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40-8943

September 28, 2021

CERTIFIED MAIL RETURN RECEIPT REQUESTED

Sue Dempsey, Drinking Water and Groundwater Division Administrator Nebraska Department of Environment and Energy P.O. Box 98922 Lincoln, Nebraska 68509-8922

2022 Surety Estimate Class III Underground Injection Control Permit Number NE 0122611 Class I Underground Injection Control Permit Number NE 0211670 Class I Underground Injection Control Permit Number NE 0210825

Dear Ms. Link:

Attached is the annual update to the surety estimate for the Crow Butte Uranium Mine. This estimate meets the requirements of Chapter 13 of Title 122, *Rules and Regulations for Underground Injection and Mineral Production Wells* and the annual update requirements included in the referenced permits issued by the Nebraska Department of Environment and Energy (NDEE). Attached as required in the approved minor permit modification dated August 21, 2007, is an audit statement from Gardner, Loutzenhiser & Ryan; an independent professional auditing firm.

As stated in Criterion 9 of 10 CFR, Appendix A, this surety estimate supplies sufficient information for the U.S. Nuclear Regulatory Commission (NRC) to verify that the amount of coverage provided by the financial assurance will permit the completion of all decontamination, decommissioning, and reclamation of sites, structures, and equipment used in conjunction with facility operation.

Cost estimates have been calculated on the basis of completion of all activities by a third party who is not financially affiliated with Crow Butte. Costs quoted by independent contractors include profit and overhead costs and do not include any credit for salvage value. Crow Butte does not incur any annual costs due to licenses or permits from any State, County, or Local Governments.

The 2022 Surety Estimate is \$56,121,073, an increase of \$4,737,709 compared to the 2021 Surety Estimate of \$51,383,364, submitted on September 28, 2020. The chemical and electrical costs are based on current day invoiced costs, or if there is not a current invoice, current price quotes from vendors. Project management costs have been incorporated into the various phases of decommissioning under the labor costs associated with engineering. There were no significant

NMSSOL NMSS



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changes to the site infrastructure in 2021 or planned for 2022 that impacted the surety estimate.

The most significant factor contributing to the increased surety estimate is that CBO changed the horsepower assumptions for downhole pumps from 5 hp to 3 hp and the estimated flow rate from 32 gpm to 12 gpm. These changes were made based on the actual field conditions that have been experienced during the heightened restoration efforts over the last several years. Fuel cost increases were also a significant driver of the changes. The CPI escalation factor for the 2022 estimate was 1.05, and this factor is reflected in the cost increases of many of the elements that contribute to the final surety estimate.

#### **Status of Mine Units in Restoration**

#### Mine Unit #2

#### **History**

The restoration plan for this mine unit was submitted to NDEE on December 5, 1995 and was approved by NDEE in a letter dated December 15, 1995. Injection of lixiviant into this mine unit ceased on January 2, 1996. Since that time period, the mine unit has been in IX and RO treatment and stability monitoring with the following exception.

On August 9, 2007 the entire restoration circuit was shut down so that changes could be made to increase the flow through IX and RO treatment. During this time period the mine unit was in recirculation to maintain a hydrologic bleed until April 1, 2009, when IX treatment resumed in this mine unit. On May 26, 2009, the RO circuit was restarted and this mine unit was placed back into RO treatment.

In February 2009, Crow Butte contracted with a third party hydrogeologist to develop a restoration flow model for Mine Units 2 through 5. The groundwater flow at the facility was simulated using MODFLOW2000, a three-dimensional groundwater flow model developed by the United States Geological Survey. The groundwater flow model was calibrated to pre-mining conditions using water level data collected prior to the mining activities in January 1983. Initial estimates of aquifer properties and boundary water levels were adjusted slightly as part of the model calibration process in order to achieve the best possible match between observed and simulated water levels. The calibrated groundwater flow model is currently being used to optimize restoration in Mine Units 2 through 5 given certain practical limitations on treatment rates, disposal capacity, and existing well injection and extraction rates. The model is calibrated periodically to reflect current mine conditions. Based on this model, eight additional restoration wells were installed to remediate the excursion of lixiviant along the perimeter monitor wells



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PR-8, PR-15, and IJ13-P. On February 1, 2010 the Safety Environmental Review Panel approved the startup of these additional wells.

Based on these conditions, it was estimated that Mine Unit 2 would be placed into stability monitoring by July 1, 2012. By letter dated August 20, 2009 and Technical Evaluation Report dated August 5, 2009, the NRC approved CBO's request to complete groundwater restoration in Mine Unit 2 by July 1, 2012.

On May 23, 2013, CBO submitted to NDEE data supporting the successful restoration of the groundwater in Mine Unit #2. By letter June 10, 2013, the NDEE indicated that the data had been reviewed and determined that stabilization could begin. Stability monitoring and sampling was initiated in June 2013 and continued through September 2014. The data indicated that all the monitored constituents had stabilized and had been returned to the approved NDEE restoration standards. However, a few of the monitored constituents did not meet the concentration limits under 10 CFR 40, Appendix A, Criterion 5B(5). As a result of this, CBO collected coring data from this mine unit and anticipated submitting an application requesting an alternate concentration limit (ACL) for these constituents. Because of the small size, geographic proximity, and similar water quality between Mine Unit #2 and Mine Unit #3, CBO planned to prepare and submit the ACL application for these mine units together, which would defray significant cost in preparation of the submittal.

#### 2021 status

CBO collected guideline-8 samples from the baseline restoration wells in Mine Unit 2 in November 2019, and again in May 2020. Based on these sample results, CBO has determined that additional treatment is required in Mine Unit 2. CBO initiated this treatment in the third quarter of 2020 and continued through the first quarter of 2021. The mine unit is currently in circulation and CBO anticipates initiating stability monitoring in the first quarter of 2022. If an ACL is required, CBO projects that this submittal will be submitted during the first quarter of 2024, with regulatory review completed by the second quarter of 2026.

#### Mine Unit #3

#### **History**

The restoration plan for this mine unit was submitted to NDEE on March 24, 1999 and was amended and approved by NDEE in a letter dated February 13, 2008. Injection of lixiviant into this mine unit ceased on July 22, 1999. Since that time period, the mine unit has been in IX and RO treatment and stability monitoring with the following exception.



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On August 9, 2007 the entire restoration circuit was shut down so that changes could be made to increase the flow through IX and RO treatment. During this time period the mine unit was in recirculation to maintain a hydrologic bleed until April 1, 2009, when IX treatment resumed in this mine unit. On May 26, 2009, the RO circuit was restarted and this mine unit was placed back into RO treatment.

In February 2009, Crow Butte contracted with a third party hydrogeologist to develop a restoration flow model for Mine Units 2 through 5. The groundwater flow at the facility was simulated using MODFLOW2000, a three-dimensional groundwater flow model developed by the United States Geological Survey. The groundwater flow model was calibrated to pre-mining conditions using water level data collected prior to the mining activities in January 1983. Initial estimates of aquifer properties and boundary water levels were adjusted slightly as part of the model calibration process in order to achieve the best possible match between observed and simulated water levels. The calibrated groundwater flow model is currently being used to optimize restoration in Mine Units 2 through 5 given certain practical limitations on treatment rates, disposal capacity, and existing well injection and extraction rates. The model is calibrated periodically to reflect current mine conditions. Based on this model, eight additional restoration wells were installed to remediate the excursion of lixiviant along the perimeter monitor wells PR-8, PR-15, and IJ13-P. On February 1, 2010 the Safety Environmental Review Panel approved the startup of these additional wells.

Based on these conditions, it was estimated that Mine Unit 3 would be placed into stability monitoring by July 1, 2013. By letter dated August 20, 2009 and Technical Evaluation Report dated August 5, 2009, the NRC approved CBO's request to complete groundwater restoration in Mine Unit 3 by July 1, 2013.

On May 23, 2013, CBO submitted to NDEE data supporting the successful restoration of the groundwater in Mine Unit #3. By letter June 10, 2013, the NDEE indicated that the data had been reviewed and determined that stabilization could begin. Stability monitoring and sampling was initiated in June 2013 and continued through September 2014. The data indicates that all the monitored constituents have stabilized and have been returned to the approved NDEE restoration standards. However, a few of the monitored constituents do not meet the concentration limits under 10 CFR 40, Appendix A, Criterion 5B(5). As a result of this, CBO has collected coring data from this mine unit and anticipates submitting an application requesting an ACL for these constituents.

On September 15, 2017, spot treatment of P246 in Mine Unit 3 was reinitiated after in-house samples indicated that the uranium levels in the well had increased significantly. Additional sampling indicated that the likely source of the elevated uranium levels in the well was an



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incursion of solutions from neighboring Mine Unit 7. Spot treatment in this area was completed during the third quarter of 2018. The first stability samples following completion of spot treatment were collected on September 4, 2018.

#### 2021 status

CBO plans to submit a stability monitoring report and initiate the ACL process for this mine unit in the fourth quarter of 2021. We project that the regulatory review for this mine unit may extend through the fourth quarter of 2023.

#### Mine Unit #4

#### History

The restoration plan for this mine unit was submitted to NDEE on March 4, 2003 and was approved by NDEE in a letter dated August 26, 2003. Injection of lixiviant into this mine unit ceased on October 31, 2003. Since that time period the mine unit has been in IX and RO treatment with the same exceptions as Mine Unit 2. On April 1, 2009, IX and RO treatment was resumed in this mine unit. Based on these conditions, it was estimated that Mine Unit 4 would be placed into stability monitoring by January 1, 2015. By letter dated August 20, 2009 and Technical Evaluation Report dated August 5, 2009, the NRC approved CBO's request to complete groundwater restoration in Mine Unit 4 by January 1, 2015.

#### 2021 status

The mine unit was placed in stability monitoring September, 2018. Based on the sampling results, CBO has identified several areas in the mine unit that were in need of additional treatment. CBO initiated treatment in the third quarter of 2020, and a small portion of the mine unit currently remains in treatment. CBO anticipates returning the mine unit to stability monitoring in the first quarter of 2022. Stability monitoring will continue through the fourth quarter of 2023. CBO anticipates an ACL submittal in the first quarter of 2024, with regulatory review finished during the first quarter of 2026.

#### Mine Unit #5

#### History

The restoration plan for this mine unit was submitted to NDEQ on July 9, 2007 and was approved by NDEQ in a letter dated August 6, 2007. Injection of lixiviant into this mine unit ceased on August 14, 2007. Since that time period the mine unit has been in IX and RO



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treatment with the same exceptions as Mine Unit 2. On April 1, 2009, IX and RO treatment was resumed in this mine unit. Based on these conditions, it was estimated that Mine Unit 5 would be placed into stability monitoring by July 1, 2016. By letter dated August 20, 2009 and Technical Evaluation Report dated August 5, 2009, the NRC approved CBO's request to complete groundwater restoration in Mine Unit 5 by July 1, 2016.

#### 2021 Status

The mine unit is currently in stability monitoring. Stability monitoring was initiated in the third quarter of 2018, slightly ahead of the MODFLOW2000 model projections. If an ACL is required, CBO anticipates submitting the application during the fourth quarter of 2022. It is estimated that the regulatory review will be completed during the fourth quarter of 2024.

#### Mine Unit #6

#### History

On October 28, 2010, CBO permanently ceased injection of lixiviant into the mine unit. By letter dated December 21, 2010, CBO provided notice of cessation of mining in Mine Unit #6.

#### 2021 Status

Mine Unit 6 is currently in IX and RO treatment. Based on the MODFLOW2000 model, stability monitoring of the mine unit should begin during the second quarter of 2022. If an ACL is required, CBO anticipates submitting the application during the second quarter of 2024. It is estimated that the regulatory review will be completed during the second quarter of 2026.

#### Mine Unit #7

#### History

On September 6, 2018, CBO permanently ceased mining activities in the mine unit. By letter dated November 6, 2018, CBO provided notice of cessation of mining in Mine Unit #7.

#### 2021 Status

Mine Unit #7 is currently in reverse osmosis treatment. Based on the MODFLOW 2000 model for this mine unit, CBO projects that treatment and recirculation of Mine Unit # 7 will continue



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through the third quarter of 2022. It will enter stability monitoring in the fourth quarter of 2022. If an ACL is required, CBO anticipates submitting the application during the first quarter of 2025. It is estimated that the regulatory review will be completed during the fourth quarter of 2026.

#### Mine Unit #8

#### <u>History</u>

As referenced earlier, Cameco announced plans to cease production at its U.S. operations on February 5, 2018, and committed to providing an alternate decommissioning schedule for the remaining mine units within 24 months. Injection in Mine Unit #8 ceased at that time.

#### 2021 Status

CBO initiated IX and RO treatment in Mine Unit #8 during the second quarter of 2021. Stability monitoring will be initiated during the first quarter of 2025. If an ACL is required, the application will be submitted during the first quarter of 2027. It is estimated that the regulatory review will be completed during the first quarter of 2029.

#### Mine Unit #9

#### History

As referenced earlier, Cameco announced plans to cease production at its U.S. operations on February 5, 2018, and committed to providing an alternate decommissioning schedule for the remaining mine units within 24 months. Injection in Mine Unit #9 ceased at that time.

#### Current Status

At this time, a small bleed is maintained in Mine Unit #9 to control excursions. Based on operational capabilities and waste water disposal capacity, CBO projects that Mine Unit #9 will enter into treatment during the third quarter of 2029. Stability monitoring will be initiated during the second quarter of 2032. If an ACL is required, the application will be submitted during the second quarter of 2034. It is estimated that the regulatory review will be completed during the second quarter of 2036.

#### Mine Unit #10

**History** 



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As referenced earlier, Cameco announced plans to cease production at its U.S. operations on February 5, 2018, and committed to providing an alternate decommissioning schedule for the remaining mine units within 24 months. Injection in Mine Unit #10 ceased at that time.

#### Current Status

At this time, a small bleed is maintained in Mine Unit #10 to control excursions. Based on operational capabilities and waste water disposal capacity, CBO projects that Mine Unit #10 will enter into treatment during the third quarter of 2024. Stability monitoring will be initiated during the first quarter of 2030. If an ACL is required, the application will be submitted during the first quarter of 2032. It is estimated that the regulatory review will be completed during the first quarter of 2034.

#### Mine Unit #11

#### History

As referenced earlier, Cameco announced plans to cease production at its U.S. operations on February 5, 2018, and committed to providing an alternate decommissioning schedule for the remaining mine units within 24 months. Injection in Mine Unit #11 ceased at that time.

#### Current Status

At this time, a small bleed is maintained in Mine Unit #11 to control excursions. Based on operational capabilities and waste water disposal capacity, CBO projects that Mine Unit #11 will enter into treatment during the fourth quarter of 2031. Stability monitoring will be initiated during the third quarter of 2036. If an ACL is required, the application will be submitted during the third quarter of 2038. It is estimated that the regulatory review will be completed during the third quarter of 2040.

Sufficient funds have been included in the 2021 Surety Estimate to cover the MU restoration periods and any associated work (e.g. development of an ACL application per Part 40, Appendix A, Criterion 5B(6)) by a third party.

Upon approval of the surety estimate update by the NDEE, the Crow Butte Operation (CBO) will provide a secured letter of credit on the renewal date to the State of Nebraska in an amount equal to the updated surety estimate.

If you have any questions or require any further information, please do not hesitate to call me at (308) 665-2215 Ext 117.



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Sincerely, CAMECO RESOURCES CROW BUTTE OPERATION

Walter D Vielan

Walter D. Nelson SHEQ Coordinator

Enclosure

cc:

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

Deputy Director, Division of Decommissioning Uranium Recovery and Waste Programs Office of Nuclear Material Safety and Safeguards U.S. Nuclear Regulatory Commission Mail Stop T-8F5 11545 Rockville Pike, Two White Flint North Rockville, MD 20852-2738

CBO - File

ec: CR – Electronic File Amanda Jones – NDEE Program Coordinator Kory Winters – NDEE Field Office

# <u>Cameco Resources</u> <u>Crow Butte Operation</u> <u>Crawford, Nebraska</u>

## INDEPENDENT ACCOUNTANTS' REPORT ON APPLYING AGREED-UPON PROCEDURES

## Crow Butte Uranium Mine 2022 Surety Estimate



#### **INDEPENDENT ACCOUNTANTS' REPORT**

Doug Pavlick, President Crow Butte Resources, Inc. P.O. Box 1201 Glenrock, WY 82637

We have performed the procedures enumerated below on evaluating the mathematical accuracy of the Crow Butte Uranium Project 2022 Surety Estimate, and to test the supporting assumptions in the master cost worksheet for the period 2022. Cameco Resources Crow Butte Operation is responsible for Crow Butte Uranium Project 2022 Surety Estimate.

Cameco Resources Crow Butte Operation has agreed to and acknowledged that the procedures performed are appropriate to meet the intended purpose of complying with Chapter 13, Title 122, Rules and Regulations for Underground Injections and Mineral Production Wells in providing the Nebraska Department of Environmental Quality with surety bond estimate of costs for the period 2022. This report may not be suitable for any other purpose. The procedures performed may not address all the items of interest to a user of this report and may not meet the needs of all users of this report and, as such, users are responsible for determining whether the procedures performed are appropriate for their purposes.

Our procedures and findings are as follows:

- 1. Obtained the excel file for the Crow Butte Uranium Project 2022 Surety Estimate totaling \$56,121,073 from Walt Nelson on September 15, 2021.
  - Verified the mechanical accuracy of the spreadsheet by creating a separate recalculation excel spreadsheet (with all applicable tabs).
    - o Manually re-entered cost amounts and formula values.
    - Beginning with the MasterCosts tab formula values were referenced forward through the entire spreadsheet.
    - Costs were verified as to properly flowing between the various tabs of the spreadsheet.
  - No notable differences were found between values in this excel spreadsheet and the 2022 Surety Estimate spreadsheet.

- 2. Verified accuracy of cost assumptions used in "MasterCosts" tab of 2022 Surety Estimate spreadsheet by tracing amounts reported to various supporting documentation including:
  - Labor rates for Operator Labor, Engineer Costs, and Radiation Technician Expenses were agreed to the Nebraska Department of Labor website for labor statistics 2<sup>nd</sup> Quarter 2021.
  - Chemical costs were agreed to actual invoices or other third-party documentation.
  - Per unit costs of chemicals were recalculated.
  - Equipment rental costs were agreed to vendor quotes from NMC Rental Services, Scottsbluff Compact Equipment Rental, and Chadron Ace Rental.
  - Total hourly costs of equipment rental were recalculated.
  - Diesel costs were agreed using monthly average diesel fuel costs at the Nebraska Energy Office website.
  - Traced and agreed the diesel tax rates to the Nebraska Department of Revenue website to determine the cost of Ruby #1 diesel.
  - Waste disposal costs were agreed to invoices from SWANN and Stumph Sanitation.
  - Transportation and disposal costs were recalculated.
  - Plant dismantling costs were agreed to a 2017 bid from Paul Reed Construction & Supply, Inc. in Gering, Nebraska.
- 3. Verified Consumer Price Index (CPI) assumptions used for accuracy, by tracing to the Historical Consumer Price Index for all Urban Consumers (CPI-U) at the Bureau of Labor Statistics website.
- 4. Recalculated the consumer price index ratios.

We were engaged by Cameco Resources Crow Butte Operation to perform this agreed-upon procedures engagement and conducted our engagement in accordance with attestation standards established by the AICPA. We were not engaged to and did not conduct an examination or review engagement, the objective of which would be the expression of an opinion or conclusion, respectively, on the mathematical accuracy of the Crow Butte Uranium Project 2022 Surety Estimate. Accordingly, we do not express such an opinion or conclusion. Had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

We are required to be independent of Cameco Resources Crow Butte Operation and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements related to our agreed-upon procedures engagement.

This report is intended solely for the use of Cameco Resources Crow Butte Operation and the Nebraska Department of Environmental Quality, and is not intended to be, and should not be, used by anyone other than these specified parties.

Gardner, Contrachiner + Ryan PC

September 23, 2021 Chadron, Nebraska

#### \$26,031,738 Groundwater Restoration (Sheets 3 to 6) I. \$14,520,925 П. Wellfield Reclamation (Sheets 7 to 9) \$1,515,932 Commercial Plant Reclamation/Decommissioning (Sheets 10 to 12) Ш. R.O. Building Reclamation/Decommissioning (Sheets 10 to 12) \$381,500 IV. \$1,442,951 V. **Evaporation Pond Reclamation (Sheets 13)** \$712,896 VI. **Miscellaneous Site Reclamation (Sheets 14)** \$258,273 VII. **Deep Disposal Well Reclamation (Sheet 15)** \$32,643 I-196 Brule Aquifer Restoration (Sheets 16) VIII. Subtotal Reclamation and Restoration Cost Estimate \$44,896,858

<b>Contract Administration</b>	10%	\$4,489,686
Contingency	15%	\$6,734,529
	TO	DTAL \$56,121,073

# **Total Restoration and Reclamation Cost Estimate**

## Comparison of Total Surety and Major Cost Elements to Previous Year Projected Costs for 2022 are Compared with Costs for 2021 and Changes are Calculated

Contract Administration	<u>2022</u>		
	\$4,489,686	<u>2021</u> \$4,110,669	<u>Change</u> \$379,017
Contingency	<b>2022</b> \$6,734,529	<u>2021</u> \$6,166,004	<u>Change</u> \$568,525
Groundwater Restoration Groundwater IX	<u>2022</u>	<u>2021</u>	Change
Total Gallons Processed (Kgal) Total Cost	2,893,512 \$1,736,107	2,893,512 \$1,273,145	0 \$462,962
RO Treatment Total Gallons Processed (Kgal) Total Cost	5,787,024 \$8,738,406	5,787,024 \$7,407,391	0 \$1,331,016
Recirculation Total Gallons Processed (Kgal) Total Cost	1,929,008 \$945,214	1,929,008 \$636,573	0 \$308,641
Sampling and Monitoring Total 5 Parameter Samples Total 5 Parameter Analysis Costs	85,563 \$5,133,780	85,563 \$5,133,780	0 \$0
Total Guideline 8 Samples Total Guideline 8 Analysis Costs	5,724 \$1,259,280	5,724 \$1,259,280	0 \$0
Wellfield Reclamation Pipeline Removal and Loading Well Abandonment Total Number of Wells Total Abandonment Cost	2022 \$1,743,713 4,953 \$3,611,158	<b>2021</b> \$1,704,021 4,953 \$3,152,406	<u>Change</u> \$39,692 0 \$458,752
Site Reclamation Site Earthwork	<u>2022</u> \$1,668,989	<u>2021</u> \$1,599,499	<u>Change</u> \$69,491
Plant and Equipment Decontamination Decontamination Costs Demolition Costs Piping Shredding Costs	2022 \$292,724 \$974,875 \$492,295	<u>2021</u> \$231,082 \$949,057 \$490,627	Change \$61,641 \$25,818 \$1,667
Transportation and Disposal Byproduct Material Soil-Type Materials, Total Volume (Yd3) Soil-Type Materials, Total Cost Unpackaged Bulk Materials, Total Volume (Yd3) Unpackaged Bulk Materials, Total Cost	<u>2022</u> 4,411 \$1,534,072 3,418 \$797,052	<u>2021</u> 4,411 \$1,450,380 3,418 \$741,960	0 \$83,692 0 \$55,092

#### **Ground Water Restoration**

		Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5	Mine Unit 6	Mine Unit 7	Mine Unit 8	Mine Unit 9	Mine Unit 10	Mine Unit 11	Total
I. IX Treatment Costs					····							
PV's Required		3 64866	3 57219	3 314268	3 643926	3 181311	3 213447	3 348732	3 273090	3 487269	309384	2893512
Total Kgals for Treatment	Sheet 25)	\$0.60	\$0.60	\$0.60	\$0.60	\$0.60	\$0.60	\$0.60	\$0.60	\$0.60	\$0.60	2075512
IX Treatment Unit Cost (\$/Kgal) (S Subtotal IX Treatment Costs per Wellfield	Sheet 25)	\$38,919.60	\$34.331.40	\$188,560.80	\$386.355.60	\$108,786.60	\$128.068.20	\$209,239.20	\$163,854.00	\$292,361.40	\$185,630.40	\$1,736,107.20
Total IX Treatment Costs		\$1,736,107.20	00,002,00	\$100,00000	0000000000	Q2009/00100	•========	<i><i><i><i>w</i>wywwwwwwwwwwwww</i></i></i>				
II. Reverse Osmosis Costs				-					·			
PV's Required		. 6	6	6	6	6	6	6	6	6	6	5787024
Total Kgals for Treatment		129732	114438	628536	1287852	362622 \$1.51	426894 \$1.51	697464 \$1.51	546180 \$1.51	974538 \$1.51	618768 \$1,51	5787024 \$1.51
	Sheet 26)	\$1.51 <b>\$195.895.32</b>	\$1.51 \$172,801.38	\$1,51 \$949,089.36	\$1.51 \$1,944,656.52	\$547,559.22	\$1.31 \$644,609.94	\$1,053,170.64	\$824,731.80	\$1,471,552.38	\$934,339.68	\$8,738,406.24
Subtotal Reverse Osmosis Costs per Wellfield Total Reverse Osmosis Costs		\$195,895.32 \$8,738,406.24	\$1/ <i>2</i> ,001.30	\$743,00 <i>7.</i> 39	31,744,030.32	3347,333,22	<b>3044,00</b> 2.24	31,033,170.04	3024,/J1.0V	91,4/1,0 <i>34.3</i> 0	\$754,557.00	00,150,400,24
III. Recirculation Costs				i.	•	•	,					
PV's Required		2	. 2	2	` 2	2	2	2	2	2	2	100000
Total Kgals for Treatment		43244	38146	209512 \$0,49	429284 \$0,49	120874 \$0,49	142298 \$0,49	232488 \$0.49	182060 \$0,49	324846 \$0.49	206256 \$0,49	1929008 \$0,49
	Sheet 27)	\$0.49 <b>\$21,189.56</b>	\$0.49 <b>\$18.691.54</b>	\$0.49 \$102,660.88	\$0.49 \$210,349.16	\$0.49 \$59,228.26	\$0.49 \$69.726.02	\$0.49 \$113.919.12	\$0.49 \$89,209,40	\$159,174.54	\$101,065.44	\$945,213.92
Subtotal Recirculation Costs per Wellfield Total Recirculation Costs		\$945,213.92	\$10,U71.04	3102,000.00	<b>\$4,10,047,10</b>	5,37,420,20 ·	\$U\$ <sub>9</sub> 720.04	J113,74,7.14	\$65,205.40	\$137,174.34	5101,005.44	
IV. Consumables										, <b>0</b> ,		
Spare parts, filters and consumables =	\$60,199.23 year											
Active restoration period (months)		9,55	8,43	46.28	94.81	26.70	31.44	51.35	40.20	71.74	45.55	426.05
Consumable usage (months restoration x annual	rate estimate)	\$47,908.55	\$42,289.96	\$232,168.36	\$475,624.08	\$133,943.29	\$157,721.98	\$257,602.54	\$201,667.42	\$359,891.06	\$228,506.24	\$2,137,323.48
Subtotal Consumables per Mine Unit Total Consumables Costs		\$47,908.55 \$2,137,323.48	\$42,289.96	\$232,168.36	\$475,624.08	\$133,943.29	\$157,721.98	\$257,602.54	\$201,667.42	\$359,891.06	\$228,506.24	\$2,137,323.48

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			Ground	l Water Restorat	ion					$= \frac{1}{2} \sum_{i=1}^{n} \sum_{j \in \mathcal{I}_{i}} \sum_{i \in \mathcal{I}_{i}} \sum_{j \in \mathcal{I}_{i}}$	
	Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5	Mine Unit 6	Mine Unit 7	Mine Unit 8	Mine Unit 9	Mine Unit 10	Mine Unit 11	Total
V. Monitoring and Sampling Costs				-							
	.00 analysis .00 analysis			•	х.			· · ·.			
Total restoration wells Total monitor wells			18431020	59 50	55 54	25 33	34 50	21 33	36 64	25 43	328 370
IX Treatment duration (months) Reverse Osmosis duration (months)			14 6.24 53 35.88	12.78 73.51	3.60 20.70	4.24 24.37	6.92 39.81	5.42 31.17	9.67 55.62	6,14 35.32	57.44 330.31
Recirculation duration (months) Stabilization duration (months)		24	76 4.16 24 24	8.52 24 60	2.40 24 60	2.83 24 60	4.62 24 60	3.61 24 60	6.45 24 60	4.09 24 60	38.30
Regulatory Review (months) A. Restoration Well Sampling	ж. ч.	60	60 60	60	00						
1. Well Sampling prior to restoration start # of Wells		0	0 0	0	0	25	34 \$220.00	21 \$220.00	36 \$220.00	25 \$220.00	. 141
S/sample 2. IX Treatment Sampling # of Wells	\$22	0.00 \$220. 12	00 \$220.00 18 43	\$220.00 59	\$220.00	\$220.00	\$220.00 34	21	36	25	
# of webs Total # samples \$/sample	\$6		36 . 301	767	220 \$60.00	125 \$60.00	238 \$60.00	126 \$60.00	360 \$60.00	175 \$60.00	2372
3. RO Sampling # of Wells			18 43 26 1548	59 4366	55 1155	25 600	34 1360	21 651	36 2016	25 875	12781
Total # samples \$/sample	\$6	84 1 0.00 \$60		\$60.00	\$60.00	\$60.00	\$60,00	\$60.00	\$60.00	\$60.00	10101

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#### **Ground Water Restoration**

	Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5	Mine Unit 6	Mine Unit 7	Mine Unit 8	Mine Unit 9	Mine Unit 10	Mine Unit 11	Total
4. Recirculation Sampling											
# of Wells	12	18	43	59	55	25	34	21	36	. 25	
Total # samples	. 12	18	215	531	165	75	170	84	252	125	1647
\$/sample	\$220.00	\$220.00	\$220.00	\$220.00	\$220.00	\$220.00	\$220.00	\$220.00	\$220,00	\$220.00	
5. Stabilization Sampling (Guideline 8)			-								
# of Wells	12	18	43	59	- 55	25	34	21	36	25	
Total # samples	144	216	516	708	660	300	408	252	432	300	3936
\$/sample	\$220.00	\$220,00	\$220,00	\$220.00	\$220.00	\$220.00	\$220.00	\$220.00	\$220.00	\$220.00	
6. Stabilization Sampling (5 parameter)											
# of Wells	12	18	43	59	55	25	. 34	21	36	25	
Total # samples	288	432	1032	. 1416	1320	600	816	504	864	600	7872
\$/sample	\$60.00	\$60,00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	
7. Monitor Well Sampling	•										
# of Wells	13	10	20	50	- 54	33	50	33	64	43	
\$/sample	\$60.00	\$60.00	\$60,00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00	
Total # samples (2.2/mo for entire period)	960	713	3092	13069	6023	4025	8289	4661	13480	6579	60891
8. Alternate Concentration Limit Sampling											
Average Cost per Mine Unit	\$44,336.00	\$44,336.00	\$44,336.00	\$44,336.00	\$44,336.00	\$44,336.00	\$44,336.00	\$44,336.00	\$44,336.00	\$44,336.00	
9 Other Laboratory Costs											
Radon, bioassays, etc. = \$600.00 more	nth			•							
Total Laboratory Costs:	\$5,730.00	\$5,058.00	\$27,768.00	\$56,886.00	\$16,020.00	\$18,864.00	\$30,810.00	\$24,120.00	\$43,044.00	\$27,330.00	\$255,630,00
Subtotal Monitoring and Sampling Costs per Mine Unit Total Monitoring and Sampling Costs	\$165,746.00 \$6,993,230.00	\$179,294.00	\$591,304.00	\$1,550,882.00	\$764,936.00	\$472,200.00	\$851,966.00	\$503,516.00	\$1,248,980.00	\$664,406.00	\$6,993,230.00
VI. MIT Costs						ć					
MIT Costs per Well	\$106.11	\$106.11	\$106.11	\$106.11	\$106.11	\$106.11	\$106.11	\$106.11	\$106.11	\$106.11	
Restoration period, plus stabilization	33.55	32.43	70.28	118.81	50,70	55.44	75.35	64.20	95.74	69.55	
Remaining MIT's per 5 year cycle	1	1	I	2	2	2	2	3	3	3	
Number of Wells MITd for Life of Mine Unit	144	163	292	496	550	618	731	552	865	528	s.
Subtotal MIT Mine Unit	\$15,279.84	\$17,295.93	\$30,984.12	\$105,261.12	\$116,721.00	\$131,151.96	\$155,132.82	\$175,718.16	\$275,355.45	\$168,078.24	
2-year MIT Costs for Disposal Wells \$10,918											
Number of DDWs 2											
Number of MITs per DDW 8											
Subtotal MIT DDW Costs	\$174,688										
Total MIT Costs \$	1,365,667										

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**Ground Water Restoration** 

	Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5	Mine Unit 6	Mine Unit 7	Mine Unit 8	Mine Unit 9	Mine Unit 10	Mine Unit 11	Total
/I. Supervisory Labor Cost				······································	· · ·		an a	•			
Engineer Support =\$8,843.08 monthHP Technician support =\$7,108.67 month	· .		· .			•					
Active restoration period (months) Stabilization period (months)	9.55 24	8.43 24	46.28 24	94,81 24	26.70 24	31.44 24	51.35 24	40.20 24	71.74 24	45.55 24	•
<ol> <li>Engineer support during active restoration</li> <li>HP Technician support during active restoration</li> <li>Engineer support during final stabilization</li> </ol>	\$84,451.41 \$67,887.80	\$74,547.16 \$59,926.09	\$409,257.74 \$328,989.25	\$838,412.41 \$673,973.00	\$236,110.24 \$189,801,49	\$278,026.44 \$223,496.58	\$454,092.16 \$365,030.20	\$355,491.82 \$285,768.53 \$212,233.92 \$170,608.08	\$634,402.56 \$509,975.99 \$212,233.92 \$170,608.08	\$402,802.29 \$323,799.92 \$212,233.92 \$170,608.08	\$3,767,594.2 \$3,028,648.8 \$636,701.7 \$511,824.2
4 HP Technician support during final stabilization 5 Cost reduction due to concurrent restoration of Mine Units			-369,123.50	-756,192.71	-212,955.87	-250,761.51	-409,561.18	-512,051.18	-763,610.28	-554,722.11	-\$3,828,978.3
Subtotal Supervisory Labor per Mine Unit otal Supervisory Labor Costs	\$152,339.21 \$4,115,790.77	\$134,473.25	\$369,123.50	\$756,192.71	\$212,955.87	\$250,761.51	\$409,561.18	\$512,051.18	\$763,610.28	\$554,722.11	\$4,115,790.7
OTAL RESTORATION COST PER WELLFIELD	\$621,998.24	\$581,881.53	\$2,432,906.90	\$5,324,060.07	\$1,827,409.24	\$1,723,087.65	\$2,895,458.68	\$2,295,029.80	\$4,295,569.66	\$2,668,669.87	\$24,666,071.6
							· · · ·		•		· · · ·

TOTAL GROUND WATER RESTORATION COSTS \$26,031,738.25

Revised 9/28/2021

Summary Sheet

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Index         Machar         Machar </th <th></th> <th></th> <th></th> <th></th> <th>Wellfield Rec</th> <th>lamation</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>					Wellfield Rec	lamation								
$ \begin{array}{c} \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		Mine Unit 1	Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5	Mine Unit 6	Mine Unit 7	Mine Unit 8	Mine Unit 9	Mine Unit 10	Mine Unit 11	Totals	
$ \begin{array}{c} \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Wellfield Pining													
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $												1		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		0	. 3	3	5	7	7	6	9	7	10	6	63	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		9.27	11.70	13.46	71.62	129.66	34.61	51,01	62.51	48.95	76.19	42.11	551.09	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $						106080	130700	172900	211200	163150	262600	92000	1281050	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		-				66300							66300	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		0	0	0	0	0	0	72000	14600	129600	110000	100000	426200	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		1200	20000	30000	22000	50000	45000	104000	72500	95000	72000	97500	609200	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		1000	2100	4000	600		4500		900		5600		18700	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$				1450	7800	3700	2000	1000	2200	2225	3600	1400	31075	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $									400				400	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $				10800	6500	31900	12000	5000	19100	11525	14500	5000	116325	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		5400	3400	16250	14900	35600	18500	6000	22600	13750	23700	6400	166500	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		3	52	57	103	210	187	205	269	195	298	201	1780	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		0		96	169	236	309	380	412	324	503	284	2792	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		0	3	3	11	25	28	. 25	30	20	32	24	201	
I         Number of Landing         Number of		11	10	7	9	25	26	8	20	13	32	19	180	
A. Rumon la Lokang       Surg       S	•													
The charge and perform and perform lying Remond 100 (cose (33 c d peo) $30, 70$ $30, 70$ $30, 70$ $30, 70$ $30, 70$ $30, 70$ $30, 70$ $50, 70$ $50, 70$ $50, 70, 700$ </td <td></td> <td>fl-</td> <td></td>												fl-		
Schwalt Preduction and Japains Pring Romond and Landing Cross         State State Pring Romond and Landing Cross         State Pring Romond and Landing Romond Pring Romond and Landing Romond Pring Romond		sh 78	\$0.78	\$0.78	\$0.78	\$0.78	\$0.78	\$0.78	\$0.78	\$0.78	\$0.78	50 78		
B. Proc. Browning Lange L		• •		• · · · ·		• · · · · ·							\$999.219.00	
		50.00	\$20,520.00	\$50,025,00	\$55,742.00	002,740.40	<i>•</i> 201,340.00	\$134,002.00	0101,750.00	012/,20/100	02011020100			
Submail Production and Informating Pringe Zumousia and Loading Conte         State Original         State Original <td></td> <td>60.02</td> <td>\$0.09</td> <td>\$0.02</td> <td>\$0.02</td> <td>\$0.02</td> <td>\$0.09</td> <td>\$0.02</td> <td>\$0.02</td> <td>\$0.09</td> <td>\$0.02</td> <td>\$0.09</td> <td></td>		60.02	\$0.09	\$0.02	\$0.02	\$0.02	\$0.09	\$0.02	\$0.02	\$0.09	\$0.02	\$0.09		
c. C. pargenet Cosethe controlthe control <th t<="" td=""><td></td><td></td><td></td><td>• · · · ·</td><td>•</td><td></td><td></td><td></td><td>• 70.40</td><td></td><td></td><td></td><td>\$115.294.50</td></th>	<td></td> <td></td> <td></td> <td>• · · · ·</td> <td>•</td> <td></td> <td></td> <td></td> <td>• 70.40</td> <td></td> <td></td> <td></td> <td>\$115.294.50</td>				• · · · ·	•				• 70.40				\$115.294.50
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		20.00		\$5,550.00	\$6,201.00	\$3,347.20	Ø11,705.00	<i><i><i>q</i>10,001.00</i></i>	\$13,000.00	\$1 4000,100	020,027100	DOLLOUD	•••••	
Strother Unit Costs for threading (SCV)(N)         Strother Unit Costs for threading (SCV)(N)         Strother Unit Costs for threading (SCV)(N)         Strother Unit Costs		\$0.00	\$137 619 91	\$159.962.91	\$278 882 70	\$429 374 12	\$529.027.13	\$699 837 72	\$854 862 51	\$660.373.19	\$1.062.911.43	\$372,383,29		
Advant Impriment Construction         Balon         3 J 45 320.00         3 J 45 320.00         3 J 45 320.00         3 J 45 320.00         5 J J 2274.63         8 389,772.54         8 389,722.54         8 389,772.54 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>														
D. Transport and Disposed Costs (V3RC)-Liseness Parity)         0.0069													\$5.483.121.74	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		90.00	V1+5,520.01	0103,102.00	V25 115 0 1120	01010012120		•/			*****			
Chipped Voltme per Wallbald (p <sup>ch</sup> )         0.0         8.7         10.1         17.6         27.1         33.4         44.2         54.0         4.7         7.1         23.5           O'lamped Voltme Per Vallbald (p <sup>ch</sup> )         0.0         52.2.3         522.2.3		0.0069	0.0069	0.0059	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069	0.0069		
Volume for Typiconal Assaming 25% Yold Space (vf)0.010.012.622.033.944.855.367.552.183.952.44404Transportation and Dipection Pyping Transport and Disposed Cont30.00\$23.58.44\$23.293\$232.293\$232.293\$232.											the second se			
Transportation and Disposal Laft Cost (Syrt) Ungenerating that\$222.93\$222.93\$232.9													409.4	
Substal Production and Infection Pyping Tanaport and Disposal Costs         58.000         \$2.338.04         \$2.348.04         \$7.704.498         \$2.348.04         \$7.704.498         \$7.707.704.498         \$7.707.704.708 <td></td>														
Tetal Production and Lijetion Pipling Costs\$9.00\$177,644.98\$206,609.95\$339,971.71\$582,247.19\$682,246.71\$590,346.76\$1,193,440.33\$852,347.15\$1,371,979.51\$480,664.50I. Trunklies<													\$95,361.55	
Translites         A. Removal Lui Loading         Translite Runoval Lui Loading         Translite Runoval Lui Loading Costs         Subotal Translite Runoval Lui Loading Costs         B. Pipe Shedding         Translite Runoval Lui Loading Costs         Subotal Translite Runoval Lui Loading Costs         Translite Runoval Lui Loading Costs         Subotal Translite Runoval Lui Loading Costs         Translite Runoval Lui Loading Costs         Subotal Translite Runoval Lui Loading Costs         Translite Runoval Lui Loading Costs         Subotal Translite Runoval Lui Loading Costs         Subotal Translite Runoval Lui Loading Costs         Subotal Translite Runoval Lui Loading Costs         C. Equiptemi Costs         C. Equiptemi Costs         Subotal Translite Runoval Lui Costs for strandulg (2007day)         \$2,25,23       \$1,77,88       \$1,56,072,8       \$12,6,075,08       \$13,6,072,8       \$14,475,00       \$21,540,44       \$52,930,608         Subotal Translite Runoval Lui Costs for strandulg (2007day)       \$2,25,23       \$1,778,88       \$14,675,08       \$14,643,00       \$23,05,007,28       \$31,692,02       \$3,199,20       \$31,540,44       \$31,634,848       \$3,644,643,00       \$14,354,92,482,244       \$17,67,64,483,20       \$21,54,643,00       \$22,64,642,94       \$17,67,64 <td></td> <td>\$6,692,996.79</td>													\$6,692,996.79	
A. Removal and Loading       A. Removal and Loading       A. Removal and Loading       Subtrain				•				.,			. ,			
$ \begin{array}{l l l l l l l l l l l l l l l l l l l $														
Skitotal Trunkline Removal and Loading Costs\$9,430.00\$9,430.00\$2,94,37.00\$2,24,37.50\$2,26,07.00\$2,24,37.50\$1,05,50.00\$3,9,550.00\$2,400.2.50\$4,1,77.00\$1,175.00 <th< td=""><td></td><td>e1 95</td><td>\$1.7E</td><td>\$1.75</td><td>F1 75</td><td>£1.75</td><td>¢1 75</td><td>£1 75</td><td>\$1.75</td><td>¢1 76</td><td>£1 75</td><td>e1 75</td><td></td></th<>		e1 95	\$1.7E	\$1.75	F1 75	£1.75	¢1 75	£1 75	\$1.75	¢1 76	£1 75	e1 75		
Bernor for the formation fo													\$701 \$75 00	
Trunkline Shredding Unit Cost (\$Mt of pipe)         \$1,75 </td <td></td> <td>\$9,430.00</td> <td>\$3,950.00</td> <td>\$20,437.30</td> <td>\$20,075.00</td> <td>\$02,500.00</td> <td>032,373.00</td> <td>\$10,500,00</td> <td>\$39,550.00</td> <td>\$24,002.30</td> <td>071,473.00</td> <td>\$11,200.00</td> <td><i>QL</i>91,373,00</td>		\$9,430.00	\$3,950.00	\$20,437.30	\$20,075.00	\$02,500.00	032,373.00	\$10,500,00	\$39,550.00	\$24,002.30	071,473.00	\$11,200.00	<i>QL</i> 91,373,00	
Subtoal Trankline Shrudding Coits         \$\$9,950.00         \$\$9,950.00         \$\$26,975.00         \$\$62,300.00         \$\$32,375.00         \$\$10,500.00         \$\$39,550.00         \$\$24,062.50         \$\$41,775.00         \$\$11,200.00           C. Equipment Costs		£1 75	P1 75	¢1 75	¢1 75	¢1 75	\$1.75	¢1 75	£1 75	¢1 75	S1 75	\$1.75		
C. Equipment Costs       C. Equipment Costs       Standard (2007/day)       \$49,178.88       \$30,964.48       \$147,992.00       \$135,697.28       \$324,216.32       \$164,483.20       \$\$24,643.20       \$205,822.72       \$172,300.48       \$\$3,348.48         Subtatil Equipment Costs       \$228,240.16       \$32,743.36       \$156,494.00       \$143,492.96       \$342,842.24       \$178,162.40       \$517,852.40       \$512,494.00       \$123,398.48       \$3,348.48       \$3,484.48       \$3,498.44       \$512,491.00       \$228,240.48       \$56,643.50       \$228,240.48       \$512,491.00       \$228,240.48       \$516,64.56       \$1,603.456       \$1,603.461.60         D. Transport and Disposal Costs (NRC-Licensed Facility)       0.0651													\$701 375 00	
Cat 926M Loader Unit Costs for removal (200/day)\$49,178.88\$33,0964.48\$147,992.00\$135,697.28\$332,4216.32\$166,483.20\$\$20,582.72\$125,224.00\$\$215,840.64\$\$58,286.08Sineddar Unit Costs for shredding (200/day)\$2,825.28\$1,778.88\$8,02.00\$7,795.68\$18,625.92\$9,679.20\$3,139.20\$11,824.32\$7,194.00\$122,399.84\$3,348.48Subtotal Equipment Costs\$52,004.16\$22,743.36\$156,494.00\$143,492.96\$4\$57,782.40\$517,782.40\$517,782.40\$122,418.00\$122,240.48\$61,603.456.64D. Transport and Disposal Costs (NRC-Licensed Facility)0.06510.06510.06510.06510.06510.06510.06510.06510.06510.06510.0651Chipped Volume Reduction (6-inch) (ff/ft)0.10130.11030.11030.11030.11030.11030.11030.11030.11030.1103Chipped Volume Reduction (10-inch) (ff/ft)0.1712 <td< td=""><td></td><td>\$9,450.00</td><td>\$3,930.00</td><td>\$20,457.50</td><td>824,072.00</td><td>002,500.00</td><td>\$32,373.00</td><td>820,000,00</td><td>\$33,550,00</td><td>\$24,002.30</td><td>0715775.00</td><td>\$11,200.00</td><td>0271,777,00</td></td<>		\$9,450.00	\$3,930.00	\$20,457.50	824,072.00	002,500.00	\$32,373.00	820,000,00	\$33,550,00	\$24,002.30	0715775.00	\$11,200.00	0271,777,00	
Sinedder Unit Costs for shredding (200/day) $$2,825.28$ $$1,778.88$ $$8,502.00$ $$7,795.68$ $$18,625.92$ $$9,679.20$ $$3,139.20$ $$11,824.32$ $$7,194.00$ $$12,399.84$ $$3,348.48$ Subtoal Equipment Costs $$52,004.16$ $$52,004.16$ $$52,2743.36$ $$156,494.00$ $$143,492.96$ $$342,842.24$ $$178.162.40$ $$51,782.40$ $$51,782.40$ $$51,2747.04$ $$5132,418.00$ $$228,240.48$ $$61,634.56$ D. Transport and Disposal Costs (NRC-Licensed Facility)0.0651 </td <td></td> <td>\$40 179 99</td> <td>\$20 064 48</td> <td>\$147 997 00</td> <td>\$125 607 28</td> <td>\$274 216 22</td> <td>\$168 483 20</td> <td>\$54 643 20</td> <td>8705 877 77</td> <td>\$125 224 00</td> <td>\$215 840 64</td> <td>\$58 286 08</td> <td></td>		\$40 179 99	\$20 064 48	\$147 997 00	\$125 607 28	\$274 216 22	\$168 483 20	\$54 643 20	8705 877 77	\$125 224 00	\$215 840 64	\$58 286 08		
Subtrait Guippent Costs         \$52,004.16         \$52,204.16         \$51,603,461.60           D. Transport and Disposal Costs (NRC-Licensed Facility)         0.0651 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>														
D. Transport and Disposal Costs (NRC-Licensed Facility)       O.0651       0.0651 </td <td></td> <td>\$1 603 461 60</td>													\$1 603 461 60	
Chipped Volume Reduction (6-inch) (f <sup>3</sup> /ft)       0.0651       0.0103       0.1103       0.1103       0.1103       0.1103       0.1103       0.1172       0.1712       0.1712       0.1712       0.1712       0.1712       0.1712       0.1712       0.2408       0.2408 <t< td=""><td></td><td><i>\$32,004.10</i></td><td>\$32,743.30</td><td>\$130,494.00</td><td>\$1+3,432.90</td><td>\$342,042.24</td><td>\$170,102.40</td><td><i>\$37</i>,702,40</td><td>\$217,047.04</td><td>0152,410.00</td><td><i>\$220,270.70</i></td><td>\$01,004.20</td><td>\$1,000,101.00</td></t<>		<i>\$32,004.10</i>	\$32,743.30	\$130,494.00	\$1+3,432.90	\$342,042.24	\$170,102.40	<i>\$37</i> ,702,40	\$217,047.04	0152,410.00	<i>\$220,270.70</i>	\$01,004.20	\$1,000,101.00	
Chipped Volume Reduction (18-inch) (18 <sup>4</sup> /ft)       0.1103		0.0651	0.0651	0.0651	0.0651	0.0651	0.0651	0.0651	0.0651	0.06\$1	0.0651	0.0651		
Chipped Volume Reduction (10-inst) (17/12)       0.1712 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>														
Chipped Volume Reduction (12-inch) (1 <sup>2</sup> /ift)       0.2408														
Chipped Volume per Wellfield (yd <sup>1</sup> )       20.4       10.4       111.9       91.3       299.6       126.0       48.7       184.0       111.9       157.5       50.3         Volume for Disposal Assuming 25% Void Space (ft <sup>3</sup> )       25.5       13.0       139.9       114.1       374.5       157.5       60.9       230.0       139.9       196.9       62.9       1515.1         Transportation and Disposal Unit Cost (\$ft <sup>5</sup> )       \$232.93 <td></td>														
Chipped Forming 25% Void Space (ft <sup>3</sup> )         25.5         13.0         139.9         114.1         374.5         157.5         60.9         230.0         139.9         196.9         62.9         1515.1           Transportation and Disposal Unit Cost (\$ft <sup>3</sup> )         \$232.93 <td></td>														
Transportation and Disposal Unit Cost (SfIP)         \$232.93 <td></td> <td>1515.1</td>													1515.1	
Subtotal Transport and Disposal Costs \$5,939.72 \$3,028.09 \$32,586.91 \$26,577.31 \$87,232.29 \$36,686.48 \$14,185.44 \$53,573.90 \$32,586.91 \$45,863.92 \$14,651.30 \$352,912.27						-,								
										•			\$352,912.27	
	Total and an		,					· · · ·			•			

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				Wellfield Rec	lamation				-			
	Mine Unit 1	Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5	Mine Unit 6	Mine Unit 7	Mine Unit 8	Mine Unit 9	Mine Unit 10	Mine Unit 11	Totals
III. Downhole Pipe												
A. Removal and Loading												
Downhole Piping Removal Unit Cost (\$/ft of pipe)	\$0.090	\$0.090	\$0.090	\$0.090	\$0.090	\$0.090	\$0.090	\$0.090	\$0,090	\$0.090	\$0.090	
Downhole Hosing Removal Unit Cost (\$/ft of pipe)	\$0.170	\$0.170	\$0,170	\$0,170	\$0.170	\$0.170	\$0.170	\$0.170	\$0.170	\$0.170	\$0.170	
Removal of 1-1/4-inch stinger pipe	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$6,480.00	\$1,314.00	\$11,664.00	\$9,900.00	\$9,000.00	
Removal of downhole production pipe	\$108.00	\$1,800.00	\$2,700.00	\$1,980.00	\$4,500.00	\$4,050.00	\$9,360.00	\$6,525.00	\$8,550.00	\$6,480.00	\$8,775.00	
Removal of downhole hose	\$0.00	\$0.00	\$0.00	\$0.00	\$11,271.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Subtotal Downhole Piping Removal and Loading Costs	\$108.00	\$1,800.00	\$2,700.00	\$1,980.00	\$15,771.00	\$4,050.00	\$15,840.00	\$7,839.00	\$20,214.00	\$16,380.00	\$17,775.00	\$104,457.00
B. Pipe Shredding												
Downhole Piping Shredding Unit Cost (\$/ft of pipe)	\$0.080	\$0.080	\$0,080	\$0,080	\$0.080	\$0.080	\$0.080	\$0.080	\$0.080	\$0.080	\$0.080	
Subtotal Downhole Piping Shredding Costs	\$96.00	\$1,600.00	\$2,400.00	\$1,760.00	\$4,000.00	\$3,600.00	\$14,080.00	\$6,968.00	\$17,968.00	\$14,560.00	\$15,800.00	\$82,832.00
C. Equipment Costs												
Smeal Unit Costs for removal	\$104.85	\$1,747,47	\$2,621.20	\$1,922.21	\$4,368.67	\$3,931.80	\$15,377.71	\$7,610.22	\$19,624.05	\$15,901.95	\$17,256.23	
Shredder Unit Costs for shredding	\$27.90	\$465.07	\$697.60	\$511.57	\$1,162.67	\$1,046.40	\$4,092.59	\$2,025.37	\$5,222.70	\$4,232.11	\$4,592.53	
Subtotal Equipment Costs	\$132.75	\$2,212.54	\$3,318.80	\$2,433.78	\$5,531.34	\$4,978.20	\$19,470.30	\$9,635.59	\$24,846.75	\$20,134.06	\$21,848.76	\$114,542.87
D. Transport and Disposal Costs (NRC-Licensed Facility)												
Chipped Volume Reduction - 1-1/4-inch stinger (ft <sup>3</sup> /ft)	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	0.0044	
Chipped Volume Reduction - 2-inch downhole production (ft <sup>3</sup> /ft)	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	
Volume Reduction - 3/8-inch hose (ft3/ft)	0.0313	0,0313	0.0313	0.0313	0.0313	0.0313	0.0313	0.0313	0.0313	0.0313	0.0313	
Chipped Volume $-1-1/4$ -inch stinger ( $f^3$ )	0	0	0	0	0	0	317	64	570	484	440	
Chipped Volume ~2-inch downhole production (ft <sup>3</sup> )	9	148	222	163	370	333	770	537	703	533	722	
Volume 3/8-inch hose (ft3)	0	0	0	0	2075	0	0	0	Ó	0	0	
Volume for Disposal Assuming 25% Void Space (yd <sup>3</sup> )	0.4	6.9	10.3	7.5	113.2	15.4	50.3	27.8	58.9	47.1	53,8	391.6
Transportation and Disposal Unit Cost (\$/yd <sup>3</sup> ) (Unpackaged Bulk)	\$232.93	\$232.93	\$232.93	\$232.93	\$232.93	\$232.93	\$232.93	\$232.93	\$232.93	\$232.93	\$232.93	
Subtotal Downhole Piping Transport and Disposal Costs	\$93.17	\$1,607.22	\$2,399.18	\$1,746.98	\$26,367.68	\$3,587.12	\$11,716.38	\$6,475.45	\$13,719.58	\$10,971.00	\$12,531.63	\$91,215.39
Total Downhole Piping Costs	\$429.92	\$7,219.76	\$10,817.98	\$7,920.76	\$51,670.02	\$16,215.32	\$61,106.68	\$30,918.04	\$76,748.33	\$62,045.06	\$67,955.39	\$393,047.26
IV. Surface Reclamation												
A. Removal and disposal of contaminated soil around wells and wellhouses	1.11	48.47	56.61	100.64	165.02	183.52	216.45	251.97	192.03	296.37	179.45	1691.64
Volume of contaminated soil (0.37 yd3 per injection and production well) Volume of contaminated soil (5 yd3 per wellhouse)	0	15	15	25	35	35	30	45	35	50	30	
Estimated volume of contaminated soil (5 yes per weinfouse)	0	116	57	40	170	253	64	70	81	13	1	
Disposal of contaminated soil \$274.40 per yd3	\$304.58	\$49,246.57	\$35,290.58	\$45,451.62	\$101,533.49	\$129,385.09	\$85,187,48	\$100,696.57	\$84,523,43	\$98,611.13	\$57,747.48	\$787,978.02
Equipment (Cat 926M loader at 2 yd3/hr)	\$126.36	\$5,517.82	\$6,444.48	\$11,456.86	\$18,785.88	\$20,891.92	\$24,640.67	\$28,684.26	\$21,860.70	\$33,738.76	\$20,428.59	
Labor (1 man-hour per 2 Yd3)	\$12.12	\$529.17	\$618.04	\$1,098.74	\$1,801.61	\$2,003.58	\$2,363.09	\$2,750.88	\$2,096.49	\$3,235.62	\$1,959.15	
Subtotal removal and disposal of contaminated soil	\$443.06	\$\$5,293.56	\$42,353.10	\$58,007.22	\$122,120,98	\$152,280.59	\$112,191.24	\$132,131.71	\$108,480.62	\$135,585.51	\$80,135.22	\$999,022.81
B. Recontour and seeding												
Recontour and seeding (est. \$300/acre)	\$2,781.00	\$3,510.00	\$4,038.00	\$21,486.00	\$38,898.00	\$10,383.00	\$15,303.00	\$18,753.00	\$14,685.00	\$22,857.00	\$12,633.00	
Subtotal Recontour and Seeding	\$2,781.00	\$3,510.00	\$4,038.00	\$21,486.00	\$38,898.00	\$10,383,00	\$15,303.00	\$18,753.00	\$14,685.00	\$22,857.00	\$12,633.00	\$165,327.00
	62 00 4 0 C	\$58,803.56	\$46,391.10	\$79,493.22	\$161,018.98	\$162,663.59	\$127,494.24	\$150,884.71	\$123,165.62	\$158,442.51	\$92,768.22	\$1,164,349.81
Total Surface Reclamation	\$3,224.06	220,803.20	91.10 در 140	3/3,433.22	\$101,018.95	3104,003.37	3141,454.44	3130,004.71	5125,105.02	01001-1001		
IV. Well Houses	_		-		-	~		9	-	10	c	
Total Quantity	0	3	3	- 5	7	7	6	•	7		0700	
Average Well House Weight (Lbs.) (Includes wellhead covers for each well)	9200	9200	9200	9200	9200	9200	9200	9200	92,00	9200	9200	
A. Removal Dismantlement at 2-man-days per wellhouse (man-days)	0	6	6	10	14	14	12	18	14	20	12	
	. \$0.00	\$1,048.08	\$1,048.08	\$1,746,80	\$2,445.52	\$2,445.52	\$2,096.16	\$3,144,24	\$2,445,52	\$3,493.60	\$2,096.16	\$22,009.68
Dismantlement Labor Costs	0.00	6	6	10	14	14	12	18	14	20	12	
Equipment (Cat 926M at 2 hours per wellhouse) (hrs)	\$0.00	\$1,366.08	\$1,366.08	\$2,276.80	\$3,187.52	\$3,187.52	\$2,732.16	\$4,098.24	\$3,187.52	\$4,553.60	\$2,732.16	\$28,687.68
Equipment Costs Subtotal Well House Dismantlement Costs	\$0.00	\$2,414.16	\$2,414.16	\$4,023.60	\$5,633.04	\$5,633.04	\$4,828.32	\$7,242.48	\$5,633.04	\$8,047.20	\$4,828.32	\$50,697.36
B. Disposal	40.00	V2171710	2,11,110	4 <b>1</b> 020100	••••••••							
B. Disposal Total Disposal Weight (9200 lbs per wellhouse) (Lbs)	0	27600	27600	46000	64400.	64400	55200	82800	64400	92000	55200	
Subtotal Disposal Costs	\$0.00	\$3,312.00	\$3,312.00	\$5,520.00	\$7,728.00	\$7,728.00	\$6,624.00	\$9,936.00	\$7,728.00	\$11,040.00	\$6,624.00	\$69,552.00
Total Well House Removal and Disposal Costs	\$0.00	\$5,726.16	\$5,726.16	\$9,543.60	\$13,361.04	\$13,361.04	\$11,452.32	\$17,178.48	\$13,361.04	\$19,087.20	\$11,452.32	\$120,249.36
	600 40 <b>7</b> 04	\$297.065.91	\$515,361.10	\$679,149.56	\$1,334,951.76	\$1,154,703.54	\$1,196,367.84	\$1,652,742.50	\$1,278,792.05	\$1,968,608.68	\$751,526.29	\$10,909,767.09
TOTAL REMOVAL AND DISPOSAL COSTS PER WEILFIELD	\$80,497.86	3497,005.91	3315,301.10	30/9,149,30	31,334,931,70	31,134,/03.34	01,170,001.04	01,0 <i>32</i> ,/42,30	<del>الكلار (6,1449) عر</del> دته.	0112001000100	\$ (A) 1 5 4 0 4 5 4	
TOTAL WELLFIELD BUILDINGS AND EQUIPMENT REMOVAL AN	ND \$10,909,767.09											
DISPOSAL COSTS	4207073101207											

DISPOSAL COSTS

Well Abandonment	Well	Aband	lonment
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	Mine Unit 1	Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5	Mine Unit 6	Mine Unit 7	Mine Unit 8	Mine Unit 9	Mine Unit 10	Mine Unit 11	<u>Fotal</u>
		· · · · · · · · · · · · · · · · · · ·										
I. Well Abandonment (Wellfields)	1	52	57	103	210	187	205	269	195	298	201	
# of Production Wells	3	52 79	96	169	236	309	380	412	324	503	284	
# of Injection Wells	0	13	70	9	25	26	8	20	13	32	19	
# of Perimeter Monitoring Wells	11	10	1	11	25	28	25	30	20	32	24	
# of Shallow Monitoring Wells	0	3	3			522	593	701	532	833	504	4752
Total Number of Deep Wells	14	141	160	281	471	28	J93 05	30	20	32	24	201
Total Number of Shallow Wells	0	3	3	11	25	28	25	30	20	54	4	401
Average Diameter of Casing (inches)	5	5	5	5	5	5	>	3	د م <del>ن</del> ت	3	790	660
Production, Injection and Perimeter Well Average Depth (ft)	665	631	774	698	675	515	762	500	770	480	·	205
Shallow Well Average Depth (ft)	200	200	200	200	200	200	200	200	200	150	300	
Total Mine Unit Well Depth (ft)	9310	89571	124440	198338	322925	274430	456866	356500	413640	404640	405360	3056020
Well Abandonment Unit Cost (\$/ft. of well)	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	
Subtotal Abandonment Cost per Wellfield	\$10,985.80	\$105,693.78	\$146,839.20	\$234,038.84	\$381,051.50	\$323,827.40	\$539,101.88	\$420,670.00	\$488,095.20	\$477,475.20	\$478,324.80	\$3,606,103.60
-												
II. Downhole Pump Disposal												
Number of Downhole Pumps 1174												•
Pump Disposal Volume(ff3) 0.5												21.7
Total Pump Disposal Volume(yd3) 21.7												232.93
Downhole Pump Disposal Rate (\$/yd3) \$232.93												\$5,054,58
Subtotal Downhole Pump Disposal	\$5,054.58											<b>QU300400</b>
Total Welkield Abandonment Costs	\$3,611,158.18										-	
LUMI VICINIU ADUNUONINEN COSS												

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Plant	Equipment	Decommissioning

	<u>Commercial Plant</u>	R.O. Building
. Removal and Loading Costs		
Tankage		
Number of Contaminated Tanks	141	
Volume of Contaminated Tauk Construction Material (ft <sup>3</sup> )	2721	1
Number of Chemical Tanks	21	
Disposal Void Factor	1.25	
A. Labor to Remove and Load Tankage		
Number of Persons	2	1
Tanks/Day	1	
Number of Days	162	
\$/Day/Person	\$174.68	
Subtotal Removal Labor Costs	\$56,596.32	
B. Labor to Clean Chemical Tankage	\$30,390.32	
Number of Persons		
	1	
Tanks/Day	1	
Number of Days	21	
\$/Day/Person	\$174.68	
Subtotal Cleaning Labor Costs	\$3,668.28	
C. Equipment		
Saws, scaffolding, etc.	\$6,000	
Subtotal Equipment Costs	\$6,000	
otal Equipment Removal and Loading Costs	\$66,264.60	
L Transportation and Disposal Costs (NRC-Licensed Facility)		
A. Tankage		
Volume of Tank Construction Material (ft <sup>3</sup> )	2721	
Volume for Disposal Assuming Void Space (yd <sup>3</sup> )	126.0	
Transportation and Disposal Unit Cost (\$/yd <sup>3</sup> ) (Unpackaged Bulk)	\$232.93	
Subtotal Tankage Transportation and Disposal Costs	\$29,349.18	
B. Contaminated PVC Pipe	020,010120	
Volume of Shredded PVC Pipe (ft <sup>3</sup> )	422.4	
Volume for Disposal Assuming Void Space (yd <sup>3</sup> )		
Transportation and Disposal Unit Cost (\$/yd <sup>3</sup> ) (Unpackaged Bulk)	19.6	
	\$232.93	
Subtotal Contaminated PVC Pipe Transportation and Disposal Costs	\$4,565.43	1
C. Pumps		
Volume of Process Pumps (yd <sup>3</sup> ) (no void factor used)	34.8	
Transportation and Disposal Unit Cost (\$/yd³) (Unpackaged Bulk)	\$232.93	
Subtotal Pump Transportation and Disposal Costs	\$8,105.96	
D. Filters (injection, backwash and yellowcake filters)		
Volume of Filters (yd <sup>3</sup> ) (no void factor used)	463.0	
Transportation and Disposal Unit Cost (\$/yd3) (Unpackaged Bulk)	\$232.93	
Subtotal Filter Transportation and Disposal Costs	\$107,846.59	
E. Dryer	\$107,040.05	
Dryer Volume (yd <sup>3</sup> ) (no void factor used)	20.6	
Transportation and Disposal Unit Cost (\$/yd <sup>3</sup> ) (Unpackaged Bulk)	29,6	
	\$232.93	
Total Dryer Transportation and Disposal Costs	\$6,894.73	
Total Contaminated Equipment Transportation and Disposal Costs	\$156,761.89	
II. Transportation and Disposal (Solid Waste for Landfill Disposal)		
A. Cleaned Tankage		
Volume of Tank Construction Material (ft <sup>3</sup> )	405	1
Number of Landfill Trips	1	
Transportation and Disposal Unit Cost (\$/Load)	\$411.00	
Subtotal Tankage Transportation and Disposal Costs	\$411.00	
B. Uncontaminated PVC Pipe	¢ / LA TO O	- AL
Volume of Shredded PVC Pipe (ft <sup>3</sup> )	184.3	1
Number of Landfill Trips	104.5	
Transportation and Disposal Unit Cost (\$/Load)	1 6411.00	
Subtotal PVC Pipe Transportation and Disposal Costs	\$411.00	
Total Uncontaminated Equipment Transportation and Disposal Costs	\$411.00 \$822.00	
	\$822.00	
V. Supervisory Labor Costs During Plant Decommissioning	,	
Estimated Duration (months)	6	
Engineer	\$53,058.48	
Radiation Technician	\$42,652.02	1
Total Supervisory Labor Costs	\$95,710.50	
UBTOTAL EQUIPMENT REMOVAL AND DISPOSAL COSTS PER FACILITY	\$319,558.99	
Building Area (Ft2)	39,738	10,000
Building Equipment Removal and Disposal Cost per Square Foot	\$8.04	\$8.04

**Commercial Plant Decontamination Costs** T. A. Wall Decontamination Area to be Decontaminated  $(ft^2)$ 36,470 HCl Application Rate (Gallons/ft<sup>2</sup>) 1 HCl Acid Cost \$1.83 Subtotal Wall Decontamination Materials Costs \$66,740.10 B. Concrete Floor Decontamination Area to be Decontaminated  $(ft^2)$ 39738 HCl Application Rate (Gallons/ft<sup>2</sup>) 2 HCl Acid Cost \$1.83 Subtotal Floor Decontamination Materials Costs \$145,441.08 C. Decontamination Labor Labor (man-days) 60 Subtotal Decontamination Labor Cost \$10,480.80 D. Decontamination Equipment Costs Sprayer pump \$500 Recycle pump \$500 Sprayer with hose \$1,000 Subtotal Decontamination Equipment Costs \$2,000 E. Decontamination Waste Disposal (to Ponds) Total gallons HCl waste 115,946 Pumping costs (5 HP/30 gpm) \$1,797.08 Subtotal Decontamination Costs \$226,459.06 **Total Decontamination Costs** \$226,459.06 **II.** Demolition Costs Assumptions (based on 2017 costs): Dismantling plant building \$625,758.00 A. Building Dismantling Plant contents and building dismantling (2017 \$'s escalated by CPI) \$657,045.90 Subtotal Building and Contents Dismantling \$657,045.90 B. Concrete Floor Removal Area of direct-dispose concrete floors (ft2) 11,100 Removal Rate (\$/ft2) \$17.80 Subtotal Concrete Floor Removal \$197,580.00 **Total Demolition Costs** \$854,625.90 **III.** Disposal Costs A. Concrete Floor Area of Direct-Dispose Concrete Floor (ft<sup>2</sup>) 11,100 Average Thickness of Concrete Floor (ft) 0.50 Volume of Concrete Floor (ft<sup>3</sup>) 5,550 Volume of Concrete Floor (Yd3) 206 B. Contaminated Soil Volume of Contaminated Soil (Yd3) 206 Transportation and Disposal Unit Cost (\$/Yd<sup>3</sup>) (Unpackaged Bulk) \$232.93 Subtotal Concrete Floor and Soil Disposal Costs \$95.967.16 **Total Disposal Costs** \$95,967.16 **IV** Plant Site Reclamation A. Plant Site Earthwork Material to be Moved (Yd3) 20,500 D8T Bulldozer Earthwork Rate (Yd3/hr) 700 D8T Hourly Rate \$598.27 Subtotal Plant Site Earthwork \$17,520.76 **B.** Revegetation Area requiring Revegetation (Ac) 6 Revegetation Unit Cost (\$/Ac) \$300 Subtotal Plant Site Revegetation \$1,800.00 **Total Plant Site Reclamation Costs** \$19,320.76 SUBTOTAL BUILDING DEMOLITION AND DISPOSAL COSTS \$1,196,372.88 Building Area (Ft2) 39,738 Building Demolition Cost per Square Foot \$30.11

TOTAL BUILDING DEMOLITION AND DISPOSAL COSTS

\$1,196,372.88

R.O. Building

II. D A B III. D A B T III. D A B B T T T T T T T	botal Decontamination Costs costs costs costs costs Assumptions (based on 2017 costs): Dismantling plant building Plant contents and building dismantling (2017 \$'s escalated by CPI) Subtotal Building and Contents Dismantling Concrete Floor Removal Area of direct-dispose concrete floors (ft2) Removal Rate (\$/ft2) Subtotal Concrete Floor Removal total Demolition Costs isposal Costs Concrete Floor Area of Direct-Dispose Concrete Floor (ft <sup>2</sup> ) Average Thickness of Concrete Floor (ft <sup>2</sup> ) Average Thickness of Concrete Floor (ft) Volume of Concrete Floor (ft <sup>3</sup> ) Volume of Contaminated Soil (Yd3) Transportation and Disposal Unit Cost (\$/Yd <sup>3</sup> ) (Unpackaged Bulk) Subtotal Concrete Floor and Soil Disposal Costs total Disposal Costs ant Site Reclamation Plant Site Earthwork Material to be Moved (Yd3) D8T Buldozer Earthwork Revegetation Area requiring Revegetation (Ac) Revegetation Area requiring Revegetation total Plant Site Reclamation Costs Otal Plant Site Reclamation Costs Dividing Area (Ft2) Building Demolition Cost per Square Foot	10,000 \$30.11
II. D A B III. D A B T III. D A B B T T T T T T	abstract         emolition Costs         Assumptions (based on 2017 costs):         Dismantling plant building         Building Dismantling         Plant contents and building dismantling (2017 \$'s escalated by CPI)         Subtotal Building and Contents Dismantling         Concrete Floor Removal         Area of direct-dispose concrete floors (ft2)         Removal Rate (\$\ft2)         Subtotal Concrete Floor Removal         brate of direct-Dispose concrete floor (ft^2)         Average Thickness of Concrete Floor (ft^2)         Average Thickness of Concrete Floor (ft)         Volume of Concrete Floor (ft^3)         Volume of Concrete Floor (ft^3)         Volume of Contaminated Soil (Yd3)         Transportation and Disposal Unit Cost (\$'Yd <sup>3</sup> ) (Unpackaged Bulk)         Subtotal Concrete Floor and Soil Disposal Costs         att Site Reclamation         Plant Site Earthwork         Material to be Moved (Yd3)         D8T Bulldozer Earthwork         Revegetation         Area requiring Revegetation (Ac)         Revegetation         Area requiring Revegetation         Area et Plant Site Reclamation Costs	10 000
II. D A B III. D A B T III. D A B B T T T T T T	abstance	
II. D A B II. D A B T II. D A B B B B	absorbed Decontamination Costs         emolition Costs         Assumptions (based on 2017 costs):         Dismantling plant building         Building Dismantling         Plant contents and building dismantling (2017 \$'s escalated by CPI)         Subtotal Building and Contents Dismantling         Concrete Floor Removal         Area of direct-dispose concrete floors (ft2)         Removal Rate (\$/ft2)         Subtotal Concrete Floor Removal         bata         bata Demolition Costs         isposal Costs         Concrete Floor         Area of Direct-Dispose Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft <sup>3</sup> )         Volume of Concrete Floor (Yd3)         Contaminated Soil         Volume of Concrete Floor (Yd3)         Contaminated Soil (Yd3)         Transportation and Disposal Unit Cost (\$/Yd <sup>3</sup> ) (Unpackaged Bulk)         Subtotal Concrete Floor and Soil Disposal Costs         otal Disposal Costs         ant Site Reclamation         Plant Site Earthwork         Material to be Moved (Yd3)         D8T Bulldozer Earthwork Rate (Yd3/hr)         D8T Hourly Rate         Subtotal Plant Site Earthwork         Revegetation	· · · · · · · · · · · · · · · · · · ·
II. D A B T II. D A B T IV P A	abstract         abstract         abstract         abstract         billion         constanting         billing         billing         billing         billing         billing         billing         billing         plant contents and building dismantling         concrete         concrete         abstract         concrete         concrete <th></th>	
II. D A B T II. D A B T IV P A	absorbed Decontamination Costs         emolition Costs         Assumptions (based on 2017 costs):         Dismantling plant building         Building Dismantling         Plant contents and building dismantling (2017 \$'s escalated by CPI)         Subtotal Building and Contents Dismantling         Concrete Floor Removal         Area of direct-dispose concrete floors (ft2)         Removal Rate (\$/ft2)         Subtotal Concrete Floor Removal         otal Demolition Costs         isposal Costs         Concrete Floor         Area of Direct-Dispose Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft <sup>3</sup> )         Volume of Concrete Floor (Yd3)         Contaminated Soil         Volume of Contentinated Soil (Yd3)         Transportation and Disposal Unit Cost (\$/Yd <sup>3</sup> ) (Unpackaged Bulk)         Subtotal Concrete Floor and Soil Disposal Costs         otal Disposal Costs         ant Site Reclamation         Plant Site Earthwork         Material to be Moved (Yd3)         D8T Buildozer Earthwork Rate (Yd3/hr)         D8T Hourly Rate         Subtotal Plant Site Earthwork         Revegetation         Area requiring Revegetation (Ac)	· · ·
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SI T II. D A B T III. D A	btal Decontamination Costs         emolition Costs         Assumptions (based on 2017 costs):         Dismantling plant building         Building Dismantling         Plant contents and building dismantling (2017 \$'s escalated by CPI)         Subtotal Building and Contents Dismantling         Concrete Floor Removal         Area of direct-dispose concrete floors (ft2)         Removal Rate (\$/ft2)         Subtotal Concrete Floor Removal         otal Demolition Costs         isposal Costs         Concrete Floor         Area of Direct-Dispose Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft <sup>3</sup> )         Volume of Concrete Floor (Yd3)         Contaminated Soil         Volume of Contaminated Soil (Yd3)         Transportation and Disposal Unit Cost (\$/Yd <sup>3</sup> ) (Unpackaged Bulk)	·
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SI T II. D A B T III. D A	<b>Decontamination Costs Assumptions (based on 2017 costs):</b> Dismantling plant building         Building Dismantling         Plant contents and building dismantling (2017 \$'s escalated by CPI)         Subtotal Building and Contents Dismantling         Concrete Floor Removal         Area of direct-dispose concrete floors (ft2)         Removal Rate (\$/ft2)         Subtotal Concrete Floor Removal <b>otal Demolition Costs isposal Costs</b> Concrete Floor         Area of Direct-Dispose Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft <sup>3</sup> )         Volume of Concrete Floor (Yd3)         Contaminated Soil	· ·
SI T II. D A B T III. D A	<b>Decontamination Costs Assumptions (based on 2017 costs):</b> Dismantling plant building         Building Dismantling         Plant contents and building dismantling (2017 \$'s escalated by CPI)         Subtotal Building and Contents Dismantling         Concrete Floor Removal         Area of direct-dispose concrete floors (ft2)         Removal Rate (\$/ft2)         Subtotal Concrete Floor Removal <b>Otal Demolition Costs isposal Costs</b> Concrete Floor         Area of Direct-Dispose Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft <sup>3</sup> )         Volume of Concrete Floor (Yd3)	· · ·
Si T II. D A B T T III. D	otal Decontamination Costs         emolition Costs         Assumptions (based on 2017 costs):         Dismantling plant building         Building Dismantling         Plant contents and building dismantling (2017 \$'s escalated by CPI)         Subtotal Building and Contents Dismantling         Concrete Floor Removal         Area of direct-dispose concrete floors (ft2)         Removal Rate (\$/ft2)         Subtotal Concrete Floor Removal         otal Demolition Costs         isposal Costs         Concrete Floor         Area of Direct-Dispose Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft <sup>3</sup> )	· · · · · · · · · · · · · · · · · · ·
Si T II. D A B T T III. D	btal Decontamination Costs         emolition Costs         Assumptions (based on 2017 costs):         Dismantling plant building         Building Dismantling         Plant contents and building dismantling (2017 \$'s escalated by CPI)         Subtotal Building and Contents Dismantling         Concrete Floor Removal         Area of direct-dispose concrete floors (ft2)         Removal Rate (\$/ft2)         Subtotal Concrete Floor Removal         btal Demolition Costs         isposal Costs         Concrete Floor         Area of Direct-Dispose Concrete Floor (ft <sup>2</sup> )         Average Thickness of Concrete Floor (ft)	
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St T II. D A	<ul> <li>and Decontamination Costs</li> <li>and Costs</li> <li>bismantling plant building</li> <li>building Dismantling</li> <li>plant contents and building dismantling (2017 \$'s escalated by CPI)</li> <li>Subtotal Building and Contents Dismantling</li> <li>Concrete Floor Removal</li> </ul>	
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Si Ti	otal Decontamination Costs	
Si		
	IDiotal Decontainmation Costs	
E	abtotal Decontamination Costs	
E	Pumping costs (5 HP/30 gpm)	
P	Decontamination Waste Disposal (to Ponds) Total gallons HCl waste	
	Subtotal Decontamination Equipment Costs	
	Sprayer with hose	
	Recycle pump	
	Sprayer pump	
D	Decontamination Equipment Costs	
	Subtotal Decontamination Labor Cost	
	Labor (man-days)	
C	Decontamination Labor	
	Subtotal Floor Decontamination Materials Costs	
	HCI Acid Cost	
	HCl Application Rate (Gallons/ft <sup>2</sup> )	
B	Concrete Floor Decontamination Area to be Decontaminated $(fl^2)$	
ħ	Subtotal Wall Decontamination Materials Costs	
	HCl Acid Cost	
	HCl Application Rate (Gallons/ft <sup>2</sup> )	
	Area to be Decontaminated $(ft^2)$	
Α	Wall Decontamination	
	econtamination Costs	

Assumptions/Data: Number of Ponds (K2) Thickness of Liner Material (ft) Lack detection piping length (ft)ond) Barface Restoration/Revogetation (Acres) Studge Production Rate (Yd3 studge/gal) (1 Yd3 studge/97,2000 gal R&D [Phase) Estimated 1991 to 2021 Total Production (gallons) Liner Removal Rate (Yd3/nam-day) 2017 - Pond #4 Lack detection piping addition Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (Yd3/nam-day) 2017 - Pond #4 Lack detection piping addition Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtotal Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Removal Effort Sizo of Crew Total Days Removal Effort Sizo of Crew Total Days Removal Effort Sizo of Crew Pond Sludge Removal Effort Subtotal Liner and Piping Removal Eguipment Total Man-Days Removal Effort Sizo of Crew Pond Sludge Removal Effort Sizo of Crew Pond Sludge Removal Effort Sizo of Crew Total Days Removal Effort Sizo of Crew Total Days Removal Effort Sizo of Crew Total Days Removal Effort Sizo d Crew Total Man-Days Labor Rate (Yd3) Sludge Removal Rate (Yd3) Sludsot Dond Sludge Removal Effort Sizo of Crew Total Man-Days Removal Effort Sizo of Crew Total Man-Days Removal Effort Sizo of Crew Total Days Removal Costs Total Pond Sludge Removal Cost	3 250,000 0.00833 6 2,100 60,000 20 266661732240 10000 8.33 250,000 920 1,000,000 10,000 10,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719 2,719	$\begin{array}{c} 2\\ 50,000\\ 0.0030\\ 3\\ 600\\ 30,000\\ 10\\ 0.000000102\\ \hline 10\\ 0.000000102\\ \hline 10,000\\ 8.33\\ \hline 100,000\\ 10\\ 8.74.68\\ $1,746.80\\ \hline 10\\ 4\\ 2.5\\ $227.68\\ $4,553.60\\ $6,300.40\\ \hline \end{array}$	\$19,214.84 \$50,089.6 \$69 <b>,304</b> .4
Area of Ponds (92) Thickness of Liner Material (ft) Leak detection piping size average (in) Leak detection piping size average (in) Leak detection piping length (ft)pond) Surface Restoration/Revegetation (Acres) Sludge Production Rate (Yd3 shudge/gal) (1 Yd3 studge/9,772,000 gal R&D Phase) Estimated 1991 to 2021 Total Production (gallons) Liner Removal Rate (Yd3/man-day) 2017 - Pond #A Leak detection piping addition <b>Pond Liner and Piping Removal</b> A. Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (t2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtoal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs Subtoal Liner and Piping Removal Labor Costs Total Man-Days Labor Rate (S/man-day) Subtoal Liner and Piping Removal Equipment Total Man-Days Removal Effort Cat 920M Loader Hourly Rate (S/hr) Subtotal Liner and Piping Removal Effort Cat 920M Loader Hourly Rate (S/hr) Subtotal Liner and Piping Removal Costs 1. Pond Sludge Removal Pond Sludge Removal Labor Pond Sludge Removal Effort Size of Crew Total Dan-Days Removal Effort Size of Crew Total Days Removal Effort Size of Crew Total Josys Removal Effort Size Crem Size	250,000 0.00833 6 2,100 60,000 20 26661732240 10000 8,33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	50,000 0.0030 3 600 30,000 10 0.000000102 10,000 8.33 100,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
Thickness of Liner Material (1) Leak detection piping length (1/pond) Earthwork Requirements (Yd3/pond) Surface Restoration/Revegetation (Acres) Sludge Production Rate (Yd3 sludge/gal) (1 Yd3 sludge/72.20.00 gal R&D Phase) Estimated 1991 to 2021 Total Production (gallons) Liner Removal Rate (12/man-day) 2017 - Pond #A New Liner 2017 - Pond #A New Liner 2017 - Pond #A Leak detection piping addition <b>Pond Liner and Piping Removal</b> A. Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (12/Man-Day) Total Man-Days Labor Rate (Sman-day) Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs D. Pond Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs D. Pond Liner and Piping Removal Effort Size of Crew Total Man-Days Removal Effort Cat 926M Loader Hourly Rate (S/m) Subtotal Liner and Piping Removal Effort B. Pond Liner and Piping Removal Effort Cat 926M Loader Hourly Rate (S/m) Subtotal Liner and Piping Removal Effort B. Pond Sludge Removal Equipment Costs Total Pond Sludge Removal Effort Estimated Production Flow since 1991 (gal) Historical Sludge Volume (Yd3) A. Pond Sludge Removal Labor Pond Sludge Removal Labor Pond Sludge Removal Labor Pond Sludge Removal Labor Pond Sludge Removal Labor Costs B. Pond Sludge Removal Effort Gat 926M Loader Hourly Rate (S/m) Subtotal Pond Sludge Removal Effort Gat 926M Loader Hourly Rate (S/m) Subtotal Pond Sludge Removal Effort Gat 926M Loader Hourly Rate (S/m) Subtotal Pond Sludge Removal Effort Gat 926M Loader Hourly Rate (S/m) Subtotal Pond Sludge Removal Effort Gat 926M Loader Hourly Rate (S/m) Subtotal Pond Sludge Removal Costs Total Days Removal Effort Gat 926M Loader Hourly Rate (S/m) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Liner (f12) Thickness of Pond Liner (f13) Void Space Factor Total Days Removal Effort Gat Pond Sludge Removal Costs B. Pond Sludge Disposal Costs To	0.00833 6 2,100 60,000 20 26661732240 10000 8.33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	0.0030 3 600 30,000 10 0.000000102 10,000 8.33 100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
Leak detection piping size average (in) Leak detection piping length (flyond) Earthwork Requirements (YdS/god) Surface Restoration/Revegetation (Acres) Suladge Production Rate (Yd3 suladge/gal) (1 Yd3 suladge/9,772,000 gal R&D Phase) Estimated 1991 to 2021 Total Production (gallons) Liner Removal Rate (Yd3/man-day) 2017 - Pond #A Veak Liner 2017 - Pond #A Leak detection piping addition <b>Pond Liner and Piping Removal</b> Labor Area of Ponds Liner Removal Rate (ft2/Man-day) Subtotal Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Case 250 Loader Hourly Rate (S/m) Subtotal Liner and Piping Removal Ediptiment Total Man-Days Removal Ediptiment Total Man-Days Removal Ediptiment Size of Crew Total Days Removal Effort Size of Crew Total Days Removal Effort Size of Crew Pond Sludge Estimate Estimated Production Flow since 1991 (gal) Historical Sludge Production Rate Estimated Production Rate Estimated Production Rate Estimated Pond Sludge Volume (Yd3) A. Pond Sludge Removal Labor Pond Sludge Removal Ediptiment Total Man-Days Labor Rate (S/man-day) Subtotal Pond Sludge Removal Ediptiment Total Man-Days Removal Effort Size of Crew Total Days Removal Effort Size of Crew Total Days Removal Effort Size of Crew Total Days Removal Ediptiment Total Man-Days Removal Ediptiment Total Man-Days Removal Ediptiment Costs <b>Total Days Removal Ediptiment</b> Total Man-Days Removal Ediptiment Costs <b>Total Days Removal Ediptiment</b> Costs <b>Total Days Removal Costs</b> <b>1. Pond Sludge Daysoal</b> Costs	6 2,100 60,000 20 26661732240 10000 8.33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	3 600 30,000 10 0.000000102 10,000 8.33 100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
Lask detection prime length (Vrjond) Surface RestorationRevegetation (Acres) Sludge Production Rate (Yd3 shudge/gal) (1 Yd3 sludge/7.2000 gal R&D Phase) Estimated 1991 to 2021 Total Production (gallons) Liner Removal Rate (ft2/man-day) Sludge Removal Rate (ft2/man-day) 2017 - Pond #4 New Liner 2017 - Pond #4 Leak detection piping addition Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (Sman-day) Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Edort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (Shr) Subtotal Liner and Piping Removal Equipment Total Man-Days Removal Effort Cat 926M Loader Hourly Rate (Shr) Subtotal Liner and Piping Removal Costs Pond Sludge Removal Pond Sludge Removal Pond Sludge Removal Labor Pond Sludge Kennoval Labor Pond Sludge Removal Labor Costs B. Pond Sludge Removal Labor Costs B. Pond Sludge Removal Labor Costs B. Pond Sludge Removal Effort Size of Crew Total Days Removal Effort Size of Pond Liner (ft2) Thickness of Pond Liner (ft2) Thickness of Pond Liner (ft2) Thickness of Pond Liner (ft3) Disposal Unit	2,100 60,000 20 26661732240 10000 8,33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	600 30,000 10 0.000000102 10,000 8.33 100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
Earthwork Requirements (Yd3) subgergal) Surface Restoration/Revegetation (Acres) Sludge Production Rate (Yd3 sludgergal) (1 Yd3 sludge%7,72,000 gal R&D Phase) Estimated 1991 to 2021 Total Production (gallons) Liner Removal Rate (Yd3/man-day) 2017 - Pond #4 New Liner 2017 - Pond #4 Leak detection piping addition <b>Pond Liner and Piping Removal</b> A. Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (Sfman-day) Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Editort Size of Crew Total Days Removal Effort Cat 9260M Loader Hourly Rate (Shr) Subtotal Liner and Piping Removal Editort Size of Crew Total Days Removal Effort Cat 9260M Loader Hourly Rate (Shr) Subtotal Liner and Piping Removal Costs <b>Pond Sludge Removal</b> Pond Sludge Production Rate Estimated Production Flow since 1991 (gal) Historical Sludge Production Rate Estimated Production Rate Estimated Prod Sludge Volume (Yd3) A. Pond Sludge Removal Labor Pond Sludge Removal Effort Size of Crew Total Days Removal Effort Cat 9260M Loader Hourly Rate (Shr) Subtotal Pond Sludge Removal Labor Costs B. Pond Sludge Removal Effort Size of Crew Total Days Removal Effort Cat 9260M Loader Hourly Rate (Shr) Subtotal Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposel Volume Factor (ft3) Not Subtotal Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposel Volume Factor (ft3) Disposal Unit Costs (Syd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal A. Pond Eindynessel Costs Total H	60,000 20 266661732240 10000 8.33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	30,000 10 0.000000102 10,000 8.33 100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
Surface Restoration/Revegetation (Acres) Sludge Production Rate (Yd3 sludge/gal) (1 Yd3 sludge9/772,000 gal R&D Phase) Estimated 1991 to 2021 Total Production (gallons) Liner Removal Rate (Yd2/man-day) 2017 - Pond #4 Leak detection piping addition <b>Pond Liner and Piping Removal</b> Liner Removal Rate (H2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtotal Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Edipment Total Man-Days Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Liner and Piping Removal Equipment Costs <b>Total Pond Sludge Removal</b> Pond Sludge Removal Estimate Production Flow since 1991 (gal) Historical Sludge Volume (Yd3) A. Pond Sludge Removal Labor Pond Sludge Removal Effort Size of Crew Total Man-Days Labor Rate (Yd3)man-day) Subtotal Pond Sludge Removal Effort Size of Crew Total Man-Days Labor Rate (S/man-day) Subtotal Pond Sludge Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (S/hr) Total Volume Pond Liner (ft) Yola Space Factor Total Disposed Volume (vd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Liner (ft) Yoid Space Factor Total Volume Pond Sludge (S/d3) Disposal Unit Costs (S/vd3) (Chapackaged Bulk) Subtota	20 266661732240 10000 8.33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468 \$17,468 \$17,468 \$25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	10 0.000000102 10,000 8.33 100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
Sludge Production Rute (Yd3 sludge/gal) (1 Yd3 sludge/9,772,000 gal R&D Phase) Estimated 199 in 2021 Total Production (gallons) Liner Removal Rate (Yd3/man-day) 2017 - Pond #4 New Liner 2017 - Pond #4 New Liner 2017 - Pond #4 Leak detection piping addition <b>Pond Liner and Piping Removal Labor</b> Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (ft2/Man-Day) Total Man-Days Labor Rate (ft2/Man-Day) Total Man-Days Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Cas 9260 Loader Hourly Rate (ft/m) Subtotal Liner and Piping Removal Equipment Total Man-Days Removal Effort Cas 9260 Loader Hourly Rate (ft/m) Subtotal Liner and Piping Removal Equipment Costs <b>Total Pond Sludge Estimate</b> Estimated Production Flow since 1991 (gal) Historical Sludge Poluciton Rate Estimated Production Flow since 1991 (gal) Historical Sludge Poluciton Rate Estimated Pond Sludge Volume (Yd3) A. Pond Sludge Removal Labor Pond Sludge Removal Labor Pond Sludge Removal Labor Pond Sludge Removal Labor Pond Sludge Removal Labor Costs B. Pond Sludge Removal Effort Size of Crew Total Days Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (Yd3/man-day) Subtotal Pond Sludge Removal Eutor Costs <b>I.</b> Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (Shr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (Shr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (Shr) Subtotal Pond Sludge Removal Effort Cat 926M Loader Hourly Rate (Shr) Void Space Factor Total Days Removal Effort Cat 926M Loader Hourly Rate (Shr) Subtotal Pond Sludge Removal Costs <b>Total Pond Sludge Removal Costs</b> <b>Total Pond Sludge Removal Costs</b> <b>Total Days Removal Costs</b> <b>I.</b> Pond Sludge Removal Costs <b>I.</b> Pond Sludge Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft2) Thickness of Pond Liner (ft3) Disposal Unit Costs (Sy/d3) (Chapackaged Bulk) Subtotal Pond Zlufn) Cators (Sy/d3) (Soli rate) Subtotal Pond Zluf	26661732240 10000 8.33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	10,000 8.33 100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
( <sup>1</sup> Y43 słudge%).772,000 gal R&D Phase) Estimated 1991 to 2021 Total Production (gallons) Liner Removal Rate (Yd3/man-day) 2017 - Pond #4 Leak detection piping addition <b>Pond Liner and Piping Removal</b> Liner Removal Rate (fd2/Man-Day) Total Man-Days Lakor Rate (fd2/Man-Day) Total Man-Days Lakor Rate (fd2/Man-Day) Total Man-Days Lakor Rate (fd2/Man-Day) Total Man-Days Lakor Rate (fd2/Man-Day) Total Man-Days Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs D. Pond Liner and Piping Removal Ediorn Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (5/hr) Subtotal Liner and Piping Removal Edipment Costs <b>Total Pond Liner</b> and Piping Removal Costs <b>Pond Sludge Removal</b> Pond Sludge Removal Labor Pond Sludge Removal Befort Size of Crew Total Days Removal Effort Size of Pond Liner (fd2) Thickness of Pond Liner (fd3) Void Space Factor Total Days Retor (fd3/h) Total Longth of Piping Piping Volume Factor (fd7/h) Total Longth of Piping Piping Volume Factor (fd7/h) Total Jopsoed Volume (vd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Sludge Disposal Costs <b>D</b> Fond Sludge Disposal Costs <b>Total Byproduct Material Disposal Costs</b> <b>Total Dysee Factor</b> Total Disposed Volume (vd3) Disposal Unit Costs (S/vd3) (Giprackaged Bulk) Subtotal Pond Sludge Disposal Costs <b>Total Pond Ediverse Costs</b> <b>Total Byproduct Material Disposal </b>	10000 8.33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	8.33 100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
Estimated 1991 to 2021 Total Production (gallons) Liner Removal Rate (ft2/man-day) 2017 - Pond #4 New Liner 2017 - Pond #4 Leak detection piping addition Area of Ponds Liner and Piping Removal Labor Rate (ft2/Man-Day) Total Man-Days Labor Rate (ft2/Man-Day) Total Man-Days Labor Rate (ft2/Man-Day) Total Man-Days Subiotal Liner and Piping Removal Labor Costs B. Pond Lines and Piping Removal Labor Costs B. Pond Liner and Piping Removal Ediort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subiotal Liner and Piping Removal Equipment Costs Total Pond Liner and Piping Removal Equipment Costs Total Pond Liner and Piping Removal Equipment Costs Total Pond Liner and Piping Removal Costs Dond Studge Estimate Estimated Production Flow since 1991 (gal) Historical Studge Production Rate Estimated Production Flow since 1991 (gal) Historical Studge Production Rate Estimated Pond Studge Volume (Yd3) A. Pond Studge Removal Labor Pond Studge Removal Labor Pond Studge Removal Labor Pond Studge Removal Labor Pond Studge Removal Effort Size of Crew Total Days Removal Effort Subiotal Pond Studge Removal Equipment Cost 926M Loader Hourly Rate (S/hr) Subiotal Pond Studge Removal Effort Subiotal Pond Studge Removal Effort Otal 926 Crew Total Days Removal Effort Subiotal Pond Studge Removal Effort Total Days Recov Total Days Removal Effort Subiotal Pond Studge Removal Effort Total Disposed Volume (vd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subiotal Pond Studge Costs C. Pond Studge Effort Total Length of Piping Piping Volume Foator (ft3/h) Total Length of Piping Piping Volume Foator (ft3/h) Total Volume	10000 8.33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	8.33 100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
Liner Removal Rate (12/man-day) Siludge Removal Rate (17d3/man-day) 2017 - Pond #4 Leak detection piping addition Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (12/Man-Day) Total Man-Days Labor Rate (5/man-day) Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs S. Pond Liner and Piping Removal Labor Costs S. Pond Liner and Piping Removal Edfort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (5/hr) Subtotal Liner and Piping Removal Edifort Otal Pond Liner and Piping Removal Edifort Cat 926M Loader Hourly Rate (5/hr) Subtotal Liner and Piping Removal Edifort Cat 926M Loader Hourly Rate (5/hr) Subtotal Liner and Piping Removal Edifort Cat 926M Loader Hourly Rate (5/hr) Subtotal Liner and Piping Removal Edifort Oral Pond Sludge Pennoval Pond Sludge Pennoval Pond Sludge Ponduction Rate Estimated Pond Sludge Volume (Yd3) Slubdate Removal Rate (Yd3/man-day) Total Man-Days Removal Edifort Size of Crew Total Days Removal Edifort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Labor Costs B. Pond Sludge Removal Equipment Total Man-Days Removal Edifort Size of Crew Total Days Removal Edifort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Ediptipment Total Pond Sludge Removal Ediptipment Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Sludge Removal Ediptipment Total Pond Sludge Removal Ediptipment Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposed Volume (vd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Liner ft3) Void Space Factor Total Disposed Volume (vd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Sludge Disposal Total Longth of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Sludge (Yd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs Total Dysposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Sludge Disposal Cos	8.33 250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.000000102 2,719	8.33 100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.0
2017 - Pond #4 Leak detection piping addition Pond Liner and Piping Removal A. Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs Costs Corew Total Days Removal Effort Cat 926M Loader Hourly Rate (S/m) Subtotal Liner and Piping Removal Equipment Cat 926M Loader Hourly Rate (S/m) Subtotal Liner and Piping Removal Equipment Costs Total Pond Sludge Removal Pond Sludge Removal Pond Sludge Removal Pond Sludge Removal Education Estimated Pond Sludge Volume (Yd3) A. Pond Sludge Removal Labor Pond Sludge Removal Rate (Yd3/man-day) Total Man-Days Labor Rate (S/man-day) Subtotal Pond Sludge Removal Labor Pond Sludge Removal Equipment Total Man-Days Labor Rate (S/man-day) Subtotal Pond Sludge Removal Equipment Total Man-Days Labor Rate (S/man-day) Subtotal Pond Sludge Removal Equipment Total Days Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (S/m) Subtotal Pond Sludge Removal Equipment Costs Total Pond Sludge Removal Equipment Costs I Pond Sludge Removal Exployment Area of Pond Liner (ft2) Thickness of Pond Liner (ft2) Thickness of Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposel Volume (vd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Sludge Disposal Cost Sludge I pond Sludge (Yd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Sludge Disposal Costs C. Pond Sludge Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) Di Sposal Unit Costs (S/vd3) (Gin rate) Subtotal Pond Earthwork Requirements Dat Hourly Pate Subtotal Pond Earthwork Requirements Dat Hourly Rate Subtotal Pond Earthwork Red	250,000 920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.000000102 2,719	100,000 10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.0
2017 - Pond #4 Leak detection piping addition Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (#2/Man-Day) Total Man-Days Labor Rate (%man-day) Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (%/n) Subtotal Liner and Piping Removal Equipment Costs Total Pond Sludge Removal Removal Labor Pond Sludge Removal Estimated Production Flow since 1991 (gal) Historical Sludge Production Rate Estimated Production Flow since 1991 (gal) Sludge Removal Labor Pond Sludge Volume (Yd3) A. Pond Sludge Volume (Yd3) Sludge Removal Labor Pond Sludge Removal Labor Pond Sludge Removal Labor Pond Sludge Removal Labor Costs B. Pond Sludge Removal Equipment Total Days Removal Effort Cat 926M Loader Hourly Rate (%/n) Slubtotal Pond Sludge Removal Edifort Cat 926M Loader Hourly Rate (%/n) Slubtotal Pond Sludge Removal Equipment Area of Pond Liner (ft) Yolume Factor Total Disposal Area of Pond Liner (ft) Yolume Factor Total Disposal Unit Costs (%/d3) (Unpackaged Bulk) Slubtotal Pond Sludge Removal Edif Disposal Unit Costs (%/d3) (Unpackaged Bulk) Slubtotal Pond Sludge Costs B. Pond Sludge Disposal Costs C. Pond Sludge Disposal Costs Disposal Unit Costs (%/d3) (Unpackaged Bulk) Slubtotal Pond Sludge Disposal Costs C. Pond Sludge Disposal Costs C. Pond Sludge Disposal Costs Disposal Unit Costs (%/d3) (Unpackaged Bulk) Slubtotal Pond Sludge Disposal Costs Disposal Unit Costs (%/d3)	920 1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.0
<ul> <li>Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtotal Liner and Piping Removal Labor Costs</li> <li>B. Pond Liner and Piping Removal Eduipment Total Man-Days Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (S/m) Subtotal Liner and Piping Removal Eduipment Costs</li> <li><b>Pond Sludge Removal</b> Pond Sludge Removal</li> <li>Pond Sludge Removal Eduipment Costs</li> <li><b>Pond Sludge Removal</b> Pond Sludge Removal Eduipment Costs</li> <li><b>Pond Sludge Removal</b> Bestimated Prof Sludge Volume (Yd3)</li> <li>A. Pond Sludge Removal Labor Pond Sludge Removal Eduipment Total Man-Days Labor Rate (Yd3/man-day) Subtotal Pond Sludge Removal Edifort Size of Crew Total Days Removal Effort Size of Crew Total Days Removal Effort Size of Crew Total Days Removal Effort Subtotal Pond Sludge Removal Labor Costs</li> <li>Pond Sludge Removal Effort Subtotal Pond Sludge Removal Edifort Cat 926M Loader Hourly Rate (S/m) Subtotal Pond Sludge Removal Edifort Cat 926M Loader Rourly Rate (S/m) Subtotal Pond Sludge Removal Costs</li> <li>I Pond Sproduct Material Disposal A. Pond Liner Disposal A. Pond Liner Disposal A rea of Pond Liner (ft3) Void Space Factor Total Disposed Volume (vd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Liner (ft3) Void Space Factor Total Disposed Volume (vd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond June Pond Piping (ft3) Void Space Factor Total Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond June Pond Piping (ft3) Void Space Factor Total Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Sludge Disposal Costs</li> <li>Pond Site Reclamation A. Pond Earthwork Requirements Latrhwork Requirements Vd3) Disposal Unit Costs (S/vd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs</li> <li>Pond Site Reclamation A. Pond Ear</li></ul>	1,000,000 10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.00000102 2,719	10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
<ul> <li>A. Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtotal Liner and Piping Removal Labor Costs</li> <li>B. Pond Liner and Piping Removal Eduipment Total Days Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Liner and Piping Removal Equipment Costs</li> <li><b>Pond Sludge Removal</b> Pond Sludge Removal Estimated Pond Sludge Volume (Yd3)</li> <li>A. Pond Sludge Removal Labor Pond Sludge Removal Rate (Yd3) Sludge Removal Rate (Yd3) Sludge Removal Rate (Yd3) Sludge Removal Eduipment Total Man-Days Labor Rate (S/man-day) Subtotal Pond Sludge Removal Labor Costs</li> <li>B. Pond Sludge Removal Effort Size of Crew Total Days Removal Effort Size of Crew Total Days Removal Effort Subtotal Pond Sludge Removal Eduipment Costs Total Pond Sludge Removal Costs</li> <li>I Pond Sludge Removal Costs</li> <li>J Pond Sludge Removal Costs</li> <li>I Pond Piping Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (S/yd3) (Unpackaged Bulk) Subtotal Pond Jimer Disposal Costs</li> <li>B. Pond Piping Disposal Costs</li> <li>J Pond Sludge Disposal Total Length of Piping Piping Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (S/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs</li> <li>J Pond Site Reclamation</li> <li>A. Pond Earthwork Requirements Lathwork Requirements Vd3) Disposal Unit Costs (S/yd3) (Unpackaged Bulk) Subtotal Pond Sindge Disposal Costs<td>10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.000000102 2,719</td><td>10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60</td><td>\$50,089.6</td></li></ul>	10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.000000102 2,719	10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.6
<ul> <li>A. Pond Liner and Piping Removal Labor Area of Ponds Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtotal Liner and Piping Removal Labor Costs</li> <li>B. Pond Liner and Piping Removal Eduipment Total Days Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Liner and Piping Removal Equipment Costs</li> <li><b>Pond Sludge Removal</b> Pond Sludge Removal Estimated Pond Sludge Volume (Yd3)</li> <li>A. Pond Sludge Removal Labor Pond Sludge Removal Rate (Yd3) Sludge Removal Rate (Yd3) Sludge Removal Rate (Yd3) Sludge Removal Eduipment Total Man-Days Labor Rate (S/man-day) Subtotal Pond Sludge Removal Labor Costs</li> <li>B. Pond Sludge Removal Effort Size of Crew Total Days Removal Effort Size of Crew Total Days Removal Effort Subtotal Pond Sludge Removal Eduipment Costs Total Pond Sludge Removal Costs</li> <li>I Pond Sludge Removal Costs</li> <li>J Pond Sludge Removal Costs</li> <li>I Pond Piping Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (S/yd3) (Unpackaged Bulk) Subtotal Pond Jimer Disposal Costs</li> <li>B. Pond Piping Disposal Costs</li> <li>J Pond Sludge Disposal Total Length of Piping Piping Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (S/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs</li> <li>J Pond Site Reclamation</li> <li>A. Pond Earthwork Requirements Lathwork Requirements Vd3) Disposal Unit Costs (S/yd3) (Unpackaged Bulk) Subtotal Pond Sindge Disposal Costs<td>10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.000000102 2,719</td><td>10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60</td><td>\$50,089.0</td></li></ul>	10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.000000102 2,719	10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.0
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Liner Removal Rate (ft2/Man-Day) Total Man-Days Labor Rate (S/man-day) Subtotal Liner and Piping Removal Labor Costs B. Pond Liner and Piping Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Liner and Piping Removal Equipment Costs Total Pond Liner and Piping Removal Equipment Costs Total Pond Liner and Piping Removal Equipment Costs Total Pond Studge Removal Pond Studge Removal Estimated Production Rate (S/hr) Historical Studge Production Rate Estimated Pond Studge Volume (Yd3) A. Pond Studge Removal Labor Pond Studge Removal Equipment Total Man-Days Labor Rate (Yd3) Subtotal Pond Studge Volume (Yd3) Subtotal Pond Studge Removal Labor Costs B. Pond Studge Removal Equipment Total Man-Days Labor Rate (S/man-day) Subtotal Pond Studge Removal Edpipment Total Man-Days Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (S/hr) Subtotal Pond Studge Removal Capipment Costs <b>1. Pond Studge Removal Costs</b> <b>1. Pond Piping Disposal</b> A. Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (S/yd3) (Unpackaged Bulk) <i>Subtotal Pond Piping Disposal Costs</i> <b>1. Pond Studge Disposal</b> Total Longth of Piping Piping Volume Factor (ft3/ft) Total Disposed Volume (yd3) Disposal Unit Costs (S/yd3) (Coin rate) <i>Subtotal Pond Piping Disposal Costs</i> <b>7 Pond Site Reclamation</b> <b>A.</b> Pond Site Reclamation <b>A.</b> Pon	10,000 100 \$174.68 \$17,468.00 100 4 25 \$227.68 \$45,536.00 \$63,004.00 26,661,732,240 0.000000102 2,719	10,000 10 \$174.68 \$1,746.80 10 4 2.5 \$227.68 \$4,553.60	\$50,089.0
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<ul> <li>B. Pond Sludge Removal Equipment Total Man-Days Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (\$/hr) Subtotal Pond Sludge Removal Equipment Costs</li> <li>Total Pond Sludge Removal Costs</li> <li>I. Pond Byproduct Material Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Total Length of Piping Piping Disposal Total Length of Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs</li> <li>B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs</li> <li>C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs</li> <li>V Pond Site Reclamation</li> <li>A. Pond Earthwork Requirements Earthwork Requirements Earthwork Requirements Yd3) D8T Buldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hours D8T Hours</li> </ul>	\$174.68		
Total Man-Days Removal Effort Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (\$/hr) Subtotal Pond Sludge Removal Equipment Costs Total Pond Sludge Removal Costs I. Pond Byproduct Material Disposal A. Pond Liner Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Total Length of Piping Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs <b>V Pond Site Reclamation</b> A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	\$56,945.68	\$0.00	\$56,945.0
Size of Crew Total Days Removal Effort Cat 926M Loader Hourly Rate (\$/hr) Subtotal Pond Sludge Removal Equipment Costs Total Pond Sludge Removal Costs I Pond Byproduct Material Disposal A. Pond Liner Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Volume of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs C. Pond Sludge Disposal Total Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Kate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	201		
Total Days Removal Effort Cat 926M Loader Hourly Rate (\$/hr) Subtotal Pond Sludge Removal Equipment Costs Total Pond Sludge Removal Costs I. Pond Byproduct Material Disposal A. Pond Liner Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Volume of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	326		
Cat 926M Loader Hourly Rate (\$/hr) Subtotal Pond Sludge Removal Equipment Costs Total Pond Sludge Removal Costs I. Pond Byproduct Material Disposal A. Pond Liner Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	3 109		
Subtotal Pond Sludge Removal Equipment Costs Total Pond Sludge Removal Costs I. Pond Byproduct Material Disposal A. Pond Liner Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (S/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	\$227.68		
Total Pond Sludge Removal Costs (I. Pond Byproduct Material Disposal A. Pond Liner Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs V Pond Site Reclamation A. Pond Earthwork Rate (Yd3/hr) Total D8T Hourly Rate Subtotal Pond Earthwork	\$198,536.96	\$0.00	\$198,536.9
<ul> <li>II. Pond Byproduct Material Disposal <ul> <li>A. Pond Liner Disposal</li> <li>Area of Pond Liner (ft2)</li> <li>Thickness of Pond Liner (ft3)</li> <li>Void Space Factor</li> <li>Total Disposed Volume (yd3)</li> <li>Disposal Unit Costs (\$/yd3) (Unpackaged Bulk)</li> <li>Subtotal Pond Liner Disposal Costs</li> </ul> </li> <li>B. Pond Piping Disposal <ul> <li>Total Length of Piping</li> <li>Piping Volume Factor (ft3/ft)</li> <li>Total Volume Pond Piping (ft3)</li> <li>Void Space Factor</li> <li>Total Disposed Volume (yd3)</li> <li>Disposal Unit Costs (\$/yd3) (Unpackaged Bulk)</li> <li>Subtotal Pond Liner Disposal Costs</li> </ul> </li> <li>B. Pond Piping Disposal <ul> <li>Total Length of Piping</li> <li>Piping Volume Factor (ft3/ft)</li> <li>Total Volume Pond Piping (ft3)</li> <li>Void Space Factor</li> <li>Total Disposed Volume (yd3)</li> <li>Disposal Unit Costs (\$/yd3) (Unpackaged Bulk)</li> <li>Subtotal Pond Piping Disposal Costs</li> </ul> </li> <li>C. Pond Sludge Disposal <ul> <li>Total Volume Pond Sludge (Yd3)</li> <li>Disposal Unit Costs (\$/yd3) (Soil rate)</li> <li>Subtotal Pond Sludge Disposal Costs</li> </ul> </li> <li>V Pond Site Reclamation <ul> <li>A. Pond Earthwork Requirements</li> <li>Earthwork Requirements Yd3)</li> <li>D8T Bulldozer Earthwork Rate (Yd3/hr)</li> <li>Total D8T Hourly Rate</li> <li>Subtotal Pond Earthwork</li> </ul> </li> </ul>	\$255,482.64	\$0.00	\$255,482.
<ul> <li>A. Pond Liner Disposal Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Void space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs</li> <li>B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs</li> <li>C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs</li> <li>Total Byproduct Material Disposal Costs</li> <li>V Pond Site Reclamation</li> <li>A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork</li> </ul>	+;	••••	, ,
Area of Pond Liner (ft2) Thickness of Pond Liner (ft3) Volume of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork			
Thickness of Pond Liner (ft) Volume of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	1 000 000	100.000	
Volume of Pond Liner (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	1,000,000	100,000	
Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	0.00833	0.00300 300	
Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hourty Rate Subtotal Pond Earthwork	8,330 1.25	1.25	
Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	386	14	400
Subtotal Pond Liner Disposal Costs B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (fd3/fd) Total Volume Pond Piping (fd3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs V Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Dat Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hourly Rate Subtotal Pond Earthwork	\$232.93	\$232.93	-00
<ul> <li>B. Pond Piping Disposal Total Length of Piping Piping Volume Factor (ft3/ft) Total Volume Pond Piping (ft3) Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs</li> <li>C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs</li> <li>Total Byproduct Material Disposal Costs</li> <li>7 Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork</li> </ul>	\$89,910,98	\$3,261.02	\$93,172.
Total Length of Piping         Piping Volume Factor (f3/ft)         Total Volume Pond Piping (f13)         Void Space Factor         Total Disposed Volume (yd3)         Disposal Unit Costs (\$/yd3) (Unpackaged Bulk)         Subtotal Pond Piping Disposal Costs         C. Pond Sludge Disposal         Total Volume Pond Sludge (Yd3)         Disposal Unit Costs (\$/yd3) (Soil rate)         Subtotal Pond Sludge Disposal Costs         Total Byproduct Material Disposal Costs         7         Pond Site Reclamation         A. Pond Earthwork Requirements         Earthwork Requirements         Earthwork Rate (Yd3/hr)         Total D8T Hourly Rate         Subtotal Pond Earthwork	000,020,000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Piping Volume Factor (ft3/ft)         Total Volume Pond Piping (ft3)         Void Space Factor         Total Disposed Volume (yd3)         Disposal Unit Costs (\$/yd3) (Unpackaged Bulk)         Subtotal Pond Piping Disposal Costs         C. Pond Sludge Disposal         Total Volume Pond Sludge (Yd3)         Disposal Unit Costs (\$/yd3) (Soil rate)         Subtotal Pond Sludge Disposal Costs         Total Byproduct Material Disposal Costs         V Pond Site Reclamation         A. Pond Earthwork Requirements         Earthwork Requirements Yd3)         D8T Bulldozer Earthwork Rate (Yd3/hr)         Total D8T Hourly Rate         Subtotal Pond Earthwork	7,220	1,200	
Total Volume Pond Piping (ft3)         Void Space Factor         Total Disposed Volume (yd3)         Disposal Unit Costs (\$/yd3) (Unpackaged Bulk)         Subtotal Pond Piping Disposal Costs         C. Pond Sludge Disposal         Total Volume Pond Sludge (Yd3)         Disposal Unit Costs (\$/yd3) (Soil rate)         Subtotal Pond Sludge Disposal Costs         Total Byproduct Material Disposal Costs         V Pond Site Reclamation         A. Pond Earthwork Requirements         Earthwork Requirements Yd3)         D8T Bulldozer Earthwork Rate (Yd3/hr)         Total D8T Hourly Rate         Subtotal Pond Earthwork	0.0103	0.0069	
Void Space Factor Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs 7 Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	74	8	
Total Disposed Volume (yd3) Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs 7 Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	1.25	1.25	
Disposal Unit Costs (\$/yd3) (Unpackaged Bulk) Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs 7 Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	3.4	0.4	:
Subtotal Pond Piping Disposal Costs C. Pond Sludge Disposal Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs 7 Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	\$232.93	\$232.93	
Total Volume Pond Sludge (Yd3) Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs 7 Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	\$791,96	\$93.17	\$885.
Disposal Unit Costs (\$/yd3) (Soil rate) Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs / Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork			
Subtotal Pond Sludge Disposal Costs Total Byproduct Material Disposal Costs 7 Pond Site Reclamation A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	2,719		2,7
Total Byproduct Material Disposal Costs         7       Pond Site Reclamation         A. Pond Earthwork Requirements         Earthwork Requirements Yd3)         D8T Bulldozer Earthwork Rate (Yd3/hr)         Total D8T Hours         D8T Hourly Rate         Subtotal Pond Earthwork	\$274.40	· · · ·	
<ul> <li>Pond Site Reclamation</li> <li>A. Pond Earthwork Requirements         <ul> <li>Earthwork Requirements Yd3)</li> <li>D8T Bulldozer Earthwork Rate (Yd3/hr)</li> <li>Total D8T Hours</li> <li>D8T Hourly Rate</li> <li>Subtotal Pond Earthwork</li> </ul> </li> </ul>	\$746,093.60	\$0.00	\$746,093.
A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	\$836,796.54	\$3,354.19	\$840,150
A. Pond Earthwork Requirements Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork			
Earthwork Requirements Yd3) D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork			
D8T Bulldozer Earthwork Rate (Yd3/hr) Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	180,000	60,000	
Total D8T Hours D8T Hourly Rate Subtotal Pond Earthwork	700	700	
D8T Hourly Rate Subtotal Pond Earthwork	257	86	
		\$598.27	
B Revertation	\$598.27	\$51,451.22	\$205,206.
	\$598.27 \$153,755.39		
Area requiring Revegetation (Ac)	\$153,755.39	10	
Revegetation Unit Cost (\$/Ac)	\$153,755.39 20	\$300.00	
Subtotal Plant Site Revegetation	\$153,755.39 20 \$300.00	\$3,000.00	<b></b>
Total Pond Site Reclamation Costs	\$153,755.39 20 \$300.00 \$6,000.00	\$54,451.22	\$214,206
Supervisory Labor Costs During Pond Reclamation	\$153,755.39 20 \$300.00		
Estimated Duration (months)	\$153,755.39 20 \$300.00 \$6,000.00		
Engineer Rate (\$/month)	\$153,755.39 20 \$300.00 \$6,000.00 \$159,755.39		
Total Engineer Labor	\$153,755.39 20 \$300.00 \$6,000.00 \$159,755.39 4		
Radiation Technician Rate (\$/month)	\$153,755.39 20 \$300.00 \$6,000.00 \$159,755.39 4 \$8,843.08		۰.
Radiation Technician Kate (5/month) Total Radiation Technician Labor	\$153,755.39 20 \$300.00 \$6,000.00 \$159,755.39 4 \$8,843.08 \$35,372.32		
Total Radiation Technician Labor Total Supervisory Labor Costs	\$153,755.39 20 \$300.00 \$6,000.00 \$159,755.39 4 \$8,843.08 \$35,372.32 \$7,108.67		
	\$153,755.39 20 \$300.00 \$6,000.00 \$159,755.39 4 \$8,843.08 \$35,372.32 \$7,108.67 \$28,434.68		\$63 807
OTAL EVAPORATION POND RECLAMATION	\$153,755.39 20 \$300.00 \$6,000.00 \$159,755.39 4 \$8,843.08 \$35,372.32 \$7,108.67	\$0.00 \$64,105.81	\$63,807 <b>\$1,442,951.3</b>

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## **Miscellaneous Site Reclamation**

I.	Access Road Reclamation	· · · · · · · · · · · · · · · · · · ·
	Assumptions	
	Road Reclamation production rate (Yd3/hr)	200
	Length of Main Access Roads (ft)	18,300
	Average Main Access Road width (ft)	25
	Depth of Main Access Road Gravel Surface (ft)	1
	Surface Area of Main Access Road (Ac)	10.5
	Length of Wellfield Access Roads (ft)	58,500
	Average Wellfield Access Road width (ft)	12
	Depth of Wellfield Access Road Gravel Surface (ft)	0.5
	Surface Area of Wellfield Road (Ac)	16.1
	A. Main Access Road Dirtwork	
	Main Access Road Gravel Volume (Yd3)	16,944
	Total reclamation time (hrs)	85
	D8T Unit Operating Cost (\$/hr)	\$598.27
	Subtotal Main Access Road Gravel Roadbase Removal Costs	\$50,852.95
	B. Wellfield Road Dirtwork	
	Wellfield Road Gravel Volume (Yd3)	13,000
	Total reclamation time (hrs)	65
	D8T Unit Operating Cost (\$/hr)	\$598.27
	Subtotal Wellfield Road Gravel Roadbase Removal Costs	\$38,887.55
	E. Discing/Seeding	
	Assumptions	-
	Surface Area (acres)	26.6
	Discing/Seeding Unit Cost (\$/acre)	\$300.00
	Subtotal Discing/Seeding Costs	\$7,980.00
	Total Access Road Reclamation Costs	\$97,720.50
	Wastewater Pipeline Reclamation	
	Assumptions	
	Pipeline Removal Rate (ft./man-day)	67
	Pipeline Shredding Rate (ft./man-day)	1,500
	Number of Pond Pipelines	4
	Length of Pond Pipelines (ft)	3,500
	Number of RO Building Pipelines	4
	Length of RO Building Pipelines (ft)	300
	Average Pipe Size (Sch 40)	4
	A. Pipeline Removal Costs	
	Length of Pipelines (ft)	15,200
	Removal Rate (ft/man-day)	67
	Removal Labor Rate (\$/man-day)	\$174.68
	Cat 926M Loader Use (days)	227
	Cat 926M Loader Cost	\$413,466.88
	Subtotal Pipeline Removal Costs	\$453,119.24
	B. Pipeline Shredding Costs	
	Length of Pipelines (ft)	15,200
	Shredding Rate (ft/man-day)	1,500
	Shredding Labor Rate (\$/man-day)	\$174.68
	Shredder Use (days)	10
	Shredder Cost	\$1,046.40
	Subtotal Pipeline Shredding Costs	\$2,793.20
•	C. Pipeline Transportation and Disposal (NRC-Licensed Facility) Pipe Diameter (inches)	· A
	Pipe Diameter (inches) Chipped Volume Reduction (ft <sup>3</sup> /ft)	4
•	Subtotal Volume Reduction (IT/IT)	0.0103 5.8
÷	Disposal Void Factor	1.25
	Final Disposal Volume (yd3)	7.25
	Transportation and Disposal Unit Cost (\$/yd <sup>3</sup> ) (Unpackaged Bulk)	\$232.93
	Subtotal Pipeline Disposal Costs	\$1,688.74
		•
	Total Wastewater Pipeline Reclamation Costs	\$457,601.18
		3437,001.18
Ľ	Electrical Distribution System Removal	5437,001.18
I.	Electrical Distribution System Removal Assumptions	
L.	Electrical Distribution System Removal Assumptions Length of High Voltage Lines	49,640
Ĺ	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.)	49,640 \$2.17
<b>L</b> .	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.)	49,640 \$2.17 \$107,718.80
<b>L</b>	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.) Substation Removal	49,640 \$2.17 \$107,718.80 \$2,000.00
	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.) Substation Removal Subtotal Electrical Distribution System Removal Costs	49,640 \$2.17 \$107,718.80
	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.) Substation Removal Substation Removal Subtotal Electrical Distribution System Removal Costs Supervisory Labor Costs During Miscellaneous Reclamation	49,640 \$2.17 \$107,718.80 \$2,000.00
. '	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.) Substation Removal Substation Removal Subtotal Electrical Distribution System Removal Costs Supervisory Labor Costs During Miscellaneous Reclamation Estimated Duration (months)	49,640 \$2.17 \$107,718.80 \$2,000.00 <b>\$109,718.80</b> 3
	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.) Substation Removal Substation Removal Subtotal Electrical Distribution System Removal Costs Supervisory Labor Costs During Miscellaneous Reclamation Estimated Duration (months) Engineer Rate (\$/month)	49,640 \$2.17 \$107,718.80 \$2,000.00 <b>\$109,718.80</b> 3 \$8,843.08
	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.) Substation Removal Substation Removal Substation System Removal Costs Supervisory Labor Costs During Miscellaneous Reclamation Estimated Duration (months) Engineer Rate (\$/month) Total Engineer Labor	49,640 \$2.17 \$107,718.80 \$2,000.00 \$109,718.80 3 \$8,843.08 \$26,529.24
	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.) Substation Removal Substation Removal Substation System Removal Costs Supervisory Labor Costs During Miscellaneous Reclamation Estimated Duration (months) Engineer Rate (\$/month) Total Engineer Labor Radiation Technician Rate (\$/month)	49,640 \$2.17 \$107,718.80 \$2,000.00 \$109,718.80 3 \$8,843.08 \$26,529.24 \$7,108.67
	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.) Substation Removal Substation Removal Substation System Removal Costs Supervisory Labor Costs During Miscellaneous Reclamation Estimated Duration (months) Engineer Rate (\$/month) Total Engineer Labor Radiation Technician Rate (\$/month) Total Radiation Technician Labor	49,640 \$2.17 \$107,718.80 \$2,000.00 \$109,718.80 3 \$8,843.08 \$26,529.24 \$7,108.67 \$21,326.01
. '	Electrical Distribution System Removal Assumptions Length of High Voltage Lines High Voltage Line Removal Rate (\$/ft.) High Voltage Line Removal Cost (\$/ft.) Substation Removal Substation Removal Substation System Removal Costs Supervisory Labor Costs During Miscellaneous Reclamation Estimated Duration (months) Engineer Rate (\$/month) Total Engineer Labor Radiation Technician Rate (\$/month)	49,640 \$2.17 \$107,718.80 \$2,000.00 \$109,718.80 3 \$8,843.08 \$26,529.24 \$7,108.67

Cost Basis	Well # 1	Well # 2
A. Plugging and Abandonment		
Cost Estimate from subcontractor (January 2014)	\$104,900	\$104,900
June 2014 CPI	238.3	238.3
July 2021 CPI	273.0	273.0
Subtotal Escalated June 2014 Plugging and Abandonment Costs	\$120,176.31	\$120,176.31
B. Site Reclamation		
Cost Estimate from subcontractor (January 2014)	\$7,821	\$7,821
June 2014 CPI	238.3	238.3
July 2021 CPI	273.0	273.0
Subtotal Escalated June 2014 Reclamation Costs	\$8,959.95	\$8,959.95
Subtotal Abandonment cost per well	\$129,136.26	\$129,136.2
DTAL DEEP DISPOSAL WELL RECLAMATION COSTS	\$258,272.52	

I-196 Brule Aquifer Restoration	<u></u>
I. Ground Water Sweep Costs	
Assumptions	
PV's Required from I-196a, I-196j and I-196n	3
Total Gallons per Pore Volume	337,758
Total Gallons to Treat	1,013,274
Flow Rate (gpm)	3
Pump Power Requirements (kwh)	3
Power Cost (\$/kw)	\$0.1244
Pumping Labor (man-day per day) (1hr/day)	0.125
Sampling Labor (man-day per day) (.5hr/day)	0.0625
Labor Rate (\$/man-day)	\$174.68
Days to complete	235
A. Electrical Costs	
Cost to pump 3 Pore Volumes	\$2,101.02
B. Labor Costs	· · · ·
Labor for pumping 3 Pore Volumes	\$5,131.23
Total Ground Water Sweep Costs	\$7,232.25
I. Monitoring and Sampling Costs	· ·
A. Labor Costs for Monitoring I-196a, I-196j, and I-196n	\$2,565.61
B. Monitoring for I-196i, I-196m, and I-196l	\$2,565.61
otal Monitoring and Sampling Costs	\$5,131.22
II Additional Ground Water Sweep	
Pump from additional wells and monitor as above	\$12,363.47
Drill 4 additional wells, 50 ft deep at \$26/ft.	\$5,200.00
Total Additional Ground Water Sweep	\$17,563.47
V Well Abandonment	
Abandon 14 wells at \$194/well	\$2,716.00
otal Well Abandonment	\$2,716.00
TOTAL I-196 BRULE AQUIFER RESTORATION COSTS	\$32,642.94

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# GROUNDWATER RESTORATION GROUNDWATER IX TREATMENT (GIX) Unit Costs

								<u> </u>	
Assumptions:									
1. All pumps are 5 hp pum	ping at 32 gpm								
2. Cost of electricity =									\$0.1244 Kw hr
<ol><li>Horsepower to kilowatt</li></ol>	conversion =								0.746 Kw/HP
4. Operator labor costs =							-		\$174.68 man-day
5. Labor costs are based of	n 36 pumps at 1,	150 gpm							
Wellfield Pumping Electrical	Costs per 1000	Gallons (Include	es ble	ed to the Deepw	ell / E	Evaporation P	ond)		
1000 gal X	<sup>3 hp</sup> X		x	0.746 kwh		-	,	- ¢ 0.297	
U X	12 gpm X	60 min	х	hp	А	kwh		= \$ 0.387	
Wellfield Pumping Labor Co	sts per 1000 Gal	lons							·
1000 gal X	<sup>1 min</sup> X 1150 gal	1 man-day 1440 min	х	\$174.68 man-day	x	2	operators	= \$ \$0.211	
Groundwater IX Production	Rate								
1150 gal X	<sup>60 min</sup> X	24 hr	X	365 day	х	1	year	_ 50,370,000	gallons
min	hr	day	л	year	л	12	month	-	month
ТОТ	AL GIX COS	STS PER 100	0 G4	ALLONS				= \$ 0.60	· · · ·

Groundwater Reverse Osmosis (RO) Treatment Unit Costs

Assumptions:																
<ol> <li>All pumps are</li> </ol>			32 gpm													
2 Membrane Re																per 1000 g
3 Cost of electr	•													\$		Kw hr
4 Horsepower t			sion =													Kw/HP
5 Operator labo														\$	174.68	man-day
6 RO System h			ments for 600 gp	m rat	ted flow based up											
		RO Unit Pum					) hp									
		Permeate/Inje			<b>-</b>		) hp									
			(. (Bleed - Deepw	/ uew	Evap Ponds)		5 hp									
7.01		TOTAL:				37:	5 hp									
7 Chemical cost		Doductout a													\$0.730	1L
		Reductant = Antiscalant =														
		Antiscalant -													\$18.66	gar
Membrane Replace	men	t Costs ner 1	000 Gallons													
1100 gal		\$660	membrane	1	17,520,00	0 gallons							~			77
		•	cost / month	-		month							= \$	0.041		per Kga
Wellfield Pumping		trical Costs g	per 1000 Gallons	5												
1100 gal	x	3	hp	х	1	hr	x	0.746	kwh	x \$	0.1244		= ¢	0.425		per Kga
	21	12	gpm		60	min	~		hp	26	kwh		-ψ	0.425		per ixga
Reverse Osmosis El	ectri	ical Caste ner	r 1000 Callons													
1100 gal		375	hp		1	hr		0,746	kwh	x \$	0.1244					
TIOO BAL	х	1100	gpm	х	60	min	Х		hp	X *	kwh		=\$	0.580		per Kga
			or and a													
Reverse Osmosis La		Costs per 10	00 Gallons													
1100 gal	x	1	min .	х	1	man-day	v	\$174.68	3	х	2	operators	- \$	\$0.243		per Kga
	л	1100	gal	л	1440	min	Λ.	man-day	1	л			φ	φ <b>υ.2</b> 45		hèi izka
Freatment chemical	C06	të nër 1000 (	Callone													
Antiscalant:	103		Janons													
		0.00003000	) gal antiscalant		\$18.66											
	Х	1	gal	X	gal antiscalant	•							≂\$	\$0.062		per Kgal
Reductant:		•	êm.		Bar annound											
1100 gal		0.000200	) lbs reductant		\$0,730								-			
	х	1	gal	X	lb reductant						-		=\$	\$0.161		per Kgal
	- d	tion Date	-													
Reverse Osmosis Pr		-			ā	4 hr		2/4	dan		,			17 500 /	100	
400 gal	х	. 00	) min hr	Х	2		х	003	day	х	1 12	year	=	17,520,0		gallons
min	l		ш			day			year		1.7	month				month
DOTAT DO CO		DED 4004							· · · ·	T	~	4 24				
FOTAL RO CO	515	) PEK 1000	GALLUNS							1	=\$	1.51				

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			G	roundwa	ter Recircula	tion <b>l</b>	Jnit C	osts			<u> </u>			
Assumptions: 1. All pumps are 5 hp pum 2. Cost of electricity = 3. Horsepower to kilowath 4. Operator labor costs =													0.74	4 Kw hr 5 Kw/HP 3 man-day
Vellfield Pumping Electrical C				1	ha		0.74	C level	. ¢	0 1244				
1000 gal X		hp gpm	х	60	hr min	Х	- 0.740 h	p p	X <sup>Φ</sup>	0.1244 kwh		=\$	0.387	per Kgal
Vellfield Injection Electrical C	osts per 1000	0 Gallons												
1000 gal X	21 21 <b>20 20</b>	hp gpm	х	1 60	hr min	Х	. 0.740 h	5 kwł p	<sup>1</sup> X <sup>\$</sup>	0.1244 kwh		=\$	0.000	per Kgal
Recirculation Labor Costs per	1000 Gallons	s												
1000 gal X	1 :	min gal	X	1 1440	man-day min	Х	. \$174.0 man	58 -day	х	1	operators	= \$	0.105	per Kgal
<b>Recirculation Production Rate</b>														
1150 gal min X	60 :	min hr	x	24	hr day	Х	365	day year	~~	1 12	year month	=	50,370,000	gallons month
TOTAL RECIRCULATION	ON COST	S PER 1000	GALL	ONS						=\$	0.49			

Revised 9/28/2021

## WELL ABANDONMENT Unit Costs

#### Assumptions:

1 Use backhoe for 0.25 hr/well to dig, cut off, and cap well.

2 Drill rig used 2.5 hrs to plug well.

3 Labor for installing chips, etc. will require 2 workers at 0.5 hrs per well

#### Well Abandonment Costs

## Cost per ft (based on 700 ft wells)

tal Estimated Cost p	er Foot:			-	\$1.18
Plug Gel	0.0086 sacks/ft	X \$	12.90 per sack	and the second	\$0.1109
Bentonite Chips	0.007 tubes/ft	X \$	11.49 per tube		\$0.0804
Cement	0.0714 lbs/ft	X \$	0.060 per pound		\$0.0043
terials per foot of well (V	'ariable Cost)				
Well Cap	1 each	X \$ 6.	75 each	=\$ 6.75	\$0.0096
Drill rig	2.5 hours	X \$ 25	0.00 per hour	=\$ 625.00	\$0.8929
	0.25 hours	X \$ 13	1.40 per hour	=\$ 32.85	\$0,0469
Cat 416 Backhoe					
Labor Costs	1 hours	X \$ 21	.84 per hour	=\$ 21.84	\$0.0312

Analytical Costs:         XRD Bulk         1 samples       X \$ 209.61 per sample         XRD Bulk + Clay         1 samples       X \$ 419.22 per sample         Selective Extraction         4 samples       X \$ 821.47 per sample         Elemental Analysis         1 samples       X \$ 530.83 per sample         Porosity + Particle Size         1 samples       X \$ 379.58 per sample         = \$ 379         Third Party Engineering Consultant Costs:	Alter	nate Concentra	tion	Lin	nit (ACL)	Unit Cost p	er Mine Unit	 
<ul> <li>1 Equipment and labor</li> <li>2 Analytical Costs</li> <li>3 Third Party Engineering Consultant</li> <li>4 Core Holes per Mine Unit</li> <li>ACL Costs per Core Hole</li> <li>Equipment and Labor: Drilling Costs</li> <li>34 hours X \$ 250.00 per hour = \$ 8,500</li> <li>Analytical Costs: XRD Bulk</li> <li>1 samples X \$ 209.61 per sample = \$ 209</li> <li>XRD Bulk + Clay</li> <li>1 samples X \$ 419.22 per sample = \$ 419</li> <li>Selective Extraction</li> <li>4 samples X \$ 821.47 per sample = \$ 3,285</li> <li>Elemental Analysis</li> <li>1 samples X \$ 530.83 per sample = \$ 379</li> <li>Third Party Engineering Consultant Costs:</li> <li>1 months X \$ 8,843.08 per month = \$ 8,843</li> <li>Unit Cost per Core Hole:</li> </ul>	Assumptions:	:						
<ul> <li>2 Analytical Costs</li> <li>3 Third Party Engineering Consultant</li> <li>4 Core Holes per Mine Unit</li> <li>ACL Costs per Core Hole</li> <li>Equipment and Labor: Drilling Costs</li> <li>34 hours X \$ 250.00 per hour = \$ 8,500</li> <li>Analytical Costs: XRD Bulk</li> <li>1 samples X \$ 209.61 per sample = \$ 209</li> <li>XRD Bulk + Clay</li> <li>1 samples X \$ 419.22 per sample = \$ 419</li> <li>Selective Extraction</li> <li>4 samples X \$ 821.47 per sample = \$ 3,285</li> <li>Elemental Analysis</li> <li>1 samples X \$ 530.83 per sample = \$ 530</li> <li>Porosity + Particle Size</li> <li>1 samples X \$ 379.58 per sample = \$ 379</li> <li>Third Party Engineering Consultant Costs:</li> <li>1 months X \$ 8,843.08 per month = \$ 8,843</li> <li>Unit Cost per Core Hole:</li> <li>= \$ 22,168</li> <li>Core Holes per Mine Unit:</li> </ul>								
3 Third Party Engineering Consultant 4 Core Holes per Mine Unit ACL Costs per Core Hole Equipment and Labor: Drilling Costs 34 hours X \$ 250.00 per hour = \$ 8,500 Analytical Costs: XRD Bulk 1 samples X \$ 209.61 per sample = \$ 209 XRD Bulk + Clay 1 samples X \$ 419.22 per sample = \$ 419 Selective Extraction 4 samples X \$ 821.47 per sample = \$ 3,285 Elemental Analysis 1 samples X \$ 530.83 per sample = \$ 530 Porosity + Particle Size 1 samples X \$ 379.58 per sample = \$ 379 Third Party Engineering Consultant Costs: 1 months X \$ 8,843.08 per month = \$ 8,843 Unit Cost per Core Hole: = \$ 22,168 Core Holes per Mine Unit:								
4 Core Holes per Mine Unit ACL Costs per Core Hole Equipment and Labor: Drilling Costs 34 hours X \$ 250.00 per hour = \$ 8,500 Analytical Costs: XRD Bulk 1 samples X \$ 209.61 per sample = \$ 209 XRD Bulk + Clay 1 samples X \$ 419.22 per sample = \$ 419 Selective Extraction 4 samples X \$ 821.47 per sample = \$ 3,285 Elemental Analysis 1 samples X \$ 530.83 per sample = \$ 330 Porosity + Particle Size 1 samples X \$ 379.58 per sample = \$ 379 Third Party Engineering Consultant Costs: 1 months X \$ 8,843.08 per month = \$ 8,843 Unit Cost per Core Hole: = \$ 22,168 Core Holes per Mine Unit:			Cone	ltani	<b>.</b>			
ACL Costs per Core Hole Equipment and Labor: Drilling Costs 34 hours X \$ 250.00 per hour = \$ 8,500 Analytical Costs: XRD Bulk 1 samples X \$ 209.61 per sample = \$ 209 XRD Bulk + Clay 1 samples X \$ 419.22 per sample = \$ 419 Selective Extraction 4 samples X \$ 821.47 per sample = \$ 3,285 Elemental Analysis 1 samples X \$ 530.83 per sample = \$ 530 Porosity + Particle Size 1 samples X \$ 379.58 per sample = \$ 379 Third Party Engineering Consultant Costs: 1 months X \$ 8,843.08 per month = \$ 8,843 Unit Cost per Core Hole: = \$ 22,168 Core Holes per Mine Unit:				utan				
Equipment and Labor: Drilling Costs 34 hours       X       \$ 250.00 per hour       = \$ 8,500         Analytical Costs: XRD Bulk 1 samples       X       \$ 209.61 per sample       = \$ 209         XRD Bulk + Clay 1 samples       X \$ 419.22 per sample       = \$ 419         Selective Extraction 4 samples       \$ 821.47 per sample       = \$ 3,285         Elemental Analysis 1 samples       X \$ 530.83 per sample       = \$ 530         Porosity + Particle Size 1 samples       X \$ 379.58 per sample       = \$ 379         Third Party Engineering Consultant Costs: 1 months       X \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168         Core Holes per Mine Unit:       =       = \$ 22,168	4 Cole	Holes per Mille Or	u					
Drilling Costs 34 hoursX\$250.00 per hour=\$\$\$\$Analytical Costs: XRD Bulk 1 samplesX\$209.61 per sample=\$209XRD Bulk+Clay 1 samplesX\$209.61 per sample=\$209XRD Bulk+Clay 1 samplesX\$419.22 per sample=\$419Selective Extraction 4 samplesX\$821.47 per sample=\$3,285Elemental Analysis 1 samplesX\$\$30.83 per sample=\$530Porosity + Particle Size 1 samplesX\$379.58 per sample=\$379Third Party Engineering Consultant Costs: 1 monthsX\$8,843.08 per month=\$8,843Unit Cost per Core Hole: Core Holes per Mine Unit:=\$22,168\$\$	ACL Costs pe	er Core Hole						
34 hours       X       \$ 250.00 per hour       = \$ 8,500         Analytical Costs:       XRD Bulk       1 samples       X \$ 209.61 per sample       = \$ 209         XRD Bulk + Clay       1 samples       X \$ 419.22 per sample       = \$ 419         Selective Extraction       4 samples       X \$ 821.47 per sample       = \$ 3,285         Elemental Analysis       1 samples       X \$ 530.83 per sample       = \$ 530         Porosity + Particle Size       1 samples       X \$ 379.58 per sample       = \$ 379         Third Party Engineering Consultant Costs:       1 months       X \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168         Core Holes per Mine Unit:       ************************************	Equipment an	nd Labor:						
Analytical Costs:       XRD Bulk       1 samples       X \$ 209.61 per sample       = \$ 209         XRD Bulk + Clay       1 samples       X \$ 419.22 per sample       = \$ 419         Selective Extraction       4 samples       X \$ 821.47 per sample       = \$ 3,285         Elemental Analysis       1 samples       X \$ 530.83 per sample       = \$ 530         Porosity + Particle Size       1 samples       X \$ 379.58 per sample       = \$ 379         Third Party Engineering Consultant Costs:       1 months       X \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168         Core Holes per Mine Unit:       E 22,168	Drilli	ng Costs						
XRD Bulk 1 samplesX\$209.61 per sample=\$209XRD Bulk + Clay 1 samplesX\$419.22 per sample=\$419Selective Extraction 4 samplesX\$821.47 per sample=\$3,285Elemental Analysis 1 samplesX\$530.83 per sample=\$530Porosity + Particle Size 1 samplesX\$379.58 per sample=\$379Third Party Engineering Consultant Costs: 1 monthsX\$\$,843.08 per month=\$8,843Unit Cost per Core Hole: Core Holes per Mine Unit:=\$22,16822,168		34 hours	Х	\$	250.00	per hour	<b>±</b>	\$ 8,500.
XRD Bulk 1 samplesX\$209.61 per sample=\$209XRD Bulk + Clay 1 samplesX\$419.22 per sample=\$419Selective Extraction 4 samplesX\$821.47 per sample=\$3,285Elemental Analysis 1 samplesX\$530.83 per sample=\$530Porosity + Particle Size 1 samplesX\$379.58 per sample=\$379Third Party Engineering Consultant Costs: 1 monthsX\$\$,843.08 per month=\$8,843Unit Cost per Core Hole: Core Holes per Mine Unit:=\$22,16822,168	Analytical Co	sts:						
XRD Bulk + Clay       1 samples       X \$ 419.22 per sample       = \$ 419         Selective Extraction       4 samples       X \$ 821.47 per sample       = \$ 3,285         Elemental Analysis       1 samples       X \$ 530.83 per sample       = \$ 530         Porosity + Particle Size       1 samples       X \$ 379.58 per sample       = \$ 379         Third Party Engineering Consultant Costs:       1 months       X \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168         Core Holes per Mine Unit:       E 22,168	. • .							
XRD Bulk + Clay 1 samplesx \$ 419.22 per sample= \$ 419Selective Extraction 4 samplesX \$ 821.47 per sample= \$ 3,285Elemental Analysis 1 samplesX \$ 530.83 per sample= \$ 530Porosity + Particle Size 1 samplesX \$ 379.58 per sample= \$ 379Third Party Engineering Consultant Costs: 1 monthsX \$ 8,843.08 per month= \$ 8,843Unit Cost per Core Hole:= \$ 22,168Core Holes per Mine Unit:		1 samples	х	\$	209.61	per sample	=	\$ 209.
1 samplesX\$ 419.22 per sample= \$ 419Selective Extraction 4 samplesX\$ 821.47 per sample= \$ 3,285Elemental Analysis 1 samplesX\$ 530.83 per sample= \$ 530Porosity + Particle Size 1 samplesX\$ 379.58 per sample= \$ 379Third Party Engineering Consultant Costs: 1 monthsX\$ 8,843.08 per month= \$ 8,843Unit Cost per Core Hole:= \$ 22,168Core Holes per Mine Unit:						• •		
Selective Extraction       4 samples       X       \$ 821.47 per sample       = \$ 3,285         Elemental Analysis       1 samples       X       \$ 530.83 per sample       = \$ 530         Porosity + Particle Size       1 samples       X       \$ 379.58 per sample       = \$ 379         Third Party Engineering Consultant Costs:       1 months       X       \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168         Core Holes per Mine Unit:       E       22,168		XRD Bulk + Cla	y					
4 samples       X       \$ 821.47 per sample       = \$ 3,285         Elemental Analysis       1 samples       X       \$ 530.83 per sample       = \$ 530         Porosity + Particle Size       1 samples       X       \$ 379.58 per sample       = \$ 379         Third Party Engineering Consultant Costs:       1 months       X       \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168         Core Holes per Mine Unit:		1 samples	Х	\$	419.22	per sample	=	\$ 419.
Elemental Analysis 1 samples X \$ 530.83 per sample = \$ 530 Porosity + Particle Size 1 samples X \$ 379.58 per sample = \$ 379 Third Party Engineering Consultant Costs: 1 months X \$ 8,843.08 per month = \$ 8,843 Unit Cost per Core Hole: = \$ 22,168 Core Holes per Mine Unit:		Selective Extract	ion					
1 samples       X       \$ 530.83 per sample       = \$ 530         Porosity + Particle Size       1       1       samples       X       \$ 379.58 per sample       = \$ 379         Third Party Engineering Consultant Costs:       1       months       X       \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168         Core Holes per Mine Unit:		4 samples	Х	\$	821.47	per sample	=	\$ 3,285.
Porosity + Particle Size 1 samples X \$ 379.58 per sample = \$ 379 Third Party Engineering Consultant Costs: 1 months X \$ 8,843.08 per month = \$ 8,843 Unit Cost per Core Hole: = \$ 22,168 Core Holes per Mine Unit:		Elemental Analy	sis		-			
1 samples       X       \$ 379.58 per sample       = \$ 379         Third Party Engineering Consultant Costs:       1 months       X       \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168       = \$ 22,168         Core Holes per Mine Unit:		1 samples	X	\$	530.83	per sample	<b>=</b>	\$ 530.
1 samples       X       \$ 379.58 per sample       = \$ 379         Third Party Engineering Consultant Costs:       1 months       X       \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168         Core Holes per Mine Unit:		Porosity + Partic	le Size	;				
1 months       X       \$ 8,843.08 per month       = \$ 8,843         Unit Cost per Core Hole:       = \$ 22,168         Core Holes per Mine Unit:       = \$ 22,168		1 samples	Х	\$	379.58	per sample	=	\$ 379.
Unit Cost per Core Hole: = \$ 22,168 Core Holes per Mine Unit:	Third Party I	Engineering Cons	ultant	Cost	s:			
Core Holes per Mine Unit:	•					per month	=	\$ 8,843.
	Unit Cost per	Core Hole:					<u></u>	\$ 22,168.
	Core Holes p	er Mine Unit:						
	•		х	\$	22,168.12	per hole	=	\$ 44,336.
	TAL ACL COST	Γ PER MINE <b>(</b>	JNIT				=	\$ 44,336

Revised 9/28/2021

#### FIVE YEAR MECHANICAL INTEGRITY TESTS (MIT)

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Assumptions: 1 Pulling Unit for 8 hr/day 2 MIT Unit for 8 hr/day Just for onrous
 Labor for operation of pulling unit requires 2 workers (one operator & one laborer)
 Labor for operation of MIT Unit requires 1 worker

#### MIT Costs per Well

·Equipment and I	abor:				
Pulling U	nit includes o	me ope	rator		
_	8 hours	х	\$ 28.87	per hour	=\$ 230.96
Laborer					
	8 hours	х	\$ 21.84	per hour	-\$ 174.72
MIT Unit	includes one	operate	or		
	8 hours	x	\$ 28.87	per hour	=\$ 231.00
				-	

TOTAL MIT COST PER DAY =\$ 636.68

Wells Completed	б	per day	
MIT COSTS PER WELL			=\$ 106.11
MIT COSTS PER DEEP DIS	POSAL	WELL (2021 Cost)	<b>-S 10918</b>

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			Mine	Jnit Data								
· · ·		Mine Unit 1	Mine Unit 2	Mine Unit 3	Mine Unit 4	Mine Unit 5	Mine Unit 6	Mine Unit 7	Mine Unit 8	Mine Unit 9	Mine Unit 10.	Mine Unit 11
Cotal number of production wells		3	52	57	103	210	187	205	269	195	298	201
Total number of injection wells		0	79	96	169	236	309	380	412	324	503	284
Total number of shallow monitor wells		0	3	3	11	25	28	25	30	20	32	24
Total number of perimeter monitor wells		11	10	7	9	25	26	8	20	13	32	19
Total number of restoration wells		10	12	18	43	59	55	25	34	21	36	25
Wellfield Area (fl2)		403,712	509,600	586,188	3,119,671	5,647,809	1,507,647	2,222,190	2,722,992	2,132,355	3,319,003	1,834,174
Wellfield Area (aores)	•	9.27	11.70	13.46	71.62	129.66	34.61	51.01	62.51	48.95	76.19	42.11
Affected Ore Zone Area (fl2)		403,712	509,600	586,188	3,119,671	5,647,809	1,507,647	2,222,190	2,722,992	2,132,355	3,319,003	1,834,174
Avg. Completed Thickness		19.6	16.3	12.5	12.9	14.6	15.4	12.3	16.4	16.4	18.8	21.6
Porosity		0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Affected Volume (ft3)		7,912,755	8,306,480	7,327,350	40,243,756	82,458,011	23,217,764	27,332,937	44,657,069	34,970,622	62,397,256	39,618,158
Flare Factor		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Kgallons per Pore Volume		20,597	21,622	19,073	104,756	214,642	60,437	71,149	116,244	91,030	162,423	103,128
Number of Patterns in Unit(s)										100		
	Current	0	52	57	96	187	187	205	269	195	298	201
	Estimated next report	0	0	0	0	0	0	0	20	0	0	0
	Total Estimated	0	52	57	96	187	187	205	289	195	298	201
Number of Wells in Unit(s)												
Production Wells									~ ~ ~			
	Current	3	52	57	103	210	187 -	205	269	195	298	201
	Estimated next report	0	0	0	0	0	0	0	0	0	0	0
	Total Estimated	3	52	57	103	210	187	205	269	195	298	201
Injection Wells												
	Current	0	79	96	169	236	309	380	412	324	503	284
	Estimated next report	0	0	0	. 0	0	0	0	0	0	0	0
	Total Estimated	0	79	96	169	236	309	380	412	324	503	284
Shallow Monitor Wells												
Murrow recorder wear	Current	0	3	3	11	25	28	25	30	20	32	24
	Estimated next report	0	0	0	0	0	0	0	0	0	0	0
	Total Estimated	ŏ	3	3	11	25	28	25	30	20	32	24
Perimeter Monitor Wells	L'UNE L'UNERTON	•	-	-			• • • •					
Fortmotor intollitor wens	Current	11	10	7	7	23	26	8	20	13	32	19
	Estimated next report	0	0	ů,	2	2	0	Ō	0	0	0	0
	Total Estimated	11	10	7	9	25	26	8	20	13	32	19
A ANT IL	LOTAL ESTIMATED	14	144	163	292	496	550	618	731	552	865	528
Number of Wells per Wellfield		4953	144	105	<i>L7L</i>	120	424	010				
Total Number of Wells			621	774	698	675	515	762	500	770	480	790
Average Well Depth (ft) - Deep Wells		665	631		200	200	200	200	200	200	150	300
Average Well Depth (ft) - Shallow Wells		200	200	200	200	200	200	200	200	200	150	300

Electric	cal Costs		
	2021	2022 Est Rate	
Power cost (adj for current actual cost)	\$0.1180	\$0,1244	kwHr
To the fore find the operation and the south			
Kilowatt to Horsepower	0.746	0.746	Kw/HP
Horsepower per gallon per minute	0.167	0.167	HP/gpm
Labor	r Rates		
	2021	2022 Est Rate	
Operator Labor Cost	\$174.44	\$174.68	day
Pulling Unit Operator	\$217.78	\$230.96	day
Engineer Cost	\$8,813.50	\$8,843.08	month
Radiation Technician Costs	\$6,907.67	\$7,108.67	month
Costs are from: Nebraska Department of Labor			
Chemie	cal Costs		
	2021	2022 Est Rate	
Antiscalant for RO (adj for current actual cost)	\$16.82	\$18.66	gal
Reductant (adj for current actual cost)	\$0.65	\$0.73	IЬ
Cement (adj for ourrent actual cost)	\$0.06	\$0.06	pound
Bentonite Tubes (adj for current actual cost)	\$10.12	\$11.49	tube
Salt (adj for ourrent actual cost)	\$109.60	\$117.76	ton
Plug Gel (adj for current actual cost)	\$10.75	\$12.90	sack
Well Cap (adj for current actual cost)	\$7.50	\$6.75	each
Hydrochloric Acid (adj for current actual cost)	\$1.30	\$1.83	gallon
Costs are based off of current invoices. No current invoices for well ca		ied.	
Analyti	cal Costs		
	2021	2022 Est Rate	
Guideline 8	\$220.00	\$220.00	analysis
5 parameter	\$60.00	\$60.00	analysis
Other (radon, bioassays, etc.)	\$600.00	\$600.00	month
Costs are based on third party lab fees			
Analytical Co	sts for Coring		
ון ת תתע	<u>2021</u> \$199.63	2022 Est Rate (CPI) \$209.61	analysis
XRD Bulk		\$419.22	-
XRD Bulk + Clay	\$399.26		analysis
Selective Extraction Method (SEM)	\$782.35	\$821.47	analysis
Elemental	\$505,55	\$530.83	analysis
Porosity + Particle Size	\$361.50	\$379.58	analysis
Costs are based on third party lab fees	Dauto		
Spare	Parts 2021	2022 Est Rate (CPI)	
	2021	LULL LOL MARE (CFI)	
Restoration spare parts estimate	\$57,332.60	\$60,199.23	year

CPI Escalators (CPI-U, U.S.	City Average)
1988 CPI (average)	118.5
June 2014 CPI (deep well	
estimate)	238.3
2020 CPI (August 2020	
used in last update)	259.9
Current CPI (July 2021)	273.0
2021 Escalation Factor	1.05

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· · ·		Equipme	ent Costs			
<u>Equipment</u>	<u>Base</u> <u>Rental</u> <u>Rate</u> (\$/hr)	Labor Costs (\$/hr)	<u>Repair Reserve Costs</u> <u>(\$/hr)</u>	<u>Fuel Costs</u> (§/hr)	Mob & Demob (\$/hr)	<u>Total (\$/hr)</u>
Cat 926M Loader	\$56.65	\$21.84	\$125.00	\$24.19	inc.	\$227.68
Cat 420F Backhoe	\$30.00	\$21.84	\$71.00	\$8.56	inc.	\$131.40
Pipe Chipper	\$13.08			inc	íno	\$13.08
Cat D8T Bulldozer	\$202.50	\$21.84	\$340.00	\$33.93	inc.	\$598.27
Pulling Unit	\$65.53	ino	inc	ine	ino	\$65.53
Mixing Unit	\$5,00			inc	ino	\$5.00
Drill Rig	\$250.00	inc	inc	inc	ino	\$250.00
Basis: Drill rig based on current 2021 contract. Equipment rates based on Cost from NMC Cat Rental September 203	71					
Augusta and an afferral fuel	\$7.05	collog				

Average 2021 costs for off-road fuel: \$2.95 gallon

	Pipe Volumes		
	Wall Thickness		Volume per foot
<u>Nominal Pipe Size</u>	<u>(in.)</u>	Pipe OD (in.)	<u>(ft3/ft)</u>
3/8-inch O2 hose		0.37500	0.03130
2-inch Sch. 40 downhole	0.15400	2.37500	0.00740
1-1/4-inch Soh. 40 stinger	0.14000	1.66000	0.00440
2-inch SDR 13.5 inj & prod.	0.14815	2.29630	0.00690
4-inch SDR 35	0.11430	4.22860	0.01030
6-inch Sch. 40 process pipe	0.28000	6.56000	0.03840
6-inch Trunkline	0.49100	6.56600	0.06510
8-inch Trunkline	0.63900	8.54800	0.11030
10-inch Trunkline	0.79600	10.65400	0.17120
12-inch Trunkline	0.94400	12.63700	0.24080

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Summary Sheet

	Pipe Removal and Shredding Costs			
	Removal Rate (ft/man-	Shredding Rate		
Activity	day)	(ft/man-day)	Labor Rate (day)	Activity Cost per foot
2-inch SDR 13.5 inj & prod. Removal	225		\$174.68	\$0.78
2-inch SDR 13.5 inj & prod. Shredding		1920	\$174.68	\$0.09
Trunkline Removal	100		\$174.68	\$1.75
Trunkline Shredding		100	\$174.68	\$1.75
Downhole Pipe Removal	2000		\$174.68	\$0.09
Downhole Pipe Shredding		2250	\$174.68	\$0.08
Downhole Hose Removal	1000		\$174.68	\$0.17
Waste and RO Building Pipeline Removal	67		\$174.68	\$2.61
Waste and RO Building Pipeline Shredding		1500	\$174.68	\$0.12

		Wast	e Disposal Costs					
			<u>Density</u>					
			Correction				Total	
			Factor				Transportation	
Waste Form	Fee	-	(Tons/Yd3)	Fee per Cubic Yard	Transport Cost		and Disposal	
Soil, Bulk Byproduct Material*	\$296.33	per Ton	0.54	\$160.02	\$114.38	per Yd3	\$274.40	per Yd3
Unpackaged Bulk Byproduct Material (e.g., pipe, equipment)	\$282.25	per Ton	0.42	\$118.55	\$114.38	per Yd3	\$232.93	per Yd3
Solid Waste (landfill)	\$0.12	per Lb			Incl.	per Lb	\$0.12000	per Lb
Solid Waste (landfill)	\$411.00	per Load			Incl.	per Load	\$411.00	per Load
Void Factor (for disposal)	1.25							
*no current invoice, escalation factor applied								

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			Plant Dismantling		· · · · · · · · · · · · · · · · · · ·			
		••	Estimated Disposal		4.4.2	F Z. 14-		017 Cont
Plant Components:	<u>Number</u>	<u>Units</u>	Volume	<u>Units</u>	<u>Activity</u>	<u>Units</u>	£	<u>017 Cost</u>
					Dismantle interior			
					steel, tanks, piping			
Contaminated Tanks	141	each	19.3	Ft3 each	electrical,			
Uncontaminated Tanks	21	each	19.3	Ft3 each	and Plant Building		\$	625758.00
Pumps	188	each	. 5	Ft3 each				
-					Concrete floor			
Downhole Pumps	1174	each	0.5	Ft3 each	removal rate	Сш	rrent Cost \$/ft2	17.80
Contaminated Piping	. 11000	feet			· · ·			
Uncontaminated Piping	4800	feet	See estimate by piping		· ·			
Filters	125	each	100	Ft3 each	1			
Dryer	2	each	400	Ft3 each				
Average PVC Pipe Diameter (inches)	6							

		Plant Decontamination	 , خىشىيە	
Direct Dispose Plant Floor Area Uncontaminated Plant Floor Area Decontaminated Plant Floor Area* Average ooncrete thickness	11100 ft2 7270 ft2 39738 ft2 0.5 ft	Decon Solution (HCl) Floor Application Rate	2	gal/ft2.
Plant Wall Area	36470 ft2	Decon Solution (HCl) Wall Application Rate	1	gal/ft2

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