
Water Balance, gallons	Monitor & Report	Monthly	Calculation

FBR: Fluidized Bed Reactor

I.A.2. **Schedule of Compliance**: The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications, which the Administrator may make in approving the schedule of compliance.

a. The Permittee shall achieve compliance with the effluent limitations upon issuance of the permit.

b. **By October 10, 2011,** the Permittee shall submit a revised Operations and Maintenance (O&M) Manual for NEV2001515. The revised O&M manual shall include sections on: the leak detection system, pond/liner inspections, calculating storage volumes and monthly water balances, sludge management, and both a narrative and flow diagram of all input/output streams for the holding ponds operation.

I.A.3. The Permittee shall remit an annual review and services fee in accordance with NAC 445A.232 starting **July 1, 2011** and every year thereafter until the permit is terminated.

I.A.4. There shall be no objectionable odors emitted from the holding ponds.

I.A.5. AP-5 and GW-11 shall be operated as holding ponds for the Perchlorate Remediation Process. The Permittee shall also maintain and comply with conditions of NPDES Permit No. NV0023060, which addresses the disposal of any effluent discharged from the Perchlorate Treatment System to the Las Vegas Wash (LVW). The current Perchlorate Treatment System is comprised of a two stage Fluidized Bed Reactor (FBR) biological treatment system. Prior to, and as part of, the FBR Treatment System, extracted groundwater and other water is treated for chromium, nitrate, chlorate, perchlorate, and other contaminants present in the influent water. The remediation process uses several biological reactors arranged in series to allow for the reduction of nitrate, chlorate, and perchlorate. Chromium is reduced and/or removed from the influent water through several methods including: reduction and precipitation by electrolytic methods and through the introduction of ferrous sulfate. The majority of this treatment occurs on-site at the BMI Complex. The addition of ferrous sulfate also occurs at the Athens Road Lift Station. The remediated water is then discharged to the LVW. The effluent discharge to the LVW is permitted under NPDES Permit No. NV0023060.

Pond GW-11 serves as a temporary storage pond to hold extracted groundwater and other water when the Perchlorate Treatment System is off-line for maintenance or repairs; or as needed to allow for proper operation of the Perchlorate Treatment System, well fields, and water collection systems. Other water that can be stored includes: (1) collected surface water; (2) off-specification effluent from the Perchlorate Treatment System; (3) treated water from the on-site Chromium Treatment System; and (4) residual water from the prior chlorate/perchlorate production process. Under Permit NEV2001515, no direct discharge of water is allowed from Pond AP-5 or GW-11, except to the Perchlorate Treatment System. As indicated above, all effluent limits for the treated water have been addressed in NPDES Permit No. NV0023060.

I.A.6. There shall be no discharge from the holding ponds except as authorized by NPDES Permit No. NV0023060.

I.A.7. The holding pond area(s) shall be fenced and posted.

I.A.8. A minimum freeboard of 3.0 feet shall be maintained at all times in ponds greater than one acre in area. A minimum of 2.0 feet of freeboard shall be maintained in all ponds less than one acre in area.

I.A.9. All solid, toxic, or hazardous waste shall be properly handled and disposed of pursuant to applicable laws and regulations. Any sludge generated during this operation shall be characterized and disposed of in accordance with local, State, and Federal regulations.

I.A.10. The holding pond shall be constructed in conformance with plans approved by the Division. The plans must be approved by the Division prior to the start of construction. All changes to the approved plans must be approved by the Division.

I.A.11. The holding pond shall be operated in accordance with the O&M Manual, which must be approved by the Division.

I.A.12. The holding pond liners (primary and secondary) shall remain free of leaks and defects. The general condition of the exposed (primary) liner shall be inspected and recorded in an operations logbook on a monthly basis.

I.A.13. There shall be no discharge of floating solids or visible foam into the holding pond in other than trace amounts.

I.A.14. The Discharge Monitoring Reports (DMRs) must be signed by the facility's highest-ranking officer. The first DMR submitted under this permit must include the written designation of the officer (required by Part III.A.2) as the authorized representative to sign the DMRs. If the officer in responsible charge changes, a new designation letter must be submitted.

I.A.15. The Permittee shall inspect the site a minimum of twice per month. The liquid level depth shall be monitored with a staff gauge measurement or other appropriate recording device. An operations logbook, including the name of the inspector (employee), date, time, and general condition of the holding pond facility must be kept and maintained on the site premises.

I.A.16. The Permittee shall submit to this office labeled and dated photograph(s) of the holding pond, annually, as part of the 4th quarter DMR.

I.A.17. Closure of all inactive holding ponds located at this facility shall be addressed in accordance with requirements prescribed by the Nevada Division of Environmental Protection, Bureau of Corrective Actions.

I.A.18. All past and existing groundwater and soil remediation activities at this site shall be addressed in accordance with requirements prescribed by the Nevada Division of Environmental Protection, Bureau of Corrective Actions.

I.B. MONITORING AND REPORTING

I.B.1. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. Analyses shall be performed by a State of Nevada certified laboratory. Results from this laboratory must accompany the Discharge Monitoring Report.

I.B.2. **Reporting**

a. **Annual Report:** The fourth quarter report shall contain a plot, of monitoring parameter (y-axis) versus date (x-axis) for each quarterly monitoring parameter. The plot shall include data from the preceding five years, if available. Any data point from the current year that is greater than the limits in Part I.A.1 must be explained by a narrative. The Permittee shall submit to this office labeled and dated photograph(s) of the holding pond, annually, as part of the 4th quarter

DMR, as required in Part I.A.16.

b. **Quarterly Reporting**: Monitoring results obtained during the previous three (3) months shall be summarized for each month and reported on a Discharge Monitoring Report (DMR) Form received in this office no later than the 28th day of the month following the completed reporting period. The first report is due on **October 28, 2011**. An original signed copy of these, and all other reports required herein, shall be submitted to the State at the following address:

Division of Environmental Protection
Bureau of Water Pollution Control
ATTN: Compliance Coordinator
901 S. Stewart Street, Suite 4001
Carson City, Nevada 89701

I.B.3. **Definitions**

a. The "30-day average discharge" means the total discharge during a month divided by the number of samples in the period that the facility was discharging. Where less than daily sampling is required by this permit, the 30-day average discharge shall be determined by the summation of all the measured discharges divided by the number of samples during the period when the measurements were made.

b. The "daily maximum" is the highest measurement during the monitoring period.

c. The "30-day average concentration", other than for fecal coliform bacteria, means the arithmetic mean of measurements made during a month. The "30-day average concentration" for fecal coliform bacteria means the geometric mean of measurements made during a month. The geometric mean is the "n^{th}" root of the product of "n" numbers. Geometric mean calculations where there are non-detect results for fecal coliform shall use one-half the detection limit as the value for the non-detect results.

d. A "discrete" sample means any individual sample collected in less than 15 minutes.

I.B.4. **Test Procedures**: Analyses shall be conducted by a "certified laboratory" using an "approved method of testing", as defined in NAC 445A.0564 and NAC 445A.0562, respectively.

I.B.5. **Reporting Limits:** Unless otherwise allowed by the Division, the approved method of testing selected for analyses shall have a reporting limit which is:

a. Half or less of the discharge limit; or, if there is no limit,

b. Half or less of the applicable water quality criteria; or, if there is no limit or criteria,

c. The lowest reasonably obtainable using an approved test method.

I.B.6. **Recording the Results**: For each measurement or sample taken pursuant to the requirements of this permit, the Permittee shall record the following information:

a. The exact place, date, and time of sampling;

b. The dates the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical techniques or methods used; and

e. The results of all required analyses, including reporting limits.

I.B.7. **Additional Monitoring by Permittee**: If the Permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form. Such increased frequency shall also be indicated.

I.B.8. **Records Retention**: All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation, shall be retained for a minimum of three (3) years, or longer if required by the Administrator.

I.B.9. **Modification of Monitoring Frequency and Sample Type**: After considering monitoring data, stream flow, discharge flow and receiving water conditions, the Division may, for just cause, modify the monitoring frequency and/or sample type by issuing an order to the Permittee.

PART II

II.A. MANAGEMENT REQUIREMENTS

II.A.1. **Change in Discharge**: All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, or treatment modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Any changes to the permitted treatment facility must comply with Nevada Administrative Code NAC 445A.283 to 445A.285. Pursuant to NAC 445A.263, the permit may be modified to specify and limit any pollutants not previously limited.

II.A.2. **Facilities Operation**: The Permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities, collection systems

or pump stations installed or used by the Permittee to achieve compliance with the terms and conditions of this permit.

II.A.3. **Adverse Impact**: The Permittee shall take all reasonable steps to minimize any adverse impact to receiving waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

II.A.4. **Noncompliance, Unauthorized Discharge, Bypassing and Upset**

a. Any diversion, bypass, spill, overflow or discharge of treated or untreated wastewater from wastewater treatment or conveyance facilities under the control of the Permittee is prohibited except as authorized by this permit. In the event the Permittee has knowledge that a diversion, bypass, spill, overflow or discharge not authorized by this permit is probable, the Permittee shall notify the Division immediately.

b. The Permittee shall notify the Division within twenty-four (24) hours of any diversion, bypass, spill, upset, overflow or release of treated or untreated discharge other than that which is authorized by the permit. A written report shall be submitted to the Administrator within five (5) days of diversion, bypass, spill, overflow, upset or discharge, detailing the entire incident including:

i. Time and date of discharge;

ii. Exact location and estimated amount of discharge;

iii. Flow path and any bodies of water which the discharge reached;

iv. The specific cause of the discharge; and

v. The preventive and/or corrective actions taken.

c. The following shall be included as information which must be reported within 24 hours: any unanticipated bypass which exceeds any effluent limitation in the permit; any upset which exceeds any effluent limitation in the permit; and violation of a limitation for any toxic pollutant or any pollutant identified as the method to control a toxic pollutant.

d. The Permittee shall report all instances of noncompliance not reported under Part II.A.4.b at the time monitoring reports are submitted. The reports shall contain the information listed in Part II.A.4.b.

e. An "upset" means an incident in which there is unintentional and temporary noncompliance with the permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

f. In selecting the appropriate enforcement option, the Division shall consider whether or not the noncompliance was the result of an upset.

g. The burden of proof is on the Permittee to establish that an upset occurred.

In order to establish that an upset occurred, the Permittee must provide, in addition to the information required under paragraph II.A.4.b above, properly signed contemporaneous logs or other documentary evidence that:

i. The facility was at the time being properly operated as required in paragraph II.A.2. above; and

ii. All reasonable steps were taken to minimize adverse impacts as required by paragraph II.A.3 above.

II.A.5. **Removed Substances**: Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of waste waters shall be disposed of in a manner such as to prevent any pollution from such materials from entering any navigable waters.

II.A.6. **Safeguards to Electric Power Failure**: In order to maintain compliance with the effluent limitations and prohibitions of this permit the Permittee shall either:

a. provide at the time of discharge an alternative power source sufficient to operate the wastewater control facilities; or

b. halt or reduce all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

II.B. RESPONSIBILITIES

II.B.1. **Right of Entry and Inspection :** The Permittee shall allow the Administrator and/or his authorized representatives, upon the presentation of credentials, to:

a. Enter, at reasonable times, upon the Permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit;

b. Have access to and copy any records required to be kept under the terms and conditions of this permit;

c. Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations required in this permit; and

d. Perform any necessary sampling or monitoring to determine compliance with this permit at any location for any parameter.

II.B.2. **Transfer of Ownership or Control**: In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the Permittee shall notify the

succeeding owner or controller of the existence of this permit, by letter, a copy of which shall be forwarded to the Administrator. Division approval is required for all transfer of permits.

II.B.3. **Availability of Reports**: Except for data determined to be confidential under NRS 445A.665, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of the Division. Effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in NRS 445A.710.

II.B.4. **Furnishing False Information and Tampering with Monitoring Devices**: Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained by the provisions of NRS 445A.300 to 445.730, inclusive, or by any permit, rule, regulation or order issued pursuant thereto, or who falsifies, tampers with or knowingly renders inaccurate any monitoring device or method required to be maintained under the provisions of NRS 445A.300 to 445A.730, inclusive, or by any permit, rule, regulation or order issued pursuant thereto, is guilty of a gross misdemeanor and shall be punished by a fine of not more than $10,000 or by imprisonment. This penalty is in addition to any other penalties, civil or criminal, provided pursuant to NRS 445A.300 to 445A.730, inclusive.

II.B.5. **Penalty for Violation of Permit Conditions**: Nevada Revised Statutes NRS 445A.675 provides that any person who violates a permit condition is subject to administrative and judicial sanctions as outlined in NRS 445A.690 through 445A.705.

II.B.6. **Permit Modification, Suspension or Revocation**: After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

II.B.7. **Toxic Pollutants**: Notwithstanding Part II.B.6. above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under NAC 445A for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the Permittee so notified.

II.B.8. **Liability**: Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable Federal, State or local laws, regulations, or ordinances.

II.B.9. **Property Rights**: The issuance of this permit does not convey any property rights, in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

II.B.10. **Severability**: The provisions of this permit are severable, and if any provision of this permit, or the application of any provisions of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

PART III

III.A. OTHER REQUIREMENTS

III.A.1. **Reapplication**: If the Permittee desires to continue to discharge, he shall reapply not later than 180 days before this permit expires on the application forms then in use. The application shall be accompanied by the renewal application fee required by NAC 445A.232.

III.A.2. **Signatures Required on Application and Reporting Forms:**

a. Application and reporting forms submitted to the department must be signed by one of the following:

i. A principal executive officer of the corporation (of at least the level of vice president) or his authorized representative who is responsible for the overall operation of the facility from which the discharge described in the application or reporting form originates; or

ii. A general partner of the partnership; or

iii. The proprietor of the sole proprietorship; or

iv. A principal executive officer, ranking elected official or other authorized employee of the municipal, state or other public facility.

b. Each application must contain a certification by the person signing the application that he is familiar with the information provided, that to the best of his knowledge and belief the information is complete and accurate and that he has the authority to sign and execute the application.

c. **Changes to Authorization**. If an authorization under paragraph b. of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph b. of this section must be submitted to the Division prior to or together with any reports, information, or applications to be signed by an authorized representative.

III.A.3. **Holding Pond Conditions**: If any wastewater from the Permittee facility or groundwater or surface water, collected for contaminant remediation purposes, is placed in ponds, such ponds shall be located and constructed so as to:

a. Contain with no discharge the once-in-twenty-five year 24 hour storm at said location;

b. Withstand with no discharge the once-in-one-hundred year flood of said location; and

c. Prevent escape of wastewater by leakage other than as authorized by this permit.