



Field Office: 21459 County Road 5 Rifle, Colorado 81650  
Division Office: PO Box 6501 Englewood, Colorado 80155

March 16, 2015

Love Ranch Centralized E&P Waste Annual Report  
Piceance Creek Facility  
Facility ID: 149012

Mr. Alex Fischer  
COGCC Environmental Supervisor – Western Colorado  
1120 Lincoln Street, Suite 801  
Denver, Colorado 80203

Dear Mr. Fischer,

Please find enclosed the Annual Report for the Love Ranch Centralized E&P Waste Facility #149012.

If you should have any concerns or questions regarding the contents related to this submittal please contact me directly at (970) 675-4122 or email at [Jessica\\_Dooling@xtoenergy.com](mailto:Jessica_Dooling@xtoenergy.com). Thanks again for your assistance.

Respectfully,

A handwritten signature in blue ink, appearing to read 'Jessica Dooling'.

Jessica Dooling  
Piceance EH&S Supervisor

CC: Stan Spencer  
Kyle Littrell



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Centralized E&P Waste Management Facility

Love Ranch Evaporation Pond

COGCC Facility No. 149012

Rio Blanco County, Colorado

Reporting Year: 2014

## 1. Introduction

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Love Ranch Centralized E&P Waste site is located in Rio Blanco County, approximately 45 miles north/northwest of Rifle, Colorado. This site includes a salt water disposal (SWD) pond and its associated pumping and storage facilities. The purpose of the pond is to retain produced water from natural gas operations and production.

Location: SWNW Section 9, Township 2 South, Range 97 West

Latitude/Longitude: 39.892642 / -108.296246



## 2. 2014 Summary of Activities:

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The facility was utilized for rotating storage of ~393,000 bbls of produced water from January 1, 2014 through 11/12/2014. Current produced water storage is ~263,526 bbls. During this period the reservoir was utilized for storage of excess produced water above and beyond the capacity of the Produced Water Distribution and Disposal System, which resulted in a total inflow of ~217,979 bbls, an outflow of ~133,576 bbls and ~354,387 bbls for recycled use in operational needs. Approximately 3,352,131 bbls were injected to disposal. (See Sec.6 below for actual volumes logged by operations)

A produced water release occurred at the facility on March 3, 2014 (Form 19 DOC# 2147915). The incident involved the release of ~42 bbls of produced water onto the access road to the pond from a faulty camlock connection while transferring produced water to the storage pond. All standing water was removed, remediation of impacts and Table 910-1 confirmation sampling was completed. COGCC Notice of Completion was issued for Form 19 DOC# 2147915 on 4/23/2014.

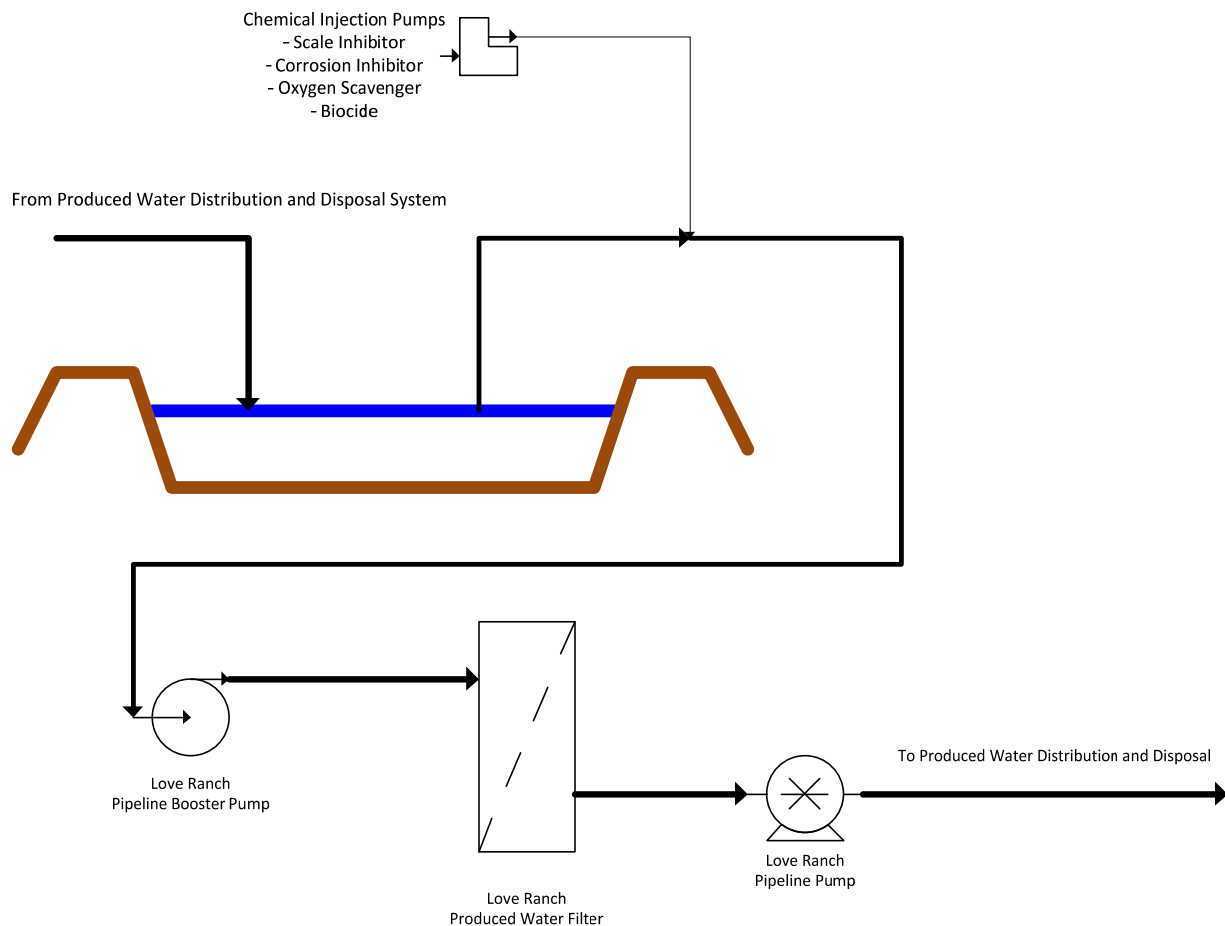
### 3. Facility Flow Process:

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The purpose of the Love Ranch Centralized E&P Waste site is to store produced water in the event disposal/alternative usage is not available. A pipeline pump returns produced water from Love Ranch Pond back to the Produced Water Distribution and Disposal (PWDD) System. Water accumulates in the pond on demand for storage/surge or as a pressure relief for the PWDD system specifically when insufficient users (well drilling, completions and disposal injection wells) exist in comparison to production. Conversely, when users exceed production, produced water that has accumulated in the pond can be pumped back to the pipeline at a low rate, 2000 BBL/day, for use or disposal. All produced water pumped from Love Ranch pond is filtered and treated with oxygen scavenger, biocide, corrosion inhibitor, and scale inhibitor to protect the pipeline, downstream equipment and wells from corrosion and deposits. The Love Ranch Pond can store up to 393,000 BBL of produced water.

### 4. Facility Flow Schematic:

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## 5. Monitoring Process:

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Surface monuments are monitored annually. The testing frequency will change to every two years if there is no significant movement ( $>0.1'$  in lateral and  $>0.3'$  in vertical) detected in the first five years. The monument movement will be plotted and interpreted after every inspection. Due to the nature of the soil, the vertical displacement is anticipated to follow an asymptotic decline. Trained survey personnel will monitor the monuments using precise survey equipment.

Piezometers are monitored quarterly. If water levels are detected in the piezometers, samples will be taken to determine water quality.

Seepage through the dam will be collected in the toe drain system and piped to a manhole. Liquid levels in the manhole will be monitored monthly for normal operations. When the pond is more than 50% full by height, liquid levels in the manhole will be measured weekly. The seepage rate through the toe drain will be measured quarterly by capturing the liquid flowing into the manhole and measuring the volume vs. time.

The pond level readings of the pond shall be recorded at the time of all readings.

All dam instrumentation (including piezometers, drains, reservoir gage, and survey monuments) shall be monitored immediately following an earthquake where ground motions are felt in the area or the owner is informed of seismic activity in the vicinity. Results of the inspection reports and instrumentation readings should be immediately sent to the State Engineer.

All measurements and descriptive details that are required to monitor the performance of the dam will be recorded. The information will be grouped into the following three categories:

**LOCATION** — the location of any questionable area or condition will be accurately described to allow that area or condition to be evaluated. The location along the length of the dam, as well as height above the toe or distance down from the dam's crest, will be established and recorded.

**EXTENT OF AREA**—the length, width, and depth or height of any area where a suspected problem is found shall be recorded.

**DESCRIPTIVE DETAIL**—a brief yet detailed description of a condition or observation will be given.

Some description items are:

- Quantity of Toe Drain Intercept Outflow
- Quantity of Seepage from Point and Area Sources
- Length, Displacement, and Depth of Cracks
- Is Area Moist, Wet, or Saturated
- Is Protective Cover Adequate
- Is Surface Drainage Adequate
- Sloughing / Erosion of Slopes
- Settlement / Depression Location, Depth, Length, and Width
- Do Slopes appear too steep
- Does Deterioration appear to be rapid or slow
- Have Conditions Changed

## **Monitoring Process continued:**

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The above listing of inspection findings that must be recorded is not meant to be a complete list but is to serve as a guide. If an inspector thinks a condition has changed since the last inspection it will be documented and the State Engineer will be contacted. Photos will also be taken of the area, carefully noting the date and writing a description of the scene shown on the photo.

Dam Inspections will be conducted quarterly. It is the responsibility of those obtaining the data to know if readings are within normal historical and/or design operating parameters. Emergency conditions should be assumed if readings exceed normal historical and/or design operating parameters and immediate notification of the State Engineer is required.

## **6. Waste Tracking:**

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2014 Volumes

Location	Produced Water Inflow (bbl.)	Produced Water Outflow (bbl.)	
		Injected/Disposal	Recycled
Love Ranch Pond	217,979	3,352,131	354,387

## **7. Monitoring Reports:**

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- Annual Dam Report, State Engineers Office (Attachment A)

## **8. Sampling Reports:**

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Samples were collected for 2014. The facility is currently being used for storage of ~263,526 bbls of produced water. Please see #2 above.

**Table 1**  
**Love Ranch Evaporation Pond Lab Summary**

Last Update

3/10/2015

Analytical Parameter	E&P Facility	COGCC	E & P Facility		COGCC
(with units)	Solids	Soils Table 910-1 Concentration Levels	Produced Water Inlet	Produced Water Outlet	Ground Water Table 910-1 Concentration Levels
<b>Accutest Job #</b>	<b>D62707 (9/25/14)</b>	-	<b>D62724 (9/25/14)</b>		-
Sample type (Composite/Discrete)	<b>C</b>	-	<b>D</b>	<b>D</b>	-
TPH (GRO) (mg/Kg)	3560	-	295	20.9	-
TPH (DRO) (mg/Kg)	20500	-	110	24.5	-
TPH (GRO + DRO) (mg/Kg)	24060	500	405	45.4	-
Benzene (mg/Kg)	12.200	0.170	15.100	0.265	5
Toluene (mg/Kg)	94.300	85	35.800	0.961	560 to 1000
Ethylbenzene (mg/Kg)	20.100	100	2.040	0.0768	700
Xylenes (total) (mg/Kg)	370.000	175	33.800	1.540	1400 to 10000
Acenaphthene (mg/Kg)	ND	1000	-	-	-
Anthracene (mg/Kg)	ND	1000	-	-	-
Benzo(A)anthracene (mg/Kg)	ND	0.22	-	-	-
Benzo(A)pyrene (mg/Kg)	ND	0.022	-	-	-
Benzo(B)fluoranthene (mg/Kg)	ND	0.22	-	-	-
Benzo(K)fluoranthene (mg/Kg)	ND	2.2	-	-	-
Chrysene (mg/Kg)	0.827	22	-	-	-
Dibenzo(A,H)anthracene (mg/Kg)	ND	0.022	-	-	-
Fluoranthene (mg/Kg)	0.531	1000	-	-	-
Fluorene (mg/Kg)	8.790	1000	-	-	-
Indeno(1,2,3,C,D)pyrene (mg/Kg)	ND	0.22	-	-	-
Naphthalene (mg/Kg)	11.800	23	-	-	-
Pyrene (mg/Kg)	0.540	1000	-	-	-
Electrical Conductivity (mmhos/cm)	5.110	4	-	-	-
Sodium Adsorption Ratio (SAR)	68.4	12	-	-	-
pH	8.34	6-9	-	-	-
Arsenic (mg/kg)	48.4	0.39	-	-	-
Barium (mg/kg)	2280	15000	-	-	-
Cadmium (mg/kg)	<16	70	-	-	-
Chromium (III) (mg/Kg)	372	120000	-	-	-
Chromium (VI) (mg/Kg)	<1.0	23	-	-	-
Copper (mg/kg)	340	3100	-	-	-
Lead (inorganic) (mg/kg)	165	400	-	-	-
Mercury (mg/kg)	8.3	23	-	-	-
Nickel (mg/kg)	315	1600	-	-	-
Selenium (mg/kg)	<79	390	-	-	-
Silver (mg/kg)	<95	390	-	-	-
Zinc (mg/kg)	<47	23000	-	-	-
% Solids	60.8	-	N/A	N/A	-

Notes:

1) ND= not detectable to the laboratory detection limit.

2) "-" indicates no analysis or COGCC requirements

## ATTACHMENT A



March 11, 2015

XTO Energy PCU Operations  
21459 County Road 5  
Rifle, CO 81650

Attention: Jessica Dooling

Subject: Love Ranch Evaporation Pond (SWD Pond)  
2014 Annual Report  
Piceance Development Project  
KRW Project Number: 0606-09

Dear Jessica,

The following is a summary of the observations made during this year's survey and monitoring events:

**Settlement Monument Survey**

1. The settlement monuments were surveyed on October 21, 2014 using a Leica Series 1200 Differential GPS unit. Please see attached Figure 1 for a summary of settlement monitoring data to date, and to attachment 1 for the location of the settlement monuments.
2. The lateral and vertical movements reported represent the total movement of the monuments since the embankment was completed and monitoring began in July 2005. No significant changes were observed in these monuments between this survey and previously conducted survey on October 17, 2013.
3. In general, measurements continue to indicate a slight horizontal and vertical shift of monuments along the northern and eastern embankments. The horizontal shift is in an easterly/northeasterly direction and is noted in monuments SMK-1 (Sta. 8+00); SMK-2 (Sta. 9+00); SMK-3 (Sta. 10+00); SMK-4 (Sta. 10+50); SMK-5 (Sta. 11+50); SMK-6 (Sta. 12+00); SMK-7 (Sta. 13+00); SMK-8 (Sta. 14+00), SMK-9 (Sta. 15+00), and SMK-10 (Sta. 16+00). No significant movement was measured in SMK-11 (Sta. 17+50).
4. In monuments located on the east side of the pond (SMK-1 thru SMK-8) in areas of the deepest embankment fill, the total measured shift ranges between 0.01 feet in SMK-1 to 0.25 feet in SMK-7 (a maximum of 3 inches) in Northing (movement towards the north); and ranges between 0.24 feet in SMK-6 to 0.43 feet in SMK-1 (a maximum of 5.2 inches) in Easting (movement towards the east). The vertical change (settlement) in these same monuments ranged from 0.00 feet in SMK-5 to 0.19 feet in SMK-8 (a maximum of 2.3 inches).
5. In monuments located on the north side of the pond (SMK-9 thru SMK-11) the total measured shift ranges between 0.01 feet in SMK-11 to 0.11 feet in SMK-10 (a maximum of 1.3 inches) in Northing; and ranges between 0.00 feet in SMK-10 to 0.35 feet in SMK-9 (a maximum of

4.2 inches) in Easting. The vertical change in these same monuments ranged from 0.02 feet in SMK-10 to +0.33 feet in SMK-9 (a maximum of 4.0 inches).

6. The only monument with horizontal movement in excess of 0.40 feet is monument SMK-1 (Sta. 8+00), located at the southernmost corner of the embankment. Monument SMK-1 has a total movement to date of 0.01 feet (<0.25 inches) to the north and of 0.43 feet (5.2 inches) to the east. Approximately 30% of the total easterly movement (0.13 feet) has occurred between December 2012 and the October 2014 survey event. It is not clear what has led to the increased lateral movement in this monument during this time period. Total lateral movement in this monument is not a concern at this point, but we will continue to closely observe during subsequent monitoring events. The total vertical change in this monument is a slight rise of 0.05 feet (0.6 inches).
7. The only monument with vertical movement in excess of 0.30 feet is monument SMK-9, located in the northeast corner of the embankment. Total vertical movement to date in SMK-9 is 0.33 feet (approx. 4 inches). This monument was disturbed between the initial construction survey (7/25/05) and the first monitoring survey (8/31/05). There has been no significant lateral or vertical movement in this monument in subsequent surveys.

### **Piezometer Monitoring**

1. Current monitoring in the piezometers indicates a trace (<0.03 ft) of water in the bottom of the 1-inch PVC in PZ-4, PZ-5, PZ-6 and PZ-9. Piezometers PZ-1; PZ-2; PZ-3; PZ-7 and PZ-8 showed no presence of water. The only measurable amount of water was found in PZ-10, located along the cut slope southwest of the pond, with 0.06 feet (< 1.0 inches). During the 2014 monthly monitoring events of the piezometers, only PZ-10 had any measurable water ranging from 0.06 feet to a maximum of 0.09 feet (<1.1 inches). See the attached Figures 2 and 3 for the Piezometer Inspection Report Form and to Attachment 1 for the location of these piezometers.
2. It is our suspect that the water encountered during the 2014 monitoring events in the site piezometers is attributable to either condensate and/or stormwater infiltration, and not from releases from the pond.
3. We will continue to monitor the piezometers on a quarterly basis. Any measurable changes in the piezometer water levels will be noted. If significant water (> 2 inches) is encountered in any piezometer, samples will be collected to determine water quality per the instrumentation and monitoring plan for the site.
4. The 2014 fourth quarter piezometer measurements scheduled for December 2014 did not occur until January 20, 2015. There were no significant changes noted between the 2014 third quarter measurements (September 29, 104) and the January 2015 measurement. The quarterly monitoring of the piezometers will correctly resume in March of 2015.

### **Seepage Detection/Toe Drain Monitoring**

1. The Toe Drain along the east side of the Evaporation Pond continues to have some minor silt/gravel and approximately 0.25 feet (3 inches) of clean water in the bottom of the monitoring manhole.

2. The water present in the bottom of the monitoring manhole is most likely the result of surface runoff and/or groundwater.
3. There has been no observable water flowing from the pipes entering the manhole during any of the 2014 monthly monitoring events.

### **Staff Gage Monitoring**

1. The pond level during the December inspection indicated approximately 13 feet of water (elevation = 6161 feet).
2. Water levels in the pond during 2014 ranged from 8 feet (elevation = 6156 feet) to 15 ft (elevation = 6163 feet).
3. The maximum gage height for the pond is 17 feet. The pond was half full or more in 2014.

### **Miscellaneous**

1. Rodent holes and some minor rills have been addressed during 2014.
2. No significant erosion rills were noted during the most recent inspections. Rills as well as rodent holes that develop will be scheduled for repair on an ongoing basis – typically in the spring and fall of each year.
3. Refer to the subject Dam Inspection Reports (Figures 3 and 4) for additional information.

If you have any questions regarding this annual report please contact Joe Hess at (303) 239-9011.

Warm Regards,

A handwritten signature in blue ink, appearing to read "Joe Hess", is displayed on a light blue background.

Joe Hess, P.E.  
Principal Engineer  
KRW Consulting, Inc.


### **Figures and Attachments:**


- Figure 1 Settlement Monument Inspection Report Form
- Figure 2 Piezometer Inspection Report Form (PZ-1 thru PZ-5)
- Figure 3 Piezometer Inspection Report Form (PZ-6 thru PZ-10)
- Attachment 1 – ExxonMobil Site Map with Piezometer and Settlement Monument Locations
- Attachment 2 – Quarterly Dam Inspection Reports (March, June, September, and December 2014)


Reservoir Name:				Love Ranch Evaporation Pond																																
Company:				ExxonMobil Corp.																																
Water Division:				6			Water District:				43																									
Dam I.D.				C-1881																																
Date	Observer	Reservoir Level		SMK 1 (8+00)			SMK 2 (9+00)			SMK 3 (10+00)			SMK 4 (10+50)			SMK 5 (11+50)			SMK 6 (12+00)			SMK 7 (13+00)			SMK 8 (14+00)			SMK 9 (15+00)			SMK 10 (16+00)			SMK 11 (17+00)		
		Gage Height ft	Elevation ft	N	E	Elev ft	N	E	Elev ft	N	E	Elev ft	N	E	Elev ft	N	E	Elev ft	N	E	Elev ft	N	E	Elev	N	E	Elev ft	N	E	Elev	N	E	Elev ft			
7/25/2005	KRW	0	6148.0	214802.54	1216202.69	6169.53	214876.25	1216269.79	6169.11	214951.56	1216335.72	6169.22	214988.75	1216369.43	6169.25	215063.91	1216437.92	6171.16	215125.63	1216440.82	6172.56	215225.84	1216441.92	6172.30	215324.09	1216435.50	6172.31	215420.90	1216411.51	6172.26	215425.90	1216310.04	6172.01	215434.08	1216161.89	6170.16
Initial Reading																																				
8/31/2005	KRW	4.0	6152.0	214802.57	1216202.70	6169.53	214876.30	1216269.81	6169.11	214951.59	1216335.71	6169.22	214988.79	1216369.45	6169.25	215063.94	1216437.95	6171.16	215125.65	1216440.86	6172.56	215225.87	1216441.95	6172.27	215324.16	1216435.53	6172.28	215420.79	1216411.63	6172.72	215425.98	1216310.00	6172.02	215434.08	1216161.87	6170.16
Delta (Initial - Current)				(0.03)	(0.01)	0.00	(0.05)	(0.02)	(0.00)	(0.03)	0.01	0.00	(0.04)	(0.02)	(0.00)	(0.03)	(0.03)	0.00	(0.02)	(0.04)	0.00	(0.03)	(0.03)	0.03	(0.07)	(0.03)	0.03	0.11	(0.12)	(0.46)	(0.08)	0.04	(0.01)	0.00	0.02	0.00
10/13/2005	KRW	8.5	6156.5	214802.56	1216202.69	6169.52	214876.25	1216269.79	6169.09	214951.56	1216335.73	6169.19	214988.75	1216369.43	6169.22	215063.91	1216437.92	6171.13	215125.66	1216440.85	6172.54	215225.86	1216441.93	6172.24	215324.10	1216435.53	6172.23	215420.69	1216411.68	6172.67	215425.92	1216310.00	6171.99	215434.07	1216161.88	6170.15
Delta (Initial - Current)				(0.02)	0.00	0.01	0.00	0.00	0.02	0.00	(0.01)	0.03	0.00	0.00	0.03	0.00	0.00	0.03	(0.03)	(0.03)	0.02	(0.02)	(0.01)	0.06	(0.01)	(0.03)	0.08	0.21	(0.17)	(0.41)	(0.02)	0.04	0.02	0.01	0.01	0.01
10/20/2005	KRW	9.5	6157.5	214802.57	1216202.70	6169.53	214876.30	1216269.81	6169.11	214951.59	1216335.71	6169.22	214988.79	1216369.45	6169.25	215063.94	1216437.95	6171.16	215125.65	1216440.86	6172.56	215225.87	1216441.95	6172.27	215324.16	1216435.53	6172.28	215420.79	1216411.63	6172.72	215425.98	1216310.00	6172.02	215434.08	1216161.87	6170.16
Delta (Initial - Current)				(0.03)	(0.01)	0.00	(0.05)	(0.02)	(0.00)	(0.03)	0.01	0.00	(0.04)	(0.02)	(0.00)	(0.03)	(0.03)	0.00	(0.02)	(0.04)	0.00	(0.03)	(0.03)	0.03	(0.07)	(0.03)	0.03	0.11	(0.12)	(0.46)	(0.08)	0.04	(0.01)	0.00	0.02	0.00
10/28/2005	KRW	10.5	6158.5	214802.54	1216202.73	6169.55	214876.25	1216269.82	6169.12	214951.57	1216335.72	6169.23	214988.74	1216369.43	6169.26	215063.90	1216437.93	6171.17	215125.64	1216440.84	6172.56	215225.86	1216441.96	6172.27	215324.10	1216435.54	6172.26	215420.71	1216411.69	6172.72	215425.92	1216310.02	6172.03	N/A	N/A	N/A
Delta (Initial - Current)				0.00	(0.04)	(0.02)	0.00	(0.03)	(0.01)	(0.01)	0.00	(0.01)	0.01	0.00	(0.01)	0.01	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	0.00	(0.02)	(0.04)	0.03	(0.01)	(0.04)	0.05	0.19	(0.18)	(0.46)	(0.02)	0.02	(0.02)		
11/4/2005	KRW	11.0	6159.0	214802.55	1216202.72	6169.54	214876.25	1216269.82	6169.10	214951.56	1216335.72	6169.22	214988.75	1216369.43	6169.25	215063.91	1216437.92	6171.17	215125.66	1216440.82	6172.56	215225.88	1216441.95	6172.26	215324.12	1216435.53	6172.25	215420.71	1216411.67	6172.71	215425.94	1216309.99	6172.02	N/A	N/A	N/A
Delta (Initial - Current)				(0.01)	(0.03)	(0.01)	0.00	(0.03)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	(0.00)	0.00	0.00	(0.01)	(0.03)	0.00	0.00	(0.04)	(0.03)	0.04	(0.03)	(0.03)	0.06	0.19	(0.16)	(0.45)	(0.04)	0.05	(0.01)		
11/9/2005	KRW	11.0	6159.0	214802.52	1216202.71	6169.54	214876.23	1216269.80	6169.11	214951.53	1216335.71	6169.23	214988.72	1216369.42	6169.26	215063.88	1216437.92	6171.16	215125.64	1216440.84	6172.57	215225.84	1216441.96	6172.27	215324.09	1216435.55	6172.27	215420.72	1216411.71	6172.72	215425.93	1216310.01	6172.02	N/A	N/A	N/A
Delta (Initial - Current)				0.02	(0.02)	(0.01)	0.02	(0.01)	(0.00)	0.03	0.01	(0.01)	0.03	0.01	(0.01)	0.03	0.00	0.00	(0.01)	(0.02)	(0.01)	0.00	(0.04)	0.03	0.00	(0.05)	0.04	0.18	(0.20)	(0.46)	(0.03)	0.03	(0.01)			
7/26/2006	KRW	9	6157.0	214802.52	1216202.70	6169.53	214876.22	1216269.83	6169.11	214951.53	1216335.73	6169.22	214988.77	1216369.46	6169.25	215063.94	1216437.95	6171.16	215125.67	1216440.84	6172.56	215225.87	1216441.96	6172.27	215324.14	1216435.59	6172.28	215420.77	1216411.71	6172.64	215425.93	1216310.00	6172.04	N/A	N/A	N/A
Delta (Initial - Current)				0.02	(0.01)	0.00	0.03	(0.04)	(0.00)	0.03	(0.01)	0.00	(0.02)	(0.03)	(0.00)	(0.03)	(0.03)	0.00	(0.04)	(0.02)	0.00	(0.03)	(0.04)	0.03	(0.05)	(0.09)	0.03	0.13	(0.20)	(0.38)	(0.03)	0.04	(0.03)			
12/8/2006	KRW	1.0	6149.0	214802.57	1216202.67	6169.52	214876.27	1216269.84	6169.10	214951.59	1216335.73	6169.21	214988.81	1216369.45	6169.25	215063.98	1216438.00	6171.15	215125.69	1216440.85	6172.54	215225.87	1216441.93	6172.21	215324.21	1216435.63	6172.19	215420.77	1216411.72	6172.64	215425.95	1216309.98	6172.02	N/A	N/A	N/A
Delta (Initial - Current)				(0.03)	0.02	0.01	(0.02)	(0.05)	0.01	(0.03)	(0.01)	0.01	(0.06)	(0.02)	(0.00)	(0.07)	(0.08)	0.01	(0.06)	(0.03)	0.02	(0.03)	(0.01)	0.09	(0.12)	(0.13)	0.12	0.13	(0.21)	(0.38)	(0.05)	0.06	(0.01)			
12/18/2007	KRW	0	6148.0	214802.55	1216202.80	6169.56	214876.26	1216269.88	6169.14	214951.59	1216335.80	6169.24	214988.745	1216369.48	6169.26	215063.94	1216438.00	6171.17	215125.676	1216440.879	6172.55	215225.93	1216442.01	6172.22	215324.16	1216435.65	6172.18	215420.80	1216411.77	6172.63	215425.95	1216310.00	6172.02	215434.07	1216161.88	6170.18
Delta (Initial - Current)				(0.01)	(0.10)	(0.02)	(0.01)	(0.09)	(0.03)	(0.03)	(0.08)	(0.02)	0.01	(0.05)	(0.01)	(0.03)	(0.08)	(0.01)	(0.05)	(0.06)	0.01	(0.09)	(0.09)	0.08	(0.07)	(0.15)	0.13	0.10	(0.26)	(0.38)	(0.05)	0.04	(0.01)	0.01	0.01	(0.02)
12/9/2008	KRW	0.5	6148.50	214802.51	1216202.76	6169.53	214876.24	1216269.84	6169.09	214951.55	1216335.77	6169.23	214988.73	1216369.50	6169.26	215063.92	1216438.01	6171.15	215125.716	1216440.907	6172.55	215225.93	1216442.04	6172.19	215324.17	1216435.68	6172.12	215420.80	1216411.81	6172.60	215425.93	1216310.03	6172.01	215434.07	1216161.88	6170.18
Delta (Initial - Current)				0.03	(0.07)	0.00	0.01	(0.05)	0.02	0.01	(0.05)	(0.01)	0.02	(0.07)	(0.01)	(0.01)	(0.09)	0.01	(0.09)	(0.09)	0.01	(0.09)	(0.12)	0.11	(0.08)	(0.18)	0.19	0.10	(0.30)	(0.34)	(0.03)	0.01	0.00	0.01	0.01	(0.02)
12/29/2009																																				


[illegible]


[illegible]


-  PZ-8


Piezometer
- 

Brass cap in concrete (dam monitoring survey monument)
- 

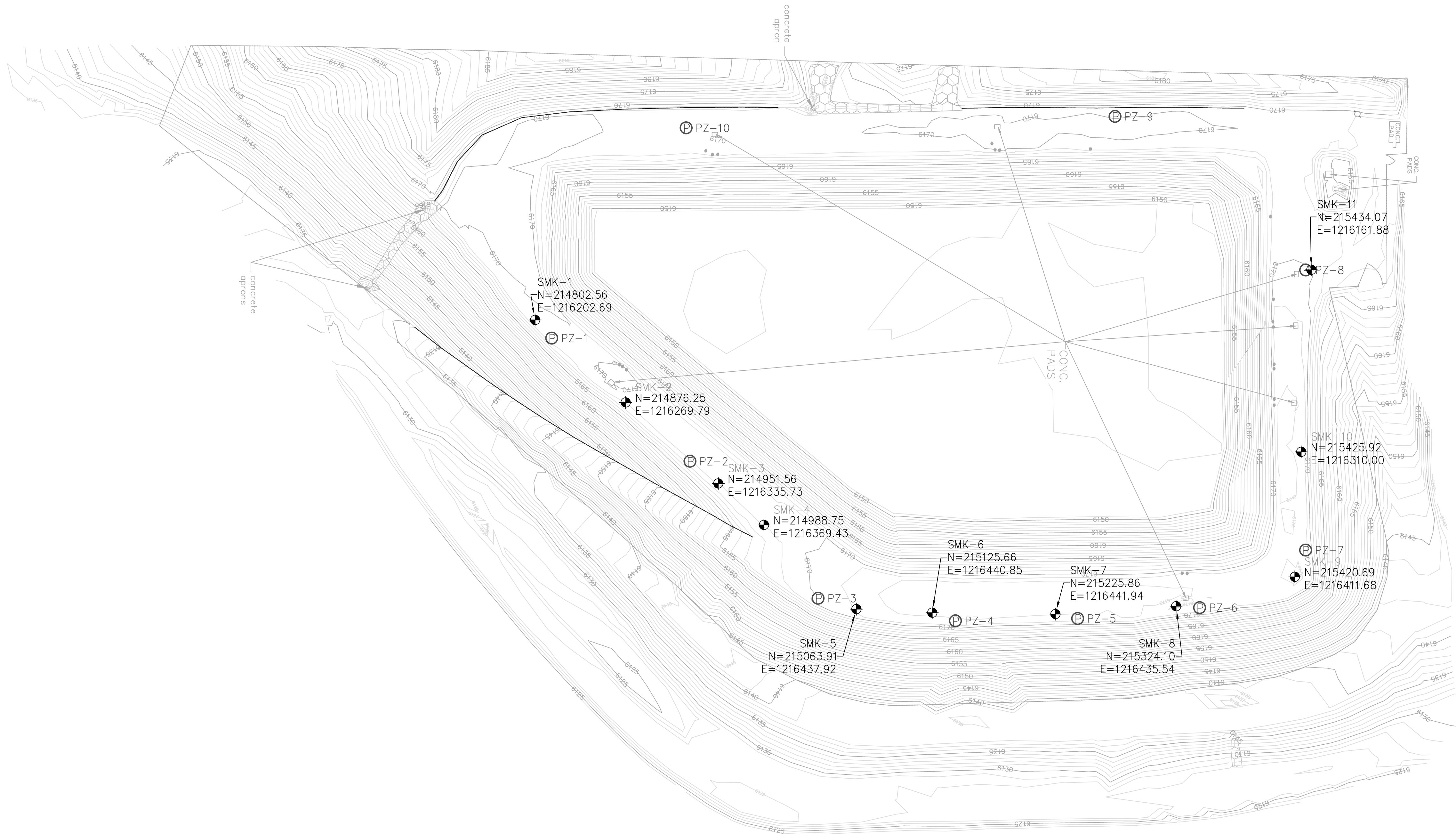
Bollard
- 

8' chain link fence
- 

1' as-constructed contour
- 

5' as-constructed contour
- 


Rip-rap




AS-CONSTRUCTED DRAWINGS BY:  
**KRW CONSULTING, INC.**  
8000 W. 14th AVENUE, SUITE 200  
LAKEWOOD, COLORADO 80214  
303-239-9011

NO.	DATE	REVISION	BY	CHK.	APPR.	MF.
0	10/21/04	ORIGINAL DRAWING				

NO.	DATE	REVISION	BY	CHK.	APPR.	MF.

CONTRACTOR	
	MUSTANG ENGINEERING, L.P. HOUSTON, TEXAS
JOB. NO.	VITAL RECORD NO.

			
SCALE	REVISION	YEAR	SIZE
1"=30'	C	2005	1

LOVE RANCH EVAPORATION POND SITE PLAN AS CONSTRUCTED PICEANCE CREEK					
PICEANCE CREEK FIELD			RIO BLANCO COUNTY, COLO.		
DIVISION	FIELD	FACILITY	CLASS	TYPE	SEQUENCE
CO	1022	330	00	C	220
					P



## DAM INSPECTION REPORT

Name of Dam: Love Ranch Evaporation Pond Date: March 25, 2014 Division: 6 Dam ID: C-1881

Type of (circle): EARTH FILL, ROCKFILL, CONCRETE, OTHER: Earth Fill

Estimate Actual Capacity: 34,193 yd<sup>3</sup> (21.2 acre-feet)

Estimate Surface Area: 127,292 ft.<sup>2</sup>

Estimate Height: 8 ft

Gauge Rod Reading: 8 ft. = elevation 6,156 ft.

Estimate Freeboard (Pond level to top of dam): 11 ft. to Elevation of 6167.00 at the top of Dam

Use: IRRIGATION, MUNICIPAL, OTHER: Salt Water Evaporation

DIRECTIONS: Mark an "X" in the Yes or No column and circle the word or phrase which applies.

	Yes	No
1. Are the roads to the dam adequate to allow ACCESS BY EMERGENCY EQUIPMENT and TRAVEL ACROSS THE DAM (i.e., TRUCKS, AMBULANCES)? SEE ADDITIONAL COMMENTS	X	
2. Is there DEBRIS, TREES, or BRUSH on the upstream slope that prevent seeing the entire surface of the slope?		X
3. Are there TREES or BRUSH on the CREST, or DOWNSTREAM SLOPE that prevent seeing the entire surface of the slope?		X
4. Are there CRACKS, SLIDES, SLUMPS, BOILS, SETTLEMENT or OTHER on the UPSTREAM SLOPE, CREST, or DOWNSTREAM SLOPE?		X
5. Are there RODENT HOLES or ERODED GULLIES on the UPSTREAM or DOWNSTREAM SLOPE?	X	
6. Is there FLOWING WATER or LARGE BOGGY SPOTS at the toe of the dam?		X
7. Are there FLOWS OF WATER or WET SPOTS above the toe of the dam?		X
9. Are there toe drains?	X	
10. Is the water from the TOE DRAINS or LEAKS found to be MUDDY or SANDY?		X
16. Is there evidence that the dam has been overtopped?		X
17. Is the reservoir usually full YEAR ROUND, OVER 1/2 OF YEAR, or LESS THAN 1/2 OF YEAR? <b>Less than 1/2 of year</b>	X	
18. Should this dam be promptly inspected by a field engineer from the State Engineer's offices?		X

Additional Comments:

There are ongoing maintenance activities noted on the access road (soil removal, stockpiles, etc.) – that would limit access to only a small portion of the site.

XTO plans on correcting erosion and rodent holes in the spring of 2014.

Inspected By: Dan Allen



## DAM INSPECTION REPORT

NAME OF DAM: Love Ranch Evaporation Pond    DATE: March 25, 2014  
DAM HEIGHT: 44 (ft)    MAX. RES. CAPACITY: 50.4 acre ft.  
MAXIMUM GAGE ROD: 17 (ft)    TODAY'S GAGE HEIGHT: 8 ft.

**NOTE:**

- a) Enter 1 below if: No problems found in this area, the whole area appears to be acceptable.  
b) Circle items of particular concern.

UPSTREAM SLOPE 1

CREST 1

DOWNSTREAM SLOPE Some minor erosion gullies & rodent holes were noted

SEEPAGE AREAS 1

OUTLET 1

SPILLWAY 1

HDPE LINER 1

REQUIRED MAINTENANCE OR ACTION: Will address minor erosion and rodent holes this spring – following snow melt.

INSPECTOR'S SIGNATURE: Dan Allen

## DAM INSPECTION REPORT

Name of Dam: Love Ranch Evaporation Pond Date: June 26, 2014 Division: 6 Dam ID: C-1881

Type of (circle): EARTH FILL, ROCKFILL, CONCRETE, OTHER: Earth Fill

Estimate Actual Capacity: 59,248 yd<sup>3</sup> (36.7 acre-feet)

Estimate Surface Area: 142,825 ft.<sup>2</sup>

Estimate Height: 13 ft

Gauge Rod Reading: 13 ft. = elevation 6,161 ft.

Estimate Freeboard (Pond level to top of dam): 6 ft. to Elevation of 6167.00 at the top of Dam

Use: IRRIGATION, MUNICIPAL, OTHER: Salt Water Evaporation

DIRECTIONS: Mark an "X" in the Yes or No column and circle the word or phrase which applies.

	Yes	No
1. Are the roads to the dam adequate to allow ACCESS BY EMERGENCY EQUIPMENT and TRAVEL ACROSS THE DAM (i.e., TRUCKS, AMBULANCES)? SEE ADDITIONAL COMMENTS	X	
2. Is there DEBRIS, TREES, or BRUSH on the upstream slope that prevent seeing the entire surface of the slope?		X
3. Are there TREES or BRUSH on the CREST, or DOWNSTREAM SLOPE that prevent seeing the entire surface of the slope?		X
4. Are there CRACKS, SLIDES, SLUMPS, BOILS, SETTLEMENT or OTHER on the UPSTREAM SLOPE, CREST, or DOWNSTREAM SLOPE?		X
5. Are there RODENT HOLES or ERODED GULLIES on the UPSTREAM or DOWNSTREAM SLOPE? (see comment No. 1)	X	
6. Is there FLOWING WATER or LARGE BOGGY SPOTS at the toe of the dam?		X
7. Are there FLOWS OF WATER or WET SPOTS above the toe of the dam?		X
9. Are there toe drains?	X	
10. Is the water from the TOE DRAINS or LEAKS found to be MUDDY or SANDY?		X
16. Is there evidence that the dam has been overtopped?		X
17. Is the reservoir usually full YEAR ROUND, OVER 1/2 OF YEAR, or LESS THAN 1/2 OF YEAR? <b>Over 1/2 of year</b>	X	
18. Should this dam be promptly inspected by a field engineer from the State Engineer's offices?		X

Additional Comments:

- Minor rills and rodent holes noted on both upstream and downstream slopes. On an ongoing basis XTO corrects erosion and rodent holes as required.

Inspected By: Dan Allen

## DAM INSPECTION REPORT

NAME OF DAM: Love Ranch Evaporation Pond    DATE: June 26, 2014  
DAM HEIGHT: 44 (ft)    MAX. RES. CAPACITY: 50.4 acre ft.  
MAXIMUM GAGE ROD: 17 (ft)    TODAY'S GAGE HEIGHT: 13 ft.

NOTE:

- a) Enter 1 below if: No problems found in this area, the whole area appears to be acceptable.
- b) Circle items of particular concern.

UPSTREAM SLOPE           Some minor erosion gullies & rodent holes were noted          

\_\_\_\_\_

CREST           1          

\_\_\_\_\_

DOWNSTREAM SLOPE           Some minor erosion gullies & rodent holes were noted          

\_\_\_\_\_

SEEPAGE AREAS           1          

\_\_\_\_\_

\_\_\_\_\_

OUTLET           1          

\_\_\_\_\_

SPILLWAY           1          

\_\_\_\_\_

HDPE LINER           Some rodent holes were noted on south end of pond/fairly close to liner/liner trench          

\_\_\_\_\_

\_\_\_\_\_

REQUIRED MAINTENANCE OR ACTION: XTO plans on addressing minor erosion and rodent holes ASAP

INSPECTOR'S SIGNATURE:           Dan Allen

## DAM INSPECTION REPORT

Name of Dam: Love Ranch Evaporation Pond Date: September 28, 2014 Division: 6 Dam ID: C-1881

Type of (circle): EARTH FILL, ROCKFILL, CONCRETE, OTHER: Earth Fill

Estimate Actual Capacity: 53,959 yd<sup>3</sup> (33.4 acre-feet)

Estimate Surface Area: 139,645 ft.<sup>2</sup>

Estimate Height: 12 ft

Gauge Rod Reading: 12 ft. = elevation 6,160 ft.

Estimate Freeboard (Pond level to top of dam): 7 ft. to Elevation of 6167.00 at the top of Dam

Use: IRRIGATION, MUNICIPAL, OTHER: Salt Water Evaporation

DIRECTIONS: Mark an "X" in the Yes or No column and circle the word or phrase which applies.

	Yes	No
1. Are the roads to the dam adequate to allow ACCESS BY EMERGENCY EQUIPMENT and TRAVEL ACROSS THE DAM (i.e., TRUCKS, AMBULANCES)? SEE ADDITIONAL COMMENTS	X	
2. Is there DEBRIS, TREES, or BRUSH on the upstream slope that prevent seeing the entire surface of the slope?		X
3. Are there TREES or BRUSH on the CREST, or DOWNSTREAM SLOPE that prevent seeing the entire surface of the slope?		X
4. Are there CRACKS, SLIDES, SLUMPS, BOILS, SETTLEMENT or OTHER on the UPSTREAM SLOPE, CREST, or DOWNSTREAM SLOPE?		X
5. Are there RODENT HOLES or ERODED GULLIES on the UPSTREAM or DOWNSTREAM SLOPE?	X	
6. Is there FLOWING WATER or LARGE BOGGY SPOTS at the toe of the dam?		X
7. Are there FLOWS OF WATER or WET SPOTS above the toe of the dam?		X
9. Are there toe drains?	X	
10. Is the water from the TOE DRAINS or LEAKS found to be MUDDY or SANDY?		X
16. Is there evidence that the dam has been overtopped?		X
17. Is the reservoir usually full YEAR ROUND, OVER 1/2 OF YEAR, or LESS THAN 1/2 OF YEAR? <b>Over 1/2 the year</b>	X	
18. Should this dam be promptly inspected by a field engineer from the State Engineer's offices?		X

Additional Comments:

Toe Drain Water Elevation = 16.01'

Total depth = 16.20'

Inspected By: Tom Hertenstein

## DAM INSPECTION REPORT

NAME OF DAM: Love Ranch Evaporation Pond    DATE: September 29, 2014  
DAM HEIGHT: 44 (ft)    MAX. RES. CAPACITY: 50.4 acre ft.  
MAXIMUM GAGE ROD: 17 (ft)    TODAY'S GAGE HEIGHT: 12 ft.

### NOTE:

- a) Enter 1 below if: No problems found in this area, the whole area appears to be acceptable.  
b) Circle items of particular concern.

UPSTREAM SLOPE 1

CREST 1

DOWNSTREAM SLOPE 1

SEEPAGE AREAS 1

OUTLET N/A

SPILLWAY 1

HDPE LINER 1

### REQUIRED MAINTENANCE OR ACTION:

Rodent holes and minor erosion rills have been addressed prior to this inspection.

INSPECTOR'S SIGNATURE: Tom Hertenstein

## DAM INSPECTION REPORT

Name of Dam: Love Ranch Evaporation Pond Date: December 29, 2014 Division: 6 Dam ID: C-1881

Type of (circle): EARTH FILL, ROCKFILL, CONCRETE, OTHER: Earth Fill

Estimate Actual Capacity: 59,248 yd<sup>3</sup> (36.7 acre-feet)

Estimate Surface Area: 142,825 ft.<sup>2</sup>

Estimate Height: 13 ft

Gauge Rod Reading: 13 ft. = elevation 6,161 ft.

Estimate Freeboard (Pond level to top of dam): 6 ft. to Elevation of 6167.00 at the top of Dam

Use: IRRIGATION, MUNICIPAL, OTHER: Salt Water Evaporation

DIRECTIONS: Mark an "X" in the Yes or No column and circle the word or phrase which applies.

	Yes	No
1. Are the roads to the dam adequate to allow ACCESS BY EMERGENCY EQUIPMENT and TRAVEL ACROSS THE DAM (i.e., TRUCKS, AMBULANCES)? SEE ADDITIONAL COMMENTS	X	
2. Is there DEBRIS, TREES, or BRUSH on the upstream slope that prevent seeing the entire surface of the slope?		X
3. Are there TREES or BRUSH on the CREST, or DOWNSTREAM SLOPE that prevent seeing the entire surface of the slope?		X
4. Are there CRACKS, SLIDES, SLUMPS, BOILS, SETTLEMENT or OTHER on the UPSTREAM SLOPE, CREST, or DOWNSTREAM SLOPE?		X
5. Are there RODENT HOLES or ERODED GULLIES on the UPSTREAM or DOWNSTREAM SLOPE?	X	
6. Is there FLOWING WATER or LARGE BOGGY SPOTS at the toe of the dam?		X
7. Are there FLOWS OF WATER or WET SPOTS above the toe of the dam?		X
9. Are there toe drains?	X	
10. Is the water from the TOE DRAINS or LEAKS found to be MUDDY or SANDY?		X
16. Is there evidence that the dam has been overtopped?		X
17. Is the reservoir usually full YEAR ROUND, OVER 1/2 OF YEAR, or LESS THAN 1/2 OF YEAR? <b>Over 1/2 the year</b>	X	
18. Should this dam be promptly inspected by a field engineer from the State Engineer's offices?		X

Additional Comments:

Toe Drain Water Elevation = 16.01'

Total depth = 16.20'

Inspected By: Nate Grove

## DAM INSPECTION REPORT

NAME OF DAM: Love Ranch Evaporation Pond    DATE: December 29, 2014  
DAM HEIGHT: 44 (ft)    MAX. RES. CAPACITY: 50.4 acre ft.  
MAXIMUM GAGE ROD: 17 (ft)    TODAY'S GAGE HEIGHT: 13 ft.

### NOTE:

- a) Enter 1 below if: No problems found in this area, the whole area appears to be acceptable.  
b) Circle items of particular concern.

UPSTREAM SLOPE 1

CREST 1

DOWNSTREAM SLOPE 1

SEEPAGE AREAS 1

OUTLET N/A

SPILLWAY 1

HDPE LINER 1

### REQUIRED MAINTENANCE OR ACTION:

Rodent holes and minor erosion rills have been addressed prior to this inspection.

INSPECTOR'S SIGNATURE: Nate Grove