

04008926260E



THE STATE OF WYOMING

MIKE SULLIVAN  
GOVERNOR

40-8926  
RETURN ORIGINAL TO PDR, HQ.



# Department of Environmental Quality

210 Lincoln Street • Lander, Wyoming 82520

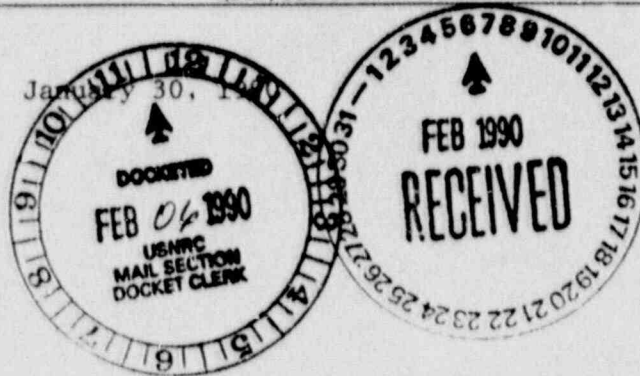
Air Quality Division  
(307) 332-3144

Land Quality Division  
(307) 332-3047

Solid Waste Management Program  
(307) 332-3144

Water Quality Division  
(307) 332-3144

Mr. Gary Konwinski  
USNRC - Region IV  
Uranium Recovery Field Office  
P. O. Box 25325  
Denver, CO 80225



RE: License No SUA-1492, Bison Basin Decommissioning Project

Dear Mr. Konwinski:

I am enclosing the following materials to complete your file on this project:

1. Landmark letter of November 29, 1989 re: concrete sump rad. survey.
2. Landmark letter of December 4, 1989 re: Status Report and invoice, including load count.
3. Landmark letter of December 14, 1989 re: concrete sump decontamination work.
4. Landmark letter of December 20, 1989 re: Soil Ra226 analysis.
5. Landmark letter of January 8, 1990 re: Liner material rad. survey.
6. DEQ-LQD inspection report dated November 21, 1989 documenting concrete sump cleanup.

These materials, along with Landmark's Final Report dated November 21, 1989 which was hand-delivered to yourself, should provide adequate documentation to verify site cleanup and decontamination. A letter requesting license termination will be forthcoming from our director. Final site reclamation, including burial of the concrete slab, is scheduled for this spring.

Should you have any questions, please feel free to call.

Sincerely,

Mark Moxley  
District II Supervisor

9002280263 900130  
PDR ADDCK 04008926  
C FDC

MM:mm

DESIGNATED ORIGINAL

Attachments

Certified By *Mary C. Hood*

xc: Rick Chancellor - Cheyenne DEQ-LQD w/o attachments

*DFC*  
*11*  
*Accel Info*  
*90-0269*

~~SECRET~~  
NRC

**LANDMARK RECLAMATION**

November 29, 1989



Mr. Mark Hoxley  
Wyoming Department D.E.Q.  
Land Quality Division  
210 Lincoln Street  
Lander, WY 82520

RE: Removal of Sump Concrete, Contaminants and Resurvey  
Information - Bison Basin Decommissioning Project

Dear Mark,

Please find enclosed the resurvey data of the sump containment drain system that was identified as exhibiting high gamma radiation. As you know, the entire southwest drain leading to the sump, as well as the sump sides, were removed by "jack-hammer".

The southwest section of the process pad was the location where yellow cake precipitation processing activities occurred and consequently the drain system in that area yielded inordinately high gamma radiation.

The material lying in the bottoms of the drain and sump were also removed. This activity involved shoveling 18 inches of debris from the sump bottoms and removing contaminated broken concrete and soils from the drain. It should be noted that the soil debris contained yellow cake clays and loaded ion exchange resin residues that would contribute to the intense gamma radiation field. All materials were removed to the Minerals Exploration disposal facility and all haulage equipment was decontaminated at Umetco's wash location.

The areas were surveyed initially and after contaminant removal for gamma, as well as fixed alpha radiation, all along the drain line and sump box.

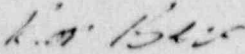
After removal of contaminant material, the gamma radiation field was reduced to ten to twenty-five percent of the original value. Fixed alpha determinations were all below allowable limits contained in "Annex A".



# LANDMARK RECLAMATION

If you have any questions regarding any of this information,  
please do not hesitate to contact me at this phone number,  
(801) 364-1071.

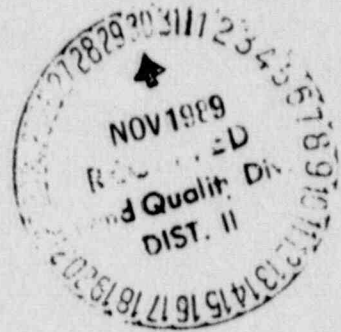
Sincerely,



Ron E. Berg  
Landmark Site Manager/RSO

cc: Bill Almas

LDHK-R-719F





GAMMA RADIATION SURVEY OF  
SOUTHWEST SECTION DRAIN AND SUMP  
AFTER CONTAMINATION REMOVAL - BISON BASIN

Note: Measurements made with Mt. Sopris Micro-R Scintillometer approximately every 3 meter interval along drainage system from West to East, and every 1 meter square in sump boxes.

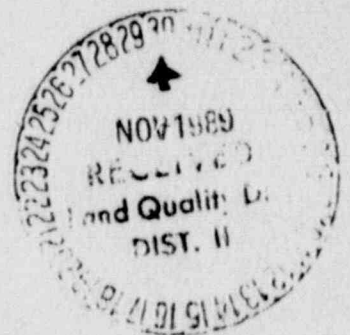
<u>Location (3 meter interval)</u>	<u>Gamma Micro-R/hr</u>
1 -> 10	25
11 -> 15	35

Sump Box #1

1	50
2	38
3	40
4	50
5	45
6	60

Sump Box #2

1	60
2	55
3	60
4	65
5	80
6 (Drain Spout)	100





ALPHA SURVEY OF SOUTHWEST SECTION  
DRAIN AND SUMP AFTER REMOVAL OF CONTAMINATION  
BISON BASIN

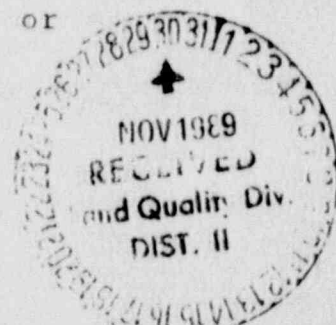
Note: Fixed and removable alpha determinations were made with instrument Eberline ESP-1 portable "smart" with AC-3 alpha scintillation probe serial numbers #2299/#707057 every 1 meter interval from West to East along drainage line and every 1 meter square in sump boxes.

<u>LOCATION</u>	<u>FIXED ALPHA DPH/100CM2</u>	<u>LOCATION</u>	<u>FIXED ALPHA DPH/100CM2</u>
1	697	10	685
2	732	11	1204
3	780	12	1346
4	555	13	1051
5	697	14	685
6	850	15	1382
7	780	16	1807
8	756	17	1618
9	744	18	1914

All removable alpha was less than or equal to minimum detectable activity  
MDA = 135 DPH/100CM2

<u>SUMP BOX #1</u>		<u>SUMP BOX #2</u>	
1	2067	1	2950
2	1854	2	2563
3	1276	3	3709
4	3579	4	4595
5	3236	5	3284
6	2953	6	4276

Again, removable alpha was less than or equal to minimum detectable activity



# LANDMARK RECLAMATION

December 4, 1989

Mr. Mark Moxley  
District II Supervisor  
Wyoming Department of Environmental Quality  
Land Quality Division  
210 Lincoln Street  
Lander, Wyoming 82520



Re: Bison Basin Project - BB-4  
Final Status Report and Invoice

Dear Mark:

The Bison Basin Decommissioning Project is now complete. This letter serves as a Final Status Report and an explanation of the attached final Invoice.

### Project Activities

Landmark Reclamation (Landmark) commenced field activities at the Bison Basin site on September 5, 1989. As noted in the previous Status Report dated September 11, 1989, dissolved salts within pond solutions had precipitated to form a crystalline salt crust. Solution volumes were reduced from original bid estimates due to evaporation and precipitation. Volumes of solids had increased. Since the movement of materials from the ponds had now changed from a task of moving principally liquids with small quantities of solids to moving mostly solids with limited amounts of liquid, a new strategy for cleaning out the ponds was formulated in conjunction with the WDEQ. It was decided to dewater the solids in the pond and move the crystalline materials and slimes using small powered equipment.

A sump was constructed in the north west corner of Pond #2 to allow dewatering of the solids. This action required the use of a backhoe, as well as significant front end loader time not anticipated as part of the original scope of work. A water line to an existing well head was also installed to facilitate the cleaning at the liner prior to cutting and moving. The itemized cost for this change is identified as Change Order #1 and attached to this Report.

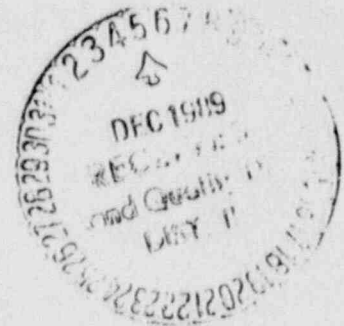
Mr. Mark Moxley  
Wyoming Department of Environmental Quality  
December 1, 1989  
Page 2

Additionally, as part of the development of a strategy for handling the crystalized solids, a Crissafulli slurry pump was ordered to pump liquids containing high percentages of solids. Before using the pump, it was decided that dewatering solids was more practical and the pump was returned to the manufacturer without use. Expense was incurred in the transport of the pump and this is itemized as Change Order #2 attached to this report.

On-site surveys, report writing and day to day operation of the site were Mr. Berg's responsibilities. His time has been broken out in the attached Task 1A, 1B documentation. Soil samples to confirm the clean-up of the site were collected and are described and itemized in Task 1C documentation.

Solutions were then removed from the three pond areas utilizing a trash pump and the diaphragm pumps mounted on vacuum tankers. A total of 2,871 cubic yards of solutions were moved over the life of the project. This volume was calculated by taking the total volume of vacuum tankers and multiplying by the number of loads. It was assumed tankers were 100% full. The truck volumes (tallied by date) and volume calculations are summarized in the documentation contained in Task 3A. Weight tickets and daily documentation has been provided by Minerals Exploration Company under separate cover.

Solids were removed from the lined pond using a Bobcat Loader and a Cat 916 Front End Loader. Solids were pushed into piles dewatered and loaded into end dump trucks. The tailgates of end dump trucks were lined with pieces of hypolon liner to prevent leakage of any residual liquids in the solids. A summary of the dates, truck numbers and truck volumes on an 80% of struck volume basis is included within the attached documentation for Task 3E and 3C. Weight tickets and daily documentation has been provided by Minerals Exploration Company under separate cover. Landmark's billing amount is 3,303.2 CY solids and Minerals Exploration was 3,241 CY showing reasonable agreement considering different means of volume determination.





Mr. Mark Moxley  
Wyoming Department of Environmental Quality  
December 1, 1989  
Page 3



Truck bed volumes were measured by Landmark personnel and are summarized below:

<u>Truck I.D.</u>	<u>Total Capacity (CY)</u>	<u>80% Capacity (CY)</u>
Hyland Trucks #T21, #T31	35.0	28.0
Shoshone Enterprises #4	15	12
#5	15	12
Shoshone Enterprises #1	12	9.6
U. S. Energy #3	12	9.6
U. S. Energy #113	10	8

After removing solids from lined impoundments, liners were cut, folded and loaded onto transport trucks.

The total amount of solids (including liner) loaded and transported to Minerals Exploration Company was 3,303.2 CY.

Road maintenance was performed for two months as documented in the attached Task 3D. A verbal request to reduce the amount of blade time to 7.5 weeks by Mark Moxley has been honored and is reflected in the Task 3D documentation.

After removal of liner material, a gamma survey was performed to determine possible contamination under pond liners. The survey was initially conducted on 10M x 10M transects across pond bottoms, sides and dike tops. Areas outside the pond area, including haul roads and loading areas, were also surveyed. Several pockets of contamination were detected within pond areas, as well as some patches of surficial contamination resulting from the loading of solids for haulage. Areas of contamination due to pond leakage were detected in the northeastern corner of Pond #2, in the center of Pond #3 and in the southern one half of Pond #1. In all cases, material was excavated in 2" to 4" lifts until gamma readings were less than 6 Micro/R/hr over background. Maximum depth of excavation was approximately 2 feet with average excavation depths of approximately 1 foot.

Mr. Mark Moxley  
Wyoming Department of Environmental Quality  
December 1, 1989  
Page 4

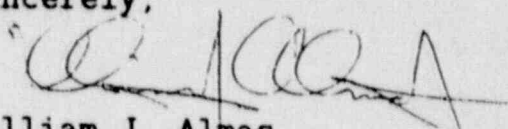
As noted in the Preliminary Decontamination Survey submittal, numerous areas on the concrete pad were found to have alpha contamination in excess of release limits. The concrete pad, which served as the floor and foundation for the process equipment, was decontaminated using an acid wash. Solutions were washed into the sump. After washing, a confirmation survey was performed on a one square meter grid. All contamination above release limits was removed on the cement pad. Some alpha contamination within the sump remained.

Small areas within the production well field were found to have gamma readings in excess of 6 Micro/R/hr. There were approximately four areas of 5 feet x 10 feet areal extent. Radiological contamination was of a surficial nature. Maximum excavation depth was approximately 1 foot and total volume moved of this material was approximately 10 cubic yards.

3303.2  
? The total invoice amount is \$208,568.04. This amount is substantially over the contract not to exceed amount of \$124,960. The additional cost is due principally to the volume of solids encountered (3,324 CY) which is more than twice the volume contained in the contract cost schedule. Also, time dependent pay items such as Task 1A, On-Site Surveys and Task 3D, Road Maintenance, exceeded contract amounts because of the additional size and scope of the effort necessary to remove additional solids. The total project length was almost nine weeks with haulage occurring eight weeks of that time.

If you have any questions regarding this invoice, please contact me at our Denver office. It has been a pleasure working with you and the State of Wyoming in the successful completion of this job.

Sincerely,

  
William J. Almas  
Project Manager

WJA:pl  
Enclosures

cc: J. Uzzel



INVOICE

TO: MR. MARK MOXLEY  
DISTRICT II SUPERVISOR  
WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY  
LAND QUALITY DIVISION  
210 LINCOLN STREET  
LANDER, WYOMING 82520

INVOICE DATE: DECEMBER 4, 1989  
INVOICE NUMBER: L-6231-1122-1  
FOR PERIOD SEPTEMBER 5 TO NOVEMBER 18, 1989

TERMS: N/30

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WORK DESCRIPTION: Decontamination of Bison Basin Insitu  
Uranium Recovery Site

INVOICE ITEMS:

Change Order #1, Sump Construction	\$ 1,210.39
Change Order \$2; Crissafulli Pump	\$ 800.00
Task 1A On-Site Surveys	\$ 19,350.00
Task 1B Office Work	\$ 1,875.00
Task 1C Soil Analysis	\$ 436.75
Task 3A Load, Unload Sludge	\$ 14,756.94
Task 3B Load, Unload Solids	\$ 93,074.26
Task 3C Ship Solids	\$ 57,706.90
Task 3D Road Maintenance	\$ 19,357.80
	<u>\$208,568.04</u>

TOTAL AMOUNT DUE: \$208,568.04





## TASK 1A AND 1B

### Bison Basin Decommissioning

#### Task 1A - On-Site Surveys and Supervision

Ron E. Berg Bison Basin Field Work<sup>(1)</sup>

<u>Dates</u>	<u>Number of Days</u>
9-5 through 9-8	4
9-12 through 9-20	8.5
9-25 through 10-6	12.0
10-10 through 10-20	11.0
10-23 through 10-29	6.5
11-2	<u>1.0</u>
	43 days

(1) Documentation contained within Daily Time Sheets

#### Task 1B - Office Work

Radiation Work Permit, Preliminary Radiological Survey,  
Final Report - Bison Basin Decommissioning

Ron E. Berg, Bison Basin Office Work

9-11-89	Radiation Work Permit,	1
	Other Letters	
9-21, 22-89	Preliminary Report	2
11-16, 17, 89	Final Report	<u>2</u>
		5 days

#### Cost Calculations

Task 1A      43 days x \$450.00/day = \$19,350.00

Task 1B      5 days x \$375.00/day = \$ 1,875.00

TASK 1C - SUMMARY

Bison Basin Decontamination Survey

Categories of Soil Sampling and Purpose

		<u># of Samples</u>
9-18-89	Soil <sup>226</sup> Ra using gamma spectroscopy to determine <sup>226</sup> Ra to <sup>214</sup> Pb relationship	10
9-25-89	Soil <sup>226</sup> Ra using gamma spectroscopy; pre clean-up	10
10-4-89	Soil <sup>226</sup> Ra determination using chemical digestion (EPA-900.1)	1
10-30-89	Soil <sup>226</sup> Ra using gamma spectroscopy; final confirmation samples	20

Payment Calculation

Gamma Spectroscopy

40 samples x \$10.00/ea \$400.00

Chemical Digestion and Gamma Spectroscopy

1 sample x \$36.75/ea \$ 36.75  
\$436.75

## BISON BASIN RECLAMATION PROJECT

Analytical Summary: Data generated for Landmark Reclamation

Invoice	Date	# Samples	Parameters	Cost
909-316	9-11-89	N/A	Pond Sludge Tests	140.00
898-328	9-16-89	10	Soil Ra-226 Quick & Pin	166.67
909-355	9-25-89	12	" "	200.00
910-302	10-4-89	1	Soil Ra-226 Chem xck	40.00
910-317	10-13-89	2	Long t1/2 radionuclides	30.00
pending	11-30-89	20	Soil Ra-226 Final gamma	166.67

Analyses Performed by: Energy Laboratories, Inc.  
P.O. Box 3258 - 254 N. Center  
Casper, WY 82602

Branch Manager: *A. C. Leasing**11/30/89*



### TASK 3A

#### Load, Unload Sludge Summary

<u>Date</u>	<u>Truck</u> <sup>(1)</sup>	<u># of Trucks</u>
9-5-89	T <sub>1</sub> , T <sub>7</sub>	2
	T <sub>5</sub>	2
9-6-89	T <sub>1</sub> , T <sub>7</sub>	3
	T <sub>5</sub>	3
9-7-89	T <sub>1</sub> , T <sub>7</sub>	6
	T <sub>5</sub>	3
9-12-89	T <sub>1</sub> , T <sub>7</sub>	6
	T <sub>5</sub>	3
9-13-89	T <sub>1</sub> , T <sub>7</sub>	6
	T <sub>5</sub>	3
9-14-89	T <sub>1</sub> , T <sub>7</sub>	6
	T <sub>5</sub>	3
9-15-89	T <sub>1</sub> , T <sub>7</sub>	4
	T <sub>5</sub>	3
9-16-89	T <sub>1</sub> , T <sub>7</sub>	6
9-17-89	T <sub>1</sub> , T <sub>7</sub>	5
9-19-89	T <sub>1</sub> , T <sub>7</sub>	1
9-20-89	T <sub>1</sub> , T <sub>7</sub>	2
	T <sub>5</sub>	1
9-22-89	T <sub>1</sub> , T <sub>7</sub>	1
9-23-89	T <sub>1</sub> , T <sub>7</sub>	4
	T <sub>5</sub>	3
9-24-89	T <sub>1</sub> , T <sub>7</sub>	6
	T <sub>5</sub>	3
9-25-89	T <sub>1</sub> , T <sub>7</sub>	6
	T <sub>5</sub>	3
10-12-89	T <sub>1</sub>	3

(1) All solutions were hauled by United Water Service, Riverton, Wyoming. Volume calculations based on assumed 100% volume of vacuum trucks.

Volume Calculations

United Water Service

$$67 \text{ loads} \times 130 \text{ barrels} \times 42 \text{ gallons/barrel} = 365,820$$

$$30 \text{ loads} \times 170 \text{ barrels} \times 42 \text{ gallons/barrel} \times .80 = \underline{214,200}$$

$$\text{Total:} \qquad \qquad \qquad 580,020 \text{ gal.}$$

Payment Calculation - Task 3A

$$580,020 \text{ gallons divided by } 202 \text{ gallons/CY} =$$

$$2,871 \text{ CY} \times \$5.14 = \underline{\underline{\$14,756.94}}$$

### TASK 3B AND TASK 3C SUMMARY

#### Load and Unload Solids and Ship Solids Bison Basin Decontamination

		<u>CY Solids<sup>(1)</sup></u>
Shoshone Enterprise Trucks #4 and #5 38 loads x 12 CY	=	456.0
Shoshone Enterprise Trucks #1 3 loads x 9.6 CY	=	28.8
U. S. Energy Truck #113 36 loads x 8 CY	=	288.0
Hyland Enterprises Truck #21 and #23 77 loads x 28 CY	=	2,156.0
U.S. Energy Truck #3 39 loads x 9.6 CY	=	<u>374.4</u>
		3,303.20

#### Payment Calculation

Task 3B 3,303.2 CY x \$28.177	=	<u>\$93,074.26</u>
Task 3C 3,303.2 CY x \$17.47	=	<u>\$57,706.90</u>

(1) All volumes calculated on an 80% struck volume basis. Documentation for number of loads has been provided under separate cover by Minerals Exploration Company.



DATE	TRUCK ID	NO. OF LOADS	VOLUME (CY)
10-03-89	HYLAND #21, #31	2	56
10-04-89	HYLAND #21, #31	6	168
10-05-89	HYLAND #21, #31	7	196
10-06-89	HYLAND #21, #31	7	196
10-07-89	HYLAND #21, #31	4	112
10-08-89	HYLAND #21, #31	2	56
10-09-89	HYLAND #21, #31	4	112
10-10-89	HYLAND #21, #31	4	112
10-12-89	HYLAND #21, #31	6	168
10-13-89	HYLAND #21, #31	6	168
10-16-89	HYLAND #21, #31	5	140
10-17-89	HYLAND #21, #31	4	112
10-18-89	HYLAND #21, #31	6	168
10-19-89	HYLAND #21, #31	3	84
10-20-89	HYLAND #21, #31	4	112
10-21-89	HYLAND #21, #31	2	56
10-22-89	HYLAND #21, #31	2	56
10-23-89	HYLAND #21, #31	2	56
10-24-89	HYLAND #21, #31	1	28
	TOTAL	77	2156

DATE	TRUCK ID	NO. OF LOADS	VOLUME (CY)
10-11-89	USE #3	1	9.60
10-12-89	USE #3	2	19.20
10-13-89	USE #3	2	19.20
10-14-89	USE #3	3	28.80
10-15-89	USE #3	2	19.20
10-16-89	USE #3	2	19.20
10-17-89	USE #3	2	19.20
10-18-89	USE #3	3	28.80
10-19-89	USE #3	3	28.80
10-20-89	USE #3	2	19.20
10-22-89	USE #3	1	9.60
10-23-89	USE #3	1	9.60
10-24-89	USE #3	3	28.80
10-25-89	USE #3	2	19.20
10-26-89	USE #3	2	19.20
10-27-89	USE #3	3	28.80
10-28-89	USE #3	3	28.80
10-29-89	USE #3	1	9.60
11-02-89	USE #3	1	9.60
	TOTAL	39	374.4

DATE	TRUCK ID	NO. OF LOADS	VOLUME (CY)
09-29-89	USE#113	2	16
09-30-89	USE#113	3	24
10-01-89	USE#113	3	24
10-02-89	USE#113	3	24
10-03-89	USE#113	2	16
10-05-89	USE#113	3	24
10-06-89	USE#113	1	8
10-09-89	USE#113	2	16
10-10-89	USE#113	2	16
10-11-89	USE#113	1	8
10-13-89	USE#113	2	16
10-14-89	USE#113	1	8
10-15-89	USE#113	2	16
10-16-89	USE#113	2	16
10-17-89	USE#113	2	16
10-19-89	USE#113	1	8
10-20-89	USE#113	2	16
10-28-89	USE#113	1	8
10-29-89	USE#113	1	8
	TOTAL	36	288.00

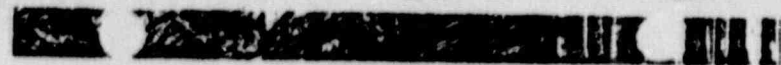


DATE	TRUCK ID	NO. HAULS	VOLUME (CY)
09-27-89	SHOS #1	3	26.80
	TOTAL	3	26.80

DATE	TRUCK ID	NO. OF LOADS	VOLUME (CY)
09-26-89	SHOS #4, #5	2	24
09-27-89	SHOS #4, #5	6	72
09-28-89	SHOS #4, #5	5	60
09-29-89	SHOS #4, #5	7	84
10-01-89	SHOS #4, #5	4	48
10-02-89	SHOS #4, #5	6	72
10-03-89	SHOS #4, #5	5	60
10-04-89	SHOS #4, #5	3	36
TOTAL		38	456

NRC Copy

OTC



# LANDMARK RECLAMATION

December 14, 1989

Mr. Mark Moxley  
District II Supervisor  
Wyoming Department of Environmental Quality  
Land Quality Division  
Lander, Wyoming 82520

Re: Bison Basin Project - BB-5  
Change Order #3

504

Dear Mark:

Enclosed please find the Final Invoice for work performed as part of Change Order #3 associated with the Bison Basin Decommissioning Project. Work performed included the radiological decontamination of the concrete sump located in the concrete pad on which the production building used to sit, and transport of contaminated material to Minerals Exploration Subcontractor facility for disposal. Specifically, concrete was chiseled out of the sides and bottom of the sump with a jack hammer to remove material impregnated with uranium process solutions. Then materials were shoveled out of the sump and transported to the disposal site.

Work was requested and authorized by telephone conversation with you on November 17, 1989. It was agreed that work would be performed on a cost and materials basis with a 15% markup. Approximately three tons of material was excavated and removed. The sump was then surveyed for alpha radiation and the results submitted to you under separate cover. Decontamination actions and surveys were carried out by or under the supervision of Ron Berg.

The total change order cost is \$2,592.97 and is documented in the attachment. Please contact me at our Denver office if you have any questions.

Sincerely,

William J. Almas  
Project Manager

WJA/pl  
Attachments

cc: Mr. Steve Toalson  
Wyoming Department of Environmental Quality  
Land Quality Division  
Administrative Section

OTC





Change Order #5  
Bison Basin Decommissioning



<u>Labor - Two Labors; Mob-Demob and Remove Sump Material</u> (1)							
11-20-89	Operator	10 hrs.	x	\$18.60	=	\$ 186.00	
	Laborer	10 hrs.	x	\$12.50	=	\$ 125.00	
11-21-89	Operator	10 hrs.	x	\$18.60	=	\$ 186.00	
	Laborer	10 hrs.	x	\$12.50	=	\$ 125.00	
11-22-89	Operator	10 hrs.	x	\$18.60	=	\$ 186.00	
	Laborer	10 hrs.	x	\$12.50	=	\$ 125.00	
						\$ 933.00	\$ <u>933.00</u>
 <u>Subcontracted Equipment</u>							
Majors Equipment							
10 CY Dump Truck						\$ 224.41	
Little Bear Equipment Rental						\$ 206.00	
						\$ 430.41	
Subcontracted Equipment x \$1.15							
Profit Overhead						\$ 494.97	\$ <u>494.97</u>
 <u>Per Diem (RED) - \$50.00/day x 2</u>						\$ 100.00	\$ <u>100.00</u>
 <u>Supervision</u>							
Ron E. Berg							
2 days x \$450.00						\$ 900.00	\$ <u>900.00</u>
 <u>Mileage</u>							
Riverton to Bison Basin to Riverton							
2 trips x 150 miles x \$.55/mile						\$ 165.00	\$ <u>165.00</u>
 Total Change Order Amount						\$2,592.97	\$2,592.97

(1) Daily time sheets reflect 16 hour days. This was due to equipment failure and additional hours are not considered recoverable by Landmark. Labor rates are those submitted as part of the first Status Report dated September 11, 1989.



# LANDMARK RECLAMATION

## DAILY TIME SHEET

DATE 11-21-89

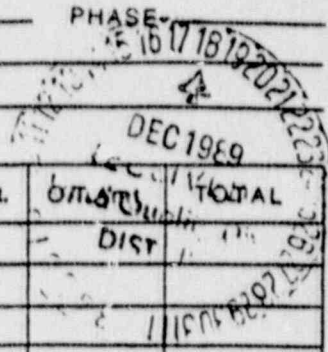
CLIENT \_\_\_\_\_

AUTHORIZATION \_\_\_\_\_

PROJECT Bison Basin

JOB/AREA \_\_\_\_\_ PHASE \_\_\_\_\_

WORK PERFORMED Remove CowCASTR



EMPLOYEE	CLASSIFICATION	Reg Rate	Reg Hrs	Reg.Amt.	TOTAL
		O.T.Rate	O.T.Hrs		
Robert Rudd	Laborer		16.5		
Thomas D. King	Lead Man		16.5		
RE. Berg	R50		14		
TOTALS					

### EQUIPMENT

### MATERIAL / SUBCONTRACT (ATTACH BACKUP)

UNIT #	DESCRIPTION	RATE	HRS.	AMOUNT
	Air Compressor		24.0	
	Jack Hammer		24.0	
	Dump Truck		24.0	
TOTAL				

INVOICE #	VENDOR	AMOUNT
	Little Bear Rental	
	" " "	
	Foster Construction	
TOTAL		

COMMENTS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

LABOR \_\_\_\_\_  
 EQUIPMENT \_\_\_\_\_  
 MATERIAL / SC \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 TOTAL \_\_\_\_\_

*Mark Kan*



# LANDMARK RECLAMATION

## DAILY TIME SHEET

DATE 11-22-89

CLIENT \_\_\_\_\_

AUTHORIZATION \_\_\_\_\_

PROJECT Bison Basin

JOB/AREA \_\_\_\_\_ PHASE \_\_\_\_\_

WORK PERFORMED Picked up last of contaminated material  
got truck decontaminated.

EMPLOYEE	CLASSIFICATION	Reg Rate	Reg Hrs	Reg. Amt.	O.T. Amt	TOTAL
		O.T. Rate	O.T. Hrs			
Robert Rudd	labor		2.5			
Thomas D King	leadman		2.5			
TOTALS						

### EQUIPMENT

UNIT #	DESCRIPTION	RATE	HRS.	AMOUNT
46	Dump truck		10	
	" "		24	
	Air Compressor		18	P/C
TOTAL				

### MATERIAL / SUBCONTRACT (ATTACH BACKUP)

INVOICE #	VENDOR	AMOUNT
TOTAL		

COMMENTS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

LABOR \_\_\_\_\_  
 EQUIPMENT \_\_\_\_\_  
 MATERIAL / SC \_\_\_\_\_  
 \_\_\_\_\_  
 TOTAL \_\_\_\_\_

*11/22/89*

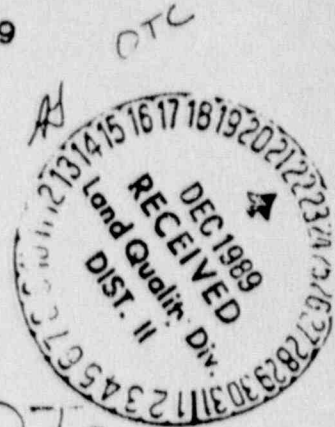


# LANDMARK RECLAMATION

December 20, 1989

Mr. Mark Moxley  
Wyoming Department of Environmental Quality  
Land Quality Division  
210 Lincoln Street  
Lander, Wyoming 82520

PERMIT No. 504



Re: Post Decommissioning Soil Verification Results  
Bison Basin Project  
BB-05

Dear Mark:

Enclosed herein are the final results of the soil samples taken from Well Field #1 areas which were identified as containing Ra-226 concentrations in excess of the regulatory guidelines in the Preliminary Radiological Survey dated September 29, 1989. These samples were taken after removal of contaminated soil and reflect the efficacy of cleanup efforts. As mentioned in the final report (BB-04) all areas were measured for gamma radiation levels after removal of contaminated soil material and in all cases gamma radiation levels were equal to or less than background. Also included herein are soil sample verification results of the three pond areas after cleanup operations. (Sample #'s P<sub>1-1</sub>-P<sub>1-3</sub>, P<sub>2-1</sub>-P<sub>2-3</sub>, SP<sub>1</sub>-SP<sub>2</sub>). It should be noted that all sample results are below regulatory guidelines for Ra-226 concentrations of 6 picocuries per gram except for one sample (#B-39). However, Sample #B-39 is still within 6 picocuries above average native surrounding background soils which exhibit average Ra-226 concentration of 3.0 ± 0.5 pCi/gm.

If you have any questions regarding this information, please do not hesitate to contact me or Bill Almas at (801) 364-1071/(800) 525-3088 respectively.

Sincerely,

R.E. Berg  
Site Project Manager/  
Radiation Safety Officer

REB/vrc  
Encl.

# LANDMARK RECLAMATION

January 8, 1990

Mr. Mark Moxley  
District Supervisor  
Wyoming Department of Environmental Quality  
Land Quality Division  
210 Lincoln Street  
Lander, Wyoming 82520

504

Re: Notice of Violation #40-8926, Bison Basin Project

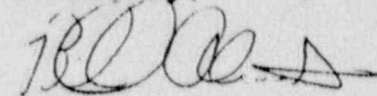
Dear Mark:

Enclosed please find the radiological survey information performed by R. E. Berg on a section of liner material found on the side of the pond areas at the Bison Basin site. In addition to this survey information, Ron took numerous unrecorded readings at various points throughout the project to give a general indication of radiological contamination present on the liner.

Based upon this information and the knowledge that the liner Mr. Larsen expropriated was from the side of the impoundment, Landmark believes that the liner in question was suitable for release under the requirements of Annex A of NRC guidance. However, this cannot be proved positively.

I hope this information is of value to you. Good luck in final closure and release of the property from NRC jurisdiction.

Sincerely,



William J. Almas  
Environmental Supervisor

WJA/pl  
Enclosures





INSPECTION REPORT

OPERATION : Bison Basin Decommissioning Project

INSPECTOR : Mark Moxley, District II Supervisor *mm*

DATE : November 21, 1989

This inspection was conducted to monitor the progress of the cleanup work in progress on the sump and drains in the concrete slab.

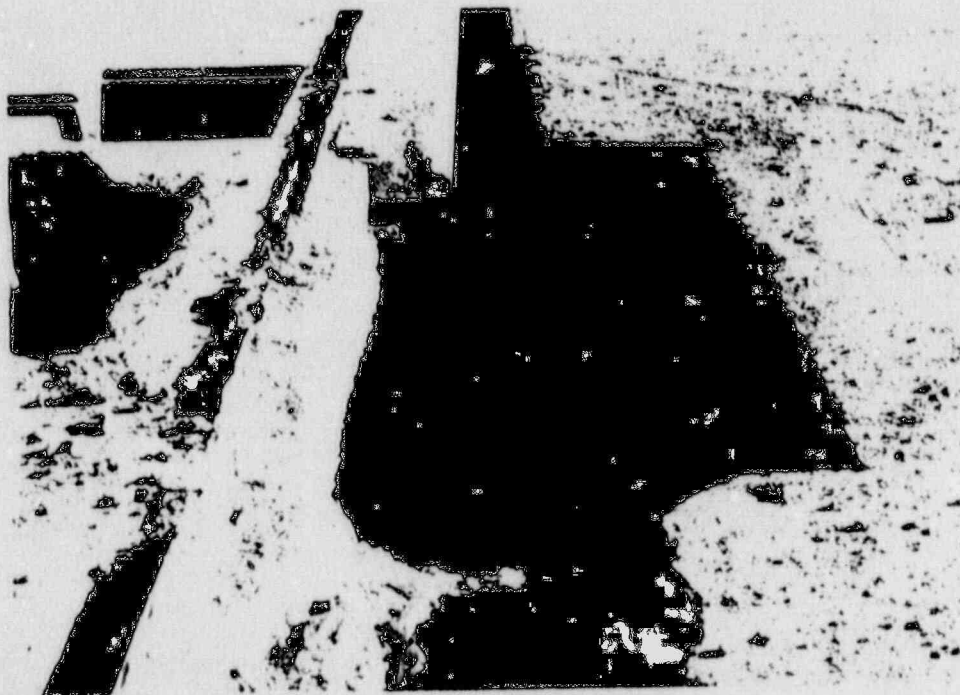
The south sump and the drain liners on either side of the sump were found to be contaminated by Mr. Konwinski of the Nuclear Regulatory Commission when he inspected the site on November 16, 1989 in the company of Mr. Moxley. He found gamma readings in the south sump as high as 400 MR/hour.

Mr. Moxley informed Landmark on November 17, 1989 that the concrete around the sump and the drains would have to be broken up with a jackhammer and hauled to Minerals Exploration for disposal. Landmark personnel began this work on November 20, 1989 and hauled out the final load of contaminated material on November 22, 1989.

The attached photos show the sump on the morning of November 21, 1989. At that time most of the jackhammer work had been completed and the south sump had been cleaned out. The surficial concrete in the south sump was all chipped off with a jackhammer. Portions of the drain lines were also chipped out to remove surficial contamination. Final alpha and gamma surveys were submitted under cover of Landmark's letter of November 29, 1989.

MM:mm

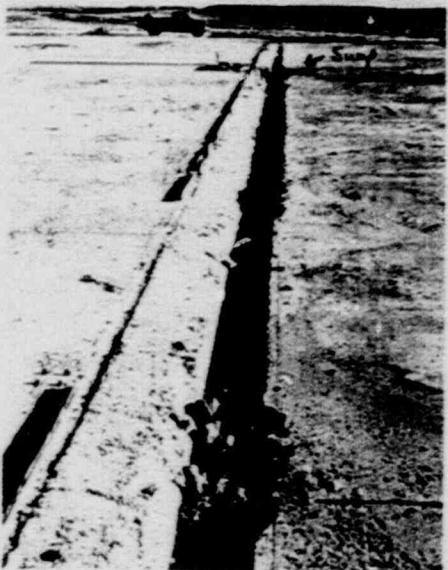
xc: Rick Chancellor - Cheyenne DEQ-LQD  
Gary Konwinski - NRC Denver, CO



Looking east at the south sump which had been chipped out and mostly cleaned at the time of the inspection. (Frame 3, Roll 469609)



Looking west across the south  
sump and down the drain line in  
the concrete slab.  
(Frame 1, Roll 469609)



Looking east from a point near  
the west edge of the concrete  
slab.  
(Frame 2, Roll 469609)

INSPECTION REPORT

OPERATION : Bison Basin Decommissioning Project

INSPECTOR : Mark Moxley, District II Supervisor *mm*

DATE : November 21, 1989