

**Cameco Resources  
Crow Butte Operation**



**86 Crow Butte Road  
P.O. Box 169  
Crawford, Nebraska 69339-0169**

**(308) 665-2215  
(308) 665-2341 – FAX**

June 21, 2017

**USPS PRIORITY MAIL  
SIGNATURE CONFIRMATION**

Attn: Document Control Desk, Director  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Commercial Evaporation Pond #1  
Updated Corrective Action Report  
Source Materials License SUA-1534  
Docket Number 40-8943

Dear Director:

On June 8, 2016, water level readings from the northwest and southwest underdrains on Cameco Resources – Crow Butte Operation (CBO) Commercial Evaporation Pond #1 indicated a potential liner leak. Samples were obtained from the underdrains and analyzed for alkalinity, chloride, conductivity, sodium, and sulfate. Upon verification of the potential liner leak, CBO notified Ron Burrows by phone on June 9, 2016 in accordance with License Condition 11.6. As required by License Condition 11.9, the following corrective action plan is being submitted for NRC review.

**Actions Taken**

June 9, 2016 – Began transferring water into Commercial Evaporation Pond #3 to lower the pond level to eliminate the liner leak. Inspected the liner for damage. Several patches on the west side of the pond were identified as potential sources of the liner leak. These patches are long in length and extended well below the water level.

June 22, 2016 – Underdrain readings during the weekly inspection indicate that the underdrain levels have stabilized. This indicates that the breach in the liner is above the current pond level of 8.7'. The liner patches were not sufficiently exposed to allow for a full assessment of the patches. Transfer of water into Commercial Evaporation Pond #3 continued. Began pumping the northwest and southwest underdrains.

July 6, 2016 - Transfer of water into Commercial Evaporation Pond #3 continued in order to lower the water level below the suspected patches. When the pond water level is low enough to provide full access to the patches (approximately 1 foot below the current level of 8.4'), the site will repair the damaged areas.

August 4, 2016 – repairs were made to the damaged areas at approximately the 8.7' level.  
(Water level was at 7.7')

NM5520

## CROW BUTTE OPERATION



August 28, 2016, stopped the transfer of water into Commercial Evaporation Pond #3.

October 5, 2016, Colorado Liners vacuum tested the repairs and determined that the areas had been successfully repaired.

October 6, 2016, the pond was returned to normal operations.

Attachment #1 contains copies of the Weekly Evaporation Pond Underdrain Analysis for the period of June 28, 2016 to August 20, 2016.

### Water Quality in Affected Underdrains

Attachment #2 contains copies of the water chemistry of the affected underdrains for the period of July 6, 2016 to August 17, 2016. The affected underdrains were sampled for an additional two weeks following permanent repair of the liner.

If you have any questions, please feel free to contact me at (308) 665-2215 Ext 112.

Sincerely,  
CAMECO RESOURCES  
CROW BUTTE OPERATION

Bob Tiensvold  
Restoration Manager

cc: NRC Deputy Director  
Marty Link – NDEQ Water Quality Division Administrator  
CBO - File  
ec: Dave Miesbach – NDEQ Groundwater Unit Supervisor  
Kory Winters – NDEQ Field Office  
CR – Electronic File

# **CROW BUTTE OPERATION**

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## **Attachment #1**

### **Weekly Evaporation Pond Underdrain Analysis**

COMMERCIAL POND INSPECTION FORM



FOR THE WEEK OF 6-26-16 THROUGH 7-2-16  
CHECK ACCORDINGLY: ☒ = OK ☐ X = NEEDS ATTENTION OR REPAIRS

LOCATION	FREQUENCY	SUN	MON	TUE	WED	THU	FRI	SAT
POND 1-DEPTH (ft.)	Daily	8.6	8.5	8.6	8.5	8.5	8.8	8.7
EMBANKMENTS	Daily	✓	✓	✓	✓	✓	✓	✓
N.E. UNDERDRAIN	Weekly				3"			
N.M. UNDERDRAIN (in.)	Weekly				1"			
N.W. UNDERDRAIN (in.)	Weekly				5"			
S.E. UNDERDRAIN (in.)	Weekly				2"			
S.M. UNDERDRAIN (in.)	Weekly				2"			
S.W. UNDERDRAIN (in.)	Weekly				2"			
POND 3-DEPTH (ft.)	Daily	9.0	9.0	9.0	9.0	9.0	9.2	9.2
EMBANKMENTS	Daily	✓	✓	✓	✓	✓	✓	✓
N.E. UNDERDRAIN (in.)	Weekly				4"			
N.M. UNDERDRAIN (in.)	Weekly				6"			
N.W. UNDERDRAIN (in.)	Weekly				4"			
S.E. UNDERDRAIN (in.)	Weekly				6"			
S.M. UNDERDRAIN (in.)	Weekly				3"			
S.W. UNDERDRAIN (in.)	Weekly				6"			
POND 4-DEPTH (ft.)	Daily	T-70	T-70	T-70	T-60	T-65	T-62	T-70
EMBANKMENTS	Daily	✓	✓	✓	✓	✓	✓	✓
N.E. UNDERDRAIN (in.)	Weekly				9"			
N.M. UNDERDRAIN (in.)	Weekly				11"			
N.W. UNDERDRAIN (in.)	Weekly				6"			
S.E. UNDERDRAIN (in.)	Weekly				8"			
S.M. UNDERDRAIN (in.)	Weekly				8"			
S.W. UNDERDRAIN (in.)	Weekly				10"			
INSPECTED INLET PIPING	Weekly				✓			
PERIMETER FENCE	Weekly				✓			
INSPECTED LINERS	Weekly				✓			
INSPECTED DIVERSION DITCHES	Monthly							
INSPECTED WASTE PIPELINE	Monthly							

OTHER (EXPLAIN BELOW)

INSPECTOR INITIALS: KE KE KE WD DB DB GR

COMMENTS:

COMMERCIAL POND INSPECTION FORM



FOR THE WEEK OF 7/3/16 THROUGH 7/9/16  
CHECK ACCORDINGLY:  $\checkmark$  = OK X = NEEDS ATTENTION OR REPAIRS

LOCATION	FREQUENCY	SUN	MON	TUE	WED	THU	FRI	SAT
POND 1-DEPTH (ft.)	Daily	8.7	8.7	8.7	8.4	8.5	8.4	8.4
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN	Weekly				2"			
N.M. UNDERDRAIN (in.)	Weekly				2"			
N.W. UNDERDRAIN (in.)	Weekly				2"			
S.E. UNDERDRAIN (in.)	Weekly				2"			
S.M. UNDERDRAIN (in.)	Weekly				1"			
S.W. UNDERDRAIN (in.)	Weekly				2"			
POND 3-DEPTH (ft.)	Daily	9.2	9.2	9.2	9.1	9.4	9.3	9.3
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				5"			
N.M. UNDERDRAIN (in.)	Weekly				9"			
N.W. UNDERDRAIN (in.)	Weekly				4"			
S.E. UNDERDRAIN (in.)	Weekly				0"			
S.M. UNDERDRAIN (in.)	Weekly				5"			
S.W. UNDERDRAIN (in.)	Weekly				9"			
POND 4-DEPTH (ft.)	Daily	T-70	T-70	T-70	T-60	T-105	T-85	T-85
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				723" <sup>W</sup>			
N.M. UNDERDRAIN (in.)	Weekly				812" <sup>W</sup>			
N.W. UNDERDRAIN (in.)	Weekly				8"			
S.E. UNDERDRAIN (in.)	Weekly				9"			
S.M. UNDERDRAIN (in.)	Weekly				9"			
S.W. UNDERDRAIN (in.)	Weekly				11"			
INSPECTED INLET PIPING	Weekly				$\checkmark$			
PERIMETER FENCE	Weekly				$\checkmark$			
INSPECTED LINERS	Weekly				$\checkmark$			
INSPECTED DIVERSION DITCHES	Monthly				$\checkmark$			
INSPECTED WASTE PIPELINE	Monthly				$\checkmark$			

OTHER (EXPLAIN BELOW)

INSPECTOR INITIALS		GK	KF	KF	WU	DB	DB	DB
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COMMENTS:

COMMERCIAL POND INSPECTION FORM



FOR THE WEEK OF 7/10/16 THROUGH 7/16/16  
CHECK ACCORDINGLY:  $\checkmark$  = OK X = NEEDS ATTENTION OR REPAIRS

LOCATION	FREQUENCY	SUN	MON	TUE	WED	THU	FRI	SAT
POND 1-DEPTH (ft.)	Daily	8.4	8.5	8.4	8.3"	8.1	8.1"	8.1
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN	Weekly				1			
N.M. UNDERDRAIN (in.)	Weekly				2			
N.W. UNDERDRAIN (in.)	Weekly				2			
S.E. UNDERDRAIN (in.)	Weekly				2			
S.M. UNDERDRAIN (in.)	Weekly				1			
S.W. UNDERDRAIN (in.)	Weekly				1			
POND 3-DEPTH (ft.)	Daily	9.4	9.3	9.2	9.1"	9.1	9.1"	9.0
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				4			
N.M. UNDERDRAIN (in.)	Weekly				8			
N.W. UNDERDRAIN (in.)	Weekly				2			
S.E. UNDERDRAIN (in.)	Weekly				0			
S.M. UNDERDRAIN (in.)	Weekly				4			
S.W. UNDERDRAIN (in.)	Weekly				5			
POND 4-DEPTH (ft.)	Daily	T-85	T-90	<T-95	<T-90	T-105	T-105	T-98
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				8			
N.M. UNDERDRAIN (in.)	Weekly				1			
N.W. UNDERDRAIN (in.)	Weekly				9			
S.E. UNDERDRAIN (in.)	Weekly				7			
S.M. UNDERDRAIN (in.)	Weekly				10			
S.W. UNDERDRAIN (in.)	Weekly							
INSPECTED INLET PIPING	Weekly				$\checkmark$			
PERIMETER FENCE	Weekly				$\checkmark$			
INSPECTED LINERS	Weekly				$\checkmark$			
INSPECTED DIVERSION DITCHES	Monthly							
INSPECTED WASTE PIPELINE	Monthly							

OTHER (EXPLAIN BELOW)

INSPECTOR INITIALS		GK	GK	LYA&A	BB	DB	DB	DB
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COMMENTS: \* - 7-10-16 - Windy  
7-11-16 -  
7.15.16 \* Windy

OK-WN

COMMERCIAL POND INSPECTION FORM



FOR THE WEEK OF 7/17/16 THROUGH 7/23/16  
CHECK ACCORDINGLY: ✓ = OK X = NEEDS ATTENTION OR REPAIRS

LOCATION	FREQUENCY	SUN	MON	TUE	WED	THU	FRI	SAT
POND 1-DEPTH (ft.)	Daily	8.1	8.1	8.1	8.0	8.0	7.9	7.9
EMBANKMENTS	Daily	✓	✓	✓	✓	—	✓	✓
N.E. UNDERDRAIN	Weekly				3"			
N.M. UNDERDRAIN (in.)	Weekly				2"			
N.W. UNDERDRAIN (in.)	Weekly				2"			
S.E. UNDERDRAIN (in.)	Weekly				2"			
S.M. UNDERDRAIN (in.)	Weekly				1"			
S.W. UNDERDRAIN (in.)	Weekly				2"			
POND 3-DEPTH (ft.)	Daily	9.0	9.0	9.0	8.9	8.9	9.0	9.0
EMBANKMENTS	Daily	✓	✓	✓	✓	—	✓	✓
N.E. UNDERDRAIN (in.)	Weekly				4"			
N.M. UNDERDRAIN (in.)	Weekly				4"			
N.W. UNDERDRAIN (in.)	Weekly				2"			
S.E. UNDERDRAIN (in.)	Weekly				6"			
S.M. UNDERDRAIN (in.)	Weekly				4"			
S.W. UNDERDRAIN (in.)	Weekly				3"			
POND 4-DEPTH (ft.)	Daily	T-94	T-90	T-90	T-95	CI-T95	T-95	T-95
EMBANKMENTS	Daily	✓	✓	✓	✓	✓	✓	✓
N.E. UNDERDRAIN (in.)	Weekly				12"			
N.M. UNDERDRAIN (in.)	Weekly				6"			
N.W. UNDERDRAIN (in.)	Weekly				8"			
S.E. UNDERDRAIN (in.)	Weekly				8"			
S.M. UNDERDRAIN (in.)	Weekly				7"			
S.W. UNDERDRAIN (in.)	Weekly				8"			
INSPECTED INLET PIPING	Weekly				✓			
PERIMETER FENCE	Weekly				✓			
INSPECTED LINERS	Weekly				✓			
INSPECTED DIVERSION DITCHES	Monthly							
INSPECTED WASTE PIPELINE	Monthly							

OTHER (EXPLAIN BELOW)

INSPECTOR INITIALS: DB WV WV WV LYADA BEAN DEAN

COMMENTS:

OK-0-0

COMMERCIAL POND INSPECTION FORM



FOR THE WEEK OF 7/24/16 THROUGH 7/30/16  
CHECK ACCORDINGLY:  $\checkmark$  = OK  $\times$  = NEEDS ATTENTION OR REPAIRS

LOCATION	FREQUENCY	SUN	MON	TUE	WED	THU	FRI	SAT
POND 1-DEPTH (ft.)	Daily	7.8	7.8	7.8	7.8	7.8	7.8	7.8
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN	Weekly				2			
N.M. UNDERDRAIN (in.)	Weekly				2			
N.W. UNDERDRAIN (in.)	Weekly				1	<del>2</del>		
S.E. UNDERDRAIN (in.)	Weekly				2			
S.M. UNDERDRAIN (in.)	Weekly				1			
S.W. UNDERDRAIN (in.)	Weekly				3			
POND 3-DEPTH (ft.)	Daily	8.9	8.8	8.8	8.8	9.0	8.9	8.9
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				4			
N.M. UNDERDRAIN (in.)	Weekly				4			
N.W. UNDERDRAIN (in.)	Weekly				3			
S.E. UNDERDRAIN (in.)	Weekly				0			
S.M. UNDERDRAIN (in.)	Weekly				4			
S.W. UNDERDRAIN (in.)	Weekly				3			
POND 4-DEPTH (ft.)	Daily	T-95	T-90	T-90	T-85	T-90	T-90	T-96
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				11			
N.M. UNDERDRAIN (in.)	Weekly				11			
N.W. UNDERDRAIN (in.)	Weekly				8			
S.E. UNDERDRAIN (in.)	Weekly				8			
S.M. UNDERDRAIN (in.)	Weekly				6			
S.W. UNDERDRAIN (in.)	Weekly				8			
INSPECTED INLET PIPING	Weekly				$\checkmark$			
PERIMETER FENCE	Weekly				$\checkmark$			
INSPECTED LINERS	Weekly				$\checkmark$			
INSPECTED DIVERSION DITCHES	Monthly							
INSPECTED WASTE PIPELINE	Monthly							

OTHER (EXPLAIN BELOW)

INSPECTOR INITIALS DB AK AK BA D. Ruby D. Ruby DB

COMMENTS:

OK - W.U.



COMMERCIAL POND INSPECTION FORM



FOR THE WEEK OF 7-31-16 THROUGH 8-6-16  
CHECK ACCORDINGLY:  $\checkmark$  = OK X = NEEDS ATTENTION OR REPAIRS

LOCATION	FREQUENCY	SUN	MON	TUE	WED	THU	FRI	SAT
POND 1-DEPTH (ft.)	Daily	7.8	7.8	7.8	7.7"	7.7	7.7	7.7
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN	Weekly				3"			
N.M. UNDERDRAIN (in.)	Weekly				2"			
N.W. UNDERDRAIN (in.)	Weekly				2"			
S.E. UNDERDRAIN (in.)	Weekly				2"			
S.M. UNDERDRAIN (in.)	Weekly				1"			
S.W. UNDERDRAIN (in.)	Weekly				4"			
POND 3-DEPTH (ft.)	Daily	9.0	9.0	9.0	8.8"	8.9	8.9	8.9
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				4"			
N.M. UNDERDRAIN (in.)	Weekly				4"			
N.W. UNDERDRAIN (in.)	Weekly				1"			
S.E. UNDERDRAIN (in.)	Weekly				0"			
S.M. UNDERDRAIN (in.)	Weekly				5"			
S.W. UNDERDRAIN (in.)	Weekly				5"			
POND 4-DEPTH (ft.)	Daily	T-100	T-95	T-95	T-90	T-90	T-90	T-90
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				12"			
N.M. UNDERDRAIN (in.)	Weekly				13"			
N.W. UNDERDRAIN (in.)	Weekly				7"			
S.E. UNDERDRAIN (in.)	Weekly				6"			
S.M. UNDERDRAIN (in.)	Weekly				7"			
S.W. UNDERDRAIN (in.)	Weekly				9"			
INSPECTED INLET PIPING	Weekly				$\checkmark$			
PERIMETER FENCE	Weekly				$\checkmark$			
INSPECTED LINERS	Weekly				$\checkmark$			
INSPECTED DIVERSION DITCHES	Monthly							
INSPECTED WASTE PIPELINE	Monthly							

OTHER (EXPLAIN BELOW)

INSPECTOR INITIALS PB GK GK WV GK DB P.S.

COMMENTS: 8-2-16 \* Windy Patched liner leak West bank Pond #  
8-3-16 \* Windy

OK-WV

COMMERCIAL POND INSPECTION FORM



FOR THE WEEK OF 8-7-16 THROUGH 8-13-16  
CHECK ACCORDINGLY:  $\checkmark$  = OK X = NEEDS ATTENTION OR REPAIRS

LOCATION	FREQUENCY	SUN	MON	TUE	WED	THU	FRI	SAT
POND 1-DEPTH (ft.)	Daily	7.7	7.7 <sup>*</sup>	7.7	7.6	7.6	7.6	7.6 <sup>*</sup>
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN	Weekly				3"			
N.M. UNDERDRAIN (in.)	Weekly				2"			
N.W. UNDERDRAIN (in.)	Weekly				3"			
S.E. UNDERDRAIN (in.)	Weekly				2"			
S.M. UNDERDRAIN (in.)	Weekly				1"			
S.W. UNDERDRAIN (in.)	Weekly				1"			
POND 3-DEPTH (ft.)	Daily	8.9	8.9 <sup>*</sup>	8.9	8.7	8.7	8.7	8.8 <sup>*</sup>
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				1"			
N.M. UNDERDRAIN (in.)	Weekly				5"			
N.W. UNDERDRAIN (in.)	Weekly				2"			
S.E. UNDERDRAIN (in.)	Weekly				0"			
S.M. UNDERDRAIN (in.)	Weekly				5"			
S.W. UNDERDRAIN (in.)	Weekly				5"			
POND 4-DEPTH (ft.)	Daily	T-93	T-93	T-100	T-95	T-95	T-95	61-T-95
EMBANKMENTS	Daily	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
N.E. UNDERDRAIN (in.)	Weekly				13"			
N.M. UNDERDRAIN (in.)	Weekly				13"			
N.W. UNDERDRAIN (in.)	Weekly				9"			
S.E. UNDERDRAIN (in.)	Weekly				7"			
S.M. UNDERDRAIN (in.)	Weekly				8"			
S.W. UNDERDRAIN (in.)	Weekly				10"			
INSPECTED INLET PIPING	Weekly				$\checkmark$			
PERIMETER FENCE	Weekly				$\checkmark$			
INSPECTED LINERS	Weekly				$\checkmark$			
INSPECTED DIVERSION DITCHES	Monthly				$\checkmark$			
INSPECTED WASTE PIPELINE	Monthly				$\checkmark$			

OTHER (EXPLAIN BELOW)

INSPECTOR INITIALS DB DB GK WD GK GK LVA

COMMENTS: 8-8-16 \* Windy  
8-9-16 \* Windy  
8-13-16 \* Bad 143 Badmarks  
Sopher treatment in Commercial ponds 8/15/16  
Remarked Commercial Ponds 8/15/16 - WD

COMMERCIAL POND INSPECTION FORM



FOR THE WEEK OF 8/14/16 THROUGH 8/20/16  
CHECK ACCORDINGLY:  $\checkmark$  = OK X = NEEDS ATTENTION OR REPAIRS

LOCATION	FREQUENCY	SUN	MON	TUE	WED	THU	FRI	SAT
POND 1-DEPTH (ft.)	Daily	* 7.6	* 7.6	7.7	7.7	7.7	7.7	7.7
EMBANKMENTS	Daily	/	/	/	/	/	/	/
N.E. UNDERDRAIN	Weekly				2"			
N.M. UNDERDRAIN (in.)	Weekly				1"			
N.W. UNDERDRAIN (in.)	Weekly				2"			
S.E. UNDERDRAIN (in.)	Weekly				1"			
S.M. UNDERDRAIN (in.)	Weekly				0"			
S.W. UNDERDRAIN (in.)	Weekly				2"			
POND 3-DEPTH (ft.)	Daily	8.8*	* 8.8	8.7	8.7	8.7	8.6	8.7
EMBANKMENTS	Daily	/	/	/	/	/	/	/
N.E. UNDERDRAIN (in.)	Weekly				3"			
N.M. UNDERDRAIN (in.)	Weekly				5"			
N.W. UNDERDRAIN (in.)	Weekly				1"			
S.E. UNDERDRAIN (in.)	Weekly				0"			
S.M. UNDERDRAIN (in.)	Weekly				4"			
S.W. UNDERDRAIN (in.)	Weekly				5"			
POND 4-DEPTH (ft.)	Daily	<1-T95	<1-T95	<1-T70	T-25	T-80	T-77	T-90
EMBANKMENTS	Daily	/	/	/	/	/	/	/
N.E. UNDERDRAIN (in.)	Weekly				12"			
N.M. UNDERDRAIN (in.)	Weekly				13"			
N.W. UNDERDRAIN (in.)	Weekly				0"			
S.E. UNDERDRAIN (in.)	Weekly				7"			
S.M. UNDERDRAIN (in.)	Weekly				16"			
S.W. UNDERDRAIN (in.)	Weekly				7"			
INSPECTED INLET PIPING	Weekly				/			
PERIMETER FENCE	Weekly				/			
INSPECTED LINERS	Weekly				/			
INSPECTED DIVERSION DITCHES	Monthly				/			
INSPECTED WASTE PIPELINE	Monthly				/			

OTHER (EXPLAIN BELOW)

INSPECTOR INITIALS: LYADA LYADA LYADA W. Nelson D. H. Roy Mike Mike

COMMENTS: \* 8/14/16 Pond 1 & 3 Bad marks  
\* 8/15/16 Pond 1 & 3 Bad marks  
\* 8/17/16 - Windy

8/17/16 - Pond 1 & 3 marks Freshened - W.N.

# **CROW BUTTE OPERATION**

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## **Attachment #2**

### **Water Chemistry of the Affected Underdrains**

Date  
6/29/2016

<u>Sample ID</u>	<u>Cl mg/L</u>	<u>ALK = CaCO3</u>	<u>COND microseimen/cm</u>	<u>Na mg/L</u>	<u>SO4 mg/L</u>
POND 1	91469	3000	112000	30820	6223
POND 1 NORTH WEST UNDERDRAIN	41122	2550	102200	28130	5747
POND 1 SOUTH WEST UNDERDRAIN	41122	2400	100900	27520	5544

Date  
7/7/2016

<u>Sample ID</u>	<u>Cl mg/L</u>	<u>ALK = CaCO3</u>	<u>COND microseimen/cm</u>	<u>Na mg/L</u>	<u>SO4 mg/L</u>
POND 1	46089	3025	111500	30450	6179
POND 1 NORTH WEST UNDERDRAIN	40416	2275	98200	25860	5303
POND 1 SOUTH WEST UNDERDRAIN	40416	2500	100300	27010	5649

Date  
7/14/2016

<u>Sample ID</u>	<u>Cl mg/L</u>	<u>ALK = CaCO3</u>	<u>COND microseimen/cm</u>	<u>Na mg/L</u>	<u>SO4 mg/L</u>
POND 1	47,507	3150	113,300	31940	6476
POND 1 NORTH WEST UNDERDRAIN	41,125	2300	97,400	25750	5379
POND 1 SOUTH WEST UNDERDRAIN	41,125	2400	100,400	26430	5685

Date  
7/20/2015

<u>Sample ID</u>	<u>Cl mg/L</u>	<u>ALK = CaCO3</u>	<u>COND microseimen/cm</u>	<u>Na mg/L</u>	<u>SO4 mg/L</u>
POND 1	48,216	3100	113,700	30940	6409
POND 1 NORTH WEST UNDERDRAIN	41,125	2350	97,500	25240	5355
POND 1 SOUTH WEST UNDERDRAIN	41,125	2500	98,500	25630	5540



Date  
7/27/2015

<u>Sample ID</u>	<u>Cl mg/L</u>	<u>ALK = CaCO3</u>	<u>COND microseimen/cm</u>	<u>Na mg/L</u>	<u>SO4 mg/L</u>
POND 1	48,216	3200	115,000	30050	6311
POND 1 NORTH WEST UNDERDRAIN	41,125	2075	98,800	24580	5194
POND 1 SOUTH WEST UNDERDRAIN	41,125	2400	98,400	24470	5317

Date  
8/3/2016

<u>Sample ID</u>	<u>Cl mg/L</u>	<u>ALK = CaCO3</u>	<u>COND microseimen/cm</u>	<u>Na mg/L</u>	<u>SO4 mg/L</u>
POND 1	48,216	3188	116,300	28780	6330
POND 1 NORTH WEST UNDERDRAIN	39,707	2350	98,000	23000	5245
POND 1 SOUTH WEST UNDERDRAIN	42,544	2500	99,600	23500	5525

Date  
8/10/2016

<u>Sample ID</u>	<u>Cl mg/L</u>	<u>ALK = CaCO3</u>	<u>COND microseimen/cm</u>	<u>Na mg/L</u>	<u>SO4 mg/L</u>
POND 1	48,925	3050	116,100	30680	6555
POND 1 NORTH WEST UNDERDRAIN	42,544	2350	99,100	25810	5714
POND 1 SOUTH WEST UNDERDRAIN	39,707	2300	99,600	24290	5195

Date  
8/17/2016

<u>Sample ID</u>	<u>Cl mg/L</u>	<u>ALK = CaCO3</u>	<u>COND microseimen/cm</u>	<u>Na mg/L</u>	<u>SO4 mg/L</u>
POND 1	48,925	3100	114,500	31230	6496
POND 1 NORTH WEST UNDERDRAIN	40,416	2350	95,400	24630	5162
POND 1 SOUTH WEST UNDERDRAIN	40,416	2350	97,900	25590	5601