



PO Box 196  
761 St. Cloud Mine Road  
Winston, New Mexico 89743  
575-743-5215

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Joseph P. McEnaney  
President

Date: August 4, 2020

Ms. Jenn Johnson  
Permit Lead  
Mining Act Reclamation Program  
NM Mining and Minerals Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

Re: Responses to Agency Review Comments and Request for Additional Information, Zeolite Mine Modification 20-1 Application, Permit No. SI006RE – Sierra County, New Mexico

Dear Ms. Johnson,

Attached are responses prepared by St. Cloud Mining Company (St. Cloud), to the Agency Review Comments and Request for Additional Information on Zeolite Mine Modification 20-1 Application, Permit No. SI006RE. Comments on the Application for Modification were prepared and submitted to us by the New Mexico Environment Department (“NMED”), the New Mexico Office of the State Engineer (“NMOSE”), the New Mexico Department of Game and Fish (“NMDG&F”), and the New Mexico Department of Cultural Affairs - Historic Preservation Division (“NMDCA/HPD”). We appreciate the timely review by yourself and the other agency staff, and look forward to comprehensively address all Review Comments and requests for Additional Information.

To ensure that you and the other agency staff can readily and efficiently review our responses, we will address them in the same order as they were presented in your letter of June 19, 2020.

**MMD comments:**

- 1. Please provide engineering design calculations for the proposed sediment ponds 1-3. The requirements for a new impoundment can be found in Section 19.10.5.508.B.6 of the NMAC.*

Response: St. Cloud has engaged David Thompson of Thompson Engineering Consultants, Inc., a NM Registered Professional Engineer based in Albuquerque, to perform the required calculations for sizing and design of the sediment ponds.

Design and calculations supporting that design for the proposed sediment ponds will be provided when completed.

St. Cloud has determined that the sediment ponds will not be retained after completion and reclamation of the project area, and will therefor modify the Reclamation Cost Estimate to include reclamation of the sediment ponds.

2. ***Please provide the communication with Wagner Equipment Rentals to support the hourly equipment rate for the D9T.***

Response: Attachment 2 is a quotation from Wagner Equipment Rental, Las Cruces office for the rental of a D9T Track Dozer. The hourly rate is the same as provided in the Permit Modification 20-1 submittal, however, there are additional one-time charges of \$2,660.00 and \$2,015.00 (total of \$4,675.00) for deliver and pickup of the equipment. In addition, the one-time 16.00% Insurance cost is show, \$5,075.20. In addition, a one-time Preventative Maintenance fee of \$630.00 and El Paso CD tax of \$3,262.23.

There would therefore be a monthly rental charge of \$179 per hour, or \$31,720 total monthly charge, plus aggregated one-time charges of \$13,642. Total cost would depend upon how long the equipment was rented to determine a total cost per hour.

Based on the Reclamation Cost Estimate, Earthmoving Worksheet #6, the dozer would be required for approximately 198.0 hours, or approximately 1 month and 3 days. The monthly rate is \$31,720, and daily rate is approximately \$1,500 per day. Total rental therefore should be approximately \$36,220 plus the \$13,642 in one-time charges, for a total of \$49,862.

Therefore a totally loaded cost for rental of the D9T Track Dozer should be \$251.83. This value has been inserted into the modified excel spreadsheet for the Reclamation Cost Estimate.

3. ***Section 'Total Ownership and Operating Costs' discusses St. Cloud's reasoning for not including the rental company profit as well as the insurance cost from the hourly equipment rate for a D9T dozer. However, if MMD were to complete the reclamation they would have to pay the entire cost from an equipment rental company therefore the D9T rate should be \$236.00/hr. Please use this equipment rate in the cost estimate.***

Response: St. Cloud has recalculated the D9T Track Dozer rate, as shown in the response above, and will utilize a rate of \$252/hr.

4. ***Please provide the fuel cost being used in the cost estimate as well as documentation to support that value.***

Response: Attached is a specification sheet provided by Caterpillar for Fuel Burn for the D9T Track Dozer. A Medium Duty value was utilized for the work to be done in reclamation of the South Side 1 Project Area, which ranges from 43.1- 56.4 liters per hour (11.4 – 14.9 gallons). For these calculations the mid-range value was used, 13.2 gallons per hour, as the dozing to be done for reclamation is relatively light duty. Fuel cost is currently \$1.35 per gallon, as shown on the attached receipt for diesel purchased from the Winston General Store (St. Cloud's fuel provider), in May 2020. This value is escalated to \$1.45 per gallon to allow for future pricing.

Therefore at a cost of \$1.45 per hour and a fuel consumption rate of 13.2 gallons per hour, fuel cost is \$19.14/hr. This is added to the Operating Cost utilized in the Reclamation Cost Estimate excel spreadsheet, for a total Ownership and Operating Cost for the D9T Track Dozer is \$271/hr.

This value is consistent with the value utilized previously, and is included in the new value of \$271 utilized for the D9T Dozer cost estimate, as provided in the attached Excel spreadsheet (revised), under the Earthmoving Worksheet tab.

5. *The Grading Production section states “the total acreage to be graded was estimated to be approximately 47.0 acres” but page 2 of Attachment 7 has the total acreage for regrading as 37 acres. Please clarify the total acreage that needs to be regraded.*

Response: St. Cloud will respond to this once the calculations and design of the sediment ponds is complete.

6. *At the end of the Permit Modification 20-1 section it says that all disturbed areas will be fertilized during the first growing season, but the fertilizer cost is not included in the Revegetation Costs section. Please include the costs for the material and labor for fertilizing the reclaimed areas in the cost estimate.*

Response: St. Cloud has never utilized fertilizer in all reclamation performed to date at the St. Cloud Zeolite Operation, and reclamation has been successful and consistent with the post mining land use and for establishing a self-sustaining ecosystem. The only place in the entire document that the word “fertilizer” appears is under the Revegetation paragraph on page 14 of the text. This inclusion was not intentional, but an oversight of missing a carry-over from a previous draft.

St. Cloud has not applied fertilizer in the past, and does not intend to apply it in the future. In the 25 years of experience in mine reclamation at St. Cloud Mining operations, fertilizer has not been utilized. The native species selected and utilized in the Reclamation Plan are naturally adapted to low soil fertility (NPK), as well as low precipitation, and therefore fertilizer will not be applied or utilized in the revegetation at St. Cloud.

7. *Please provide a breakdown of the labor and equipment costs that contribute to the \$765 per acre value under the Revegetation Costs section.*

Response: Recalculated labor and equipment costs for reclamation cost per acre are \$347 / acre.

St. Cloud Mining Revegetation Cost Estimate								
								7/6/2020
PERSONNEL	No.	Unit Costs	1) Mobilization / Demobilization	Revegetation	Mulching	Harrowing	Total Hours	Total Costs by Unit / Category
			HOURS					
Supervisor/Operator	1	\$62.00	16	32	16	8	72.0	\$4,464.00
Laborer	2	\$32.00	16	32	16	0	64.0	\$4,096.00
TOTAL HOURS			32.0	64.0	32.0	8.0	136.0	
TOTAL COST			\$2,016.00	\$4,032.00	\$2,016.00	\$496.00		\$8,560.00
EQUIPMENT			Task 1	Task 2	Task 2	Task 5	Total Units	Total Equip Cost
	Units	Unit Rate	UNITS					
Tractor	Day	\$310.00	2	2	2	1	7	\$2,170.00
Mulching Machine	Day	\$312.00	2	0	2	0	4	\$1,248.00
F150 PU Truck	Day	\$115.00	3	3	2	1	9	\$1,035.00
							0	\$0.00
Equipment Subtotal:			\$1,589.00	\$965.00	\$1,474.00	\$425.00		\$4,453.00
Subtotal:			\$3,605.00	\$4,997.00	\$3,490.00	\$921.00	\$0.00	\$13,013.00
Per Diem	Days	\$55.00	\$220.00	\$440.00	\$220.00	\$55.00		\$935.00
Subtotal:			\$3,825.00	\$5,437.00	\$3,710.00	\$976.00		\$13,948.00
Sierra County GRT		6.9375%	\$265.36	\$377.19	\$257.38	\$67.71		\$967.64
TOTAL			\$4,090.36	\$5,814.19	\$3,967.38	\$1,043.71		\$14,915.64
Acreage to be Revegetated:			43				Cost per acre:	\$346.88
Note: Wages and Equipment Rates include base wage, fringes and contractor profit								
Tractor Rental Rate*: Highland Rentals, Albuquerque, NM 505-349-4798								
Mulch Machine Rent Rate*: 4-Rivers Rental, El Paso, TX 915-598-1133								
*rate includes 25% mark up for contractor costs & profit. Rental rate includes insurance.								

8. *Attachment 7 page 2 has the total acreage for revegetation and monitoring as 43.5 acres but the total area to be regraded is 37 acres. What disturbed areas are included in the 6.5 acre difference?*

Response: St. Cloud will reassess total acreage once the sediment ponds calculations and design has been completed.

9. *Attachment 7 page 5 does not include the calculations for ripping that are mentioned in the Production Rate for Ripping section. Please provide these calculations.*

Response: The entire page was not converted in the pdf conversion. This has been corrected and is included in the excel spreadsheet as well as new pdf. This will be provided in entirety once the sediment ponds calculations and design have been completed.

10. *Please provide the cost breakdown for the vegetation monitoring unit cost from Attachment 7 page 8.*

Response: Recalculated labor and equipment costs for reclamation monitoring is \$1,200/year.

St. Cloud Mining Revegetation Monitoring Cost							
PERSONNEL		Unit Costs	Revegetation Monitoring			Total Hours	Total Costs by Unit / Category
	No.	\$/Hour					
Botanist	1	\$75.00	12	0	0	12.0	\$900.00
TOTAL HOURS			12.0	0.0	0.0	12.0	
TOTAL COST			\$900.00	\$0.00	\$0.00		\$900.00
EQUIPMENT							
			Task 1			Total Units	Total Equip Cost
	Units	Unit Rate					
Vehicle	Day	\$85.00	1.5	0	0	2	\$127.50
						0	\$0.00
Equipment Subtotal:			\$127.50	\$0.00	\$0.00		\$127.50
Subtotal:			\$1,027.50	\$0.00	\$0.00	\$0.00	\$1,027.50
Per Diem	Days	\$55.00	\$82.50	\$0.00	\$0.00		\$82.50
Subtotal:			\$1,110.00	\$0.00	\$0.00		\$1,110.00
Sierra County GRT		6.9375%	\$77.01	\$0.00	\$0.00		\$77.01
TOTAL			\$1,187.01	\$0.00	\$0.00		\$1,187.01

11. Please provide page 7 for Attachment 7 that is mentioned under Revegetation Costs section.

Response: Page 7 for Attachment 7 is included in this revised package and the attached excel spreadsheet that will be provided once the sediment ponds calculations and design are completed.

12. MMD will require interim pit slopes to be no greater than 2:1.

Response: St. Cloud has no objection to maintaining interim pit slopes at an angle of 2:1 or less. Language will be included in a submittal of a comprehensive revision of the Application for Permit Modification 20-1 once all items have been address and updated.

13. MMD's guidance for indirect costs requires a 1.5% of the labor cost for liability insurance. Please add this indirect to the cost estimate.

Response: The Reclamation Cost Estimate Excel Spreadsheet Indirect Cost has been modified to include 1.5% for the labor cost for liability insurance on Direct Costs. This is reflected in the Bond Summary, page 10 the Reclamation Cost Estimate spreadsheet, which will be provided once all revisions to the spreadsheet are completed.

14. Please provide MMD with the excel file for the updated cost estimate.

Response: The excel file for the updated cost estimate is will be provided once all revisions and updates are completed.

15. MMD will require drill seeding where it is safe to do so in order to increase the effectiveness of the lighter grass seeds. Please update the cost estimate to reflect drill seeding where accessible.

Response: Drill seeding is not considered safe or practical on virtually all the areas to be reseeded after mining at the St. Cloud Zeolite Operations. Final graded areas are rocky and primarily on slopes that are not safe or effective for utilizing a seed drill. Drill seeding is optimum when done on contour, and there are few areas where this will be existent within the St. Cloud Zeolite Operations. St. Cloud has utilized broadcast seeding for the 24 years of operations for reclaimed slopes, and it has proven effective and safe.

St. Cloud prefers to include broadcast seeding of reclaimed areas, and will have adequate Financial Assurance posted to cover this reclamation method. As such, broadcast seeding will be utilized and the seeding rates will be double the drill seed rates.

**16. MMD will require the following seed mix to be used on this new unit based on MMD's recent review of the ecological site description. The total seeding rate is 10.5 lbs. PLS/acre.**

Response: St. Cloud has only one objection to utilizing the seed mix listed in the MMD Technical Comments letter. Indian Ricegrass (*Achnatherum hymenoides*), is included in the MMD recommended seed mix. Indian Ricegrass is a cool season grass that generally is found in sandy soils north of Sierra County, New Mexico. Indian Ricegrass is not found on native slopes on the St. Cloud properties, and is likely not a species that will be successful in the reclamation at St. Cloud. As such, St. Cloud would prefer to delete this species from the reclamation seed mix.

**Comments and questions posed by the New Mexico Environment Department are addressed below.**

**A. Memorandum dated May 27, 2020, from Rhett Zyla, Environmental Scientist & Specialist – Air Quality Bureau to Kurt Vollobrecht, Program Manager, Mining Environmental Compliance Section.**

**Comment:** As a point of clarification, the St. Cloud Zeolite Operation located in Sierra County, New Mexico mines only Clinoptilolite Zeolite and not Chabazite. The Air Quality Permit (GCP2-5510) was for the processing component of the St. Cloud Zeolite Operation in Sierra County, NM, which was added to process Chabazite Zeolite ore mined in Arizona and transported to the St. Cloud facility in New Mexico for processing. Permit Modification 20-1 to Permit SI006RE deals only with mining of the Clinoptilolite ore located within the Design Limits of the Permit SI006RE, Sierra County, New Mexico.

Response: Comments submitted by the Air Quality Bureau are consistent with the conditions, operating procedures and practices of the current operations that St. Cloud utilizes in mining operations at the Sierra County operation to comply with all state of New Mexico and federal Air Quality requirements.

**B. Memorandum from John Money dated June 15, 2020, Watershed Protection Section, Surface Water Quality Bureau to Anne Mauer, Mining Act Team Leader (Acting), Mining Environmental Compliance Section, Ground Water Quality Bureau of the New Mexico Environment Department.**

Response: St. Cloud Mining Company is current with EPA's MSGP, NPDES Stormwater Permit coverage, however the permit tracking number provided in the SWPPP for the St. Cloud operations was incorrectly typed as NMR00A058, and is instead NMR053072. St. Cloud is current with the EPA NPDES permitting requirements.

- C. **Letter from Mr. Richard Reycraft dated May 18, 2020, Staff Archaeologist for the State of New Mexico Department of Cultural Affairs, Historic Preservation Division dated May 18, 2020, HPD Log#113075, to Jenn Johnson.**

Response: St. Cloud applied for a Mineral Lease from the NM State Land Office in 2018 on the lands that are Split Estate, that area being State Minerals managed by the NM State Land Office and the surface is owned privately, and was granted Mineral Lease No. HA-315-0 under Rule 5, Split Estate. St. Cloud has a valid Surface Use Agreement with the private land owner, which provides for St. Cloud to conduct surface mining operations for zeolite on the private surface.

Should St. Cloud encounter and human remains in mining operations, St. Cloud will strictly comply with applicable laws pertaining to such discovery.

St. Cloud will comply with all requirements of the New Mexico Cultural Properties Act N.M. Statute §§ 18-6-1 through 18-6-17, including 18-6-10 Cultural properties on private land. No other investigations are anticipated by the private land owner or St. Cloud, and as privately held surface are not required of the land owner or St. Cloud.

- D. **Letter from Matt Wunder, Ph.D., Chief, Ecological and Environmental Planning Division, State of New Mexico Department of Game & Fish dated 11 June 2020 to Jenn Johnson.**

Response: In the response from MMD to St. Cloud regarding species to be included in the Reclamation Seed Mix, the MMD has removed all flax species from the seed mix, therefore Blue flax (*Linum perenne*) will not be utilized.

The revised seed mix is:

Common Name	Scientific Name	Broadcast Rate (lbs. of PLS/acre)
Blue grama	<i>Bouteloua gracilis</i>	1.0
Sideoats grama	<i>Bouteloua curtipendula</i>	1.0
Indian ricegrass	<i>Achnatherum hymenoides</i>	6
Western wheatgrass	<i>Pascopyrum smithii</i>	1.0
Alkali sacaton	<i>Sporobolus airoides</i>	1.0
Big sacaton	<i>Sporobolus wrightii</i>	1.0
Desert globemallow	<i>Sphaeralcea ambigua</i>	2
Red mexican hat	<i>Ratibida columnaris forma pulcherrima</i>	1.2
Wand-bloom penstemon	<i>Penstemon virgatus</i>	2
Apache plume	<i>Fallugia paradoxa</i>	0.8
Fourwing saltbrush	<i>Atriplex canescens</i>	4

TOTAL: 21.0 lbs. PLS/acre

The total seeding rate will be 21 lbs. PLS/acre, the broadcast rate which is 2 times the drill seeding rate shown in the above table.

St. Cloud will comply with the requirements of the Migratory Bird Treaty Act.

***E. Memorandum from Hamran H. Syed, Ph.D., P.E., Hydrology Bureau, through Ghassan Musharrafi, Ph.D., P.E. dated June 15, 2020 to Jenn Johnson.***

Response: The responses provided here will follow the order in which issues were discussed/listed in the Memorandum from the Hydrology Bureau of the Office of NM State Engineer.

***Page 2, second paragraph, “As such, we are unable to corroborate the statement in the application that the Creek is located 200+ feet lower than the lowest elevation of the surface mining pits.”***

Response: The cross section provided in the application are based on the best information available to St. Cloud at this time based on exploration drilling that has been conducted to date, as well as surface geologic investigations, and site-specific historic experience that St. Cloud of surface mining this zeolite deposit since 1996. The best estimate of the lowest elevation of the surface mining pits for the South Side 1 Project is approximately elevation 5,980', in the NW area of the pit, as shown in Figure 2.

The elevation of the South Fork of Cuchillo Negro Creek adjacent to the proposed South Side 1 Project area is approximately 5890' (to be provided in Figure XX, of the revised Application for Permit Modification 20-1 when the sediment ponds calculations and design are completed.). Depth to water below this location, based on other drilling on the north side operations (Yellowjacket Pit), is approximately elevation 5834', or about 146' below the lowest elevation of the proposed surface mining pits of the South Side 1 Project.

Therefore, the reference in the application should state that the Creek is located 90+ feet lower than the lowest elevation of the surface mining pits (to be submitted in the revised Application for Permit Modification 20-1 when the sediment ponds calculations and design are completed.

***Page 2, third paragraph, “If groundwater is encountered or surface flows and surface water bodies are disrupted [sic] by the pit operation, the Water Rights Division of the New Mexico of the Office of the State Engineer should be contacted immediately.”***

Response: If groundwater is encountered or surface flows and surface water bodies are disrupted by the pit operation, the Water Rights Division of the New Mexico of the Office of the State Engineer will be contacted immediately by St. Cloud.

***Comments:***

***1. Provide additional detail regarding location, depth, and date of drilling.***

Response: St, Cloud drilled 14 - 3'' diameter holes to the depth of 60 feet utilizing air as the circulating media, with a Soosan Drill. Below is the Location of each hole drilled on.



Little Hermosa Exploration Drill Hole Location and Elevation						
Pt NO	Northing	Easting	Elevation	Drilled Elevation	Description	Note - Coordinates adjusted to match Cooper Aerial Survey Base maps
1	829115.706	2782144.29	6122.786	6062.786	I 8	Data collected 12-10-19 by EL Engineering Services
2	828805.041	2781841.173	6181.883	6121.883	J 6	
3	829153.505	2781974.699	6125.602	6065.602	J 8	
4	829437.682	2781869.008	6068.478	6008.478	K 9	
5	829633.576	2781918.433	6054.09	5994.09	K 10 bore	
6	829454.232	2781825.857	6079.626	6019.626	K 9 50 Bore	
7	829586.351	2781980.808	6054.679	5994.679	k10100se Bore	
8	829135.914	2781539.136	6143.405	6083.405	L 7	
9	829321.293	2781612.348	6119.439	6059.439	L 8	
10	829502.702	2781667.844	6087.93	6027.93	I 9 a bore	
11	829671.894	2781742.666	6048.109	5988.109	I10a	
12	829290.86	2781725.111	6110.004	6050.004	I8120	
13	829611.422	2781700.603	6063.033	6003.033	I9110ne	
14	829636.403	2781845.807	6057.545	5997.545	I10100se Bore	

**2. Provide an approximate maximum depth below ground surface for the proposed vertical extent of mining for the removal of waste rock and ore.**

Response: The cross section provided in the application are based on the best information available to St. Cloud at this time based on exploration drilling that has been conducted to date, as well as surface geologic investigations, and site-specific historic experience that St. Cloud of surface mining this zeolite deposit since 1996. The best estimate of the lowest elevation of the surface mining pits for the South Side 1 Project is approximately elevation 5,980', in the NW area of the pit, as shown in Figure 2.

**3. Precise location information of the proposed new mining pit is not provided. The location coordinates provided in the application (33°17'30" N. Latitude, 107°37'35" W Longitude) appear to be of their main site as they plot north of the South Fork of the Cuchillo Creek (NOT south the Creek as implied on Page 1 of the application).**

***Provide a map showing the proposed new mine pit along with water bodies in the proximity (especially South Fork of the Negro Cuchillo Creek and existing water wells).***

Response: Indeed, the location coordinates are for the main site, or the St. Cloud Plant Site, as Permit SI006RE is issued for the entire St. Cloud Zeolite Operation. The South Side 1 Project mine area is located south of the South Fork of Cuchillo Negro Creek, and coordinates for the South Side 1 Project are generally 33°16'47" N. Latitude, 107°38'31" W Longitude.

A map is to be provided as Attachment XX to the revised Application for Permit Modification 20-1 when the sediment ponds calculations and design are completed and all other changes have been made to the application, that identifies the only water feature in the area, the ephemeral South Fork of Cuchillo Negro Creek, and existing water wells within proximity to the project area.

**4. If groundwater is encountered during mine pit excavation or if it is anticipated that groundwater may be encountered (based on occasional exploratory drilling described above), the Water Rights Division (WRD) of the NMOSE District Office should immediately be contacted. Similarly, if it is anticipated that the flow in the Cuchillo Creek could be disrupted in any way by the mining operations, the WRD District Office should be contacted. Their address is: 5550 San Antonio Dr. NE, Albuquerque, NM 87109 and the phone number is: [505] 383-4000.**

Response: Should groundwater be encountered during mine pit excavation or if it is anticipated that groundwater may be encountered (based on occasional exploratory drilling described above), the Water Rights Division (WRD) of the NMOSE District Office will immediately be contacted by St. Cloud. Similarly, if it is anticipated that the flow in the Cuchillo Creek could be disrupted in any way by the mining operations, the WRD District Office will be contacted by St. Cloud at 5550 San Antonio Dr. NE, Albuquerque, NM 87109, phone number is: [505] 383-4000.



PO Box 196  
761 St. Cloud Mine Road  
Winston, New Mexico 89743  
575-743-5215

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Joseph P. McEnaney  
President

Date: September 2, 2020

Ms. Jenn Johnson  
Permit Lead  
Mining Act Reclamation Program  
NM Mining and Minerals Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

Re: Responses to Agency Review Comments and Request for Additional Information, Zeolite Mine Modification 20-1 Application, Permit No. SI006RE – Sierra County, New Mexico

Dear Ms. Johnson,

St. Cloud responded to many of the Agency Review Comments and Requests for Additional Information on Zeolite Mine Modification 20-1 Application, Permit No. SI006RE in a transmittal to your office dated August 4, 2020. Items unanswered at that time centered primarily on the design of the sediment ponds as proposed in the Modification Application. St. Cloud has since engaged Mr. David Thompson of Thompson Engineering Consultants, Inc., a NM Registered Professional Engineer based in Albuquerque, to perform the required calculations for sizing and design of the sediment ponds.

This letter responds to those previously unanswered items utilizing Thompson Engineering inputs and their impact on sediment pond design, location, calculation, and reclamation cost estimates.

As before, to ensure that you can readily and efficiently review our responses, we will address them in the same order as they were presented in your letter of June 19, 2020.

**MMD comments:**

- 1. Please provide engineering design calculations for the proposed sediment ponds 1-3. The requirements for a new impoundment can be found in Section 19.10.5.508.B.6 of the NMAC.*

Response: Design and calculations supporting that design for the proposed sediment ponds are provided as attached here as Pond Design Documents (Attachment P).

St. Cloud has determined that the sediment ponds will not be retained after completion and reclamation of the project area, and will therefor modify the Reclamation Cost Estimate to include reclamation of the sediment ponds. The ponds will be reseeded as construction is completed. The ponds are designed with very low embankments which will provide long-term stability. At project closure and

reclamation the Emergency Spillway areas of the ponds will be excavated to the elevation of the downgradient slope of the embankment, side slopes graded to 5H to 1V and reseeded with the reclamation seed mix. This will provide a free draining system and render the ponds as land features. The remainder of the pond embankments, other than the spillways, will not be disturbed, but retained in a revegetated state that provides a self-sustaining ecosystem and meets the Post Mining Land Use.

2. ***Please provide the communication with Wagner Equipment Rentals to support the hourly equipment rate for the D9T.***

Response: Please refer to the response in our submittal of August 4, 2020.

3. ***Section 'Total Ownership and Operating Costs' discusses St. Cloud's reasoning for not including the rental company profit as well as the insurance cost from the hourly equipment rate for a D9T dozer. However, if MMD were to complete the reclamation they would have to pay the entire cost from an equipment rental company therefore the D9T rate should be \$236.00/hr. Please use this equipment rate in the cost estimate.***

Response: Please refer to the response in our submittal of August 4, 2020.

4. ***Please provide the fuel cost being used in the cost estimate as well as documentation to support that value.***

Response: Please refer to the response in our submittal of August 4, 2020.

5. ***The Grading Production section states "the total acreage to be graded was estimated to be approximately 47.0 acres" but page 2 of Attachment 7 has the total acreage for regrading as 37 acres. Please clarify the total acreage that needs to be regraded.***

Response: Please disregard previous acreage calculations as the revised design and location of sediment ponds have rendered them obsolete. Updated acreage calculations are addressed herein. See response to Question 8 below for a more complete discussion of total acreages subsequent to the design of the sedimentation ponds by Thompson Engineering.

6. ***At the end of the Permit Modification 20-1 section it says that all disturbed areas will be fertilized during the first growing season, but the fertilizer cost is not included in the Revegetation Costs section. Please include the costs for the material and labor for fertilizing the reclaimed areas in the cost estimate.***

Response: Please see the response in our submittal of August 4, 2020.

7. ***Please provide a breakdown of the labor and equipment costs that contribute to the \$765 per acre value under the Revegetation Costs section.***

Response: Please see the response in our submittal of August 4, 2020.

8. ***Attachment 7 page 2 has the total acreage for revegetation and monitoring as 43.5 acres but the total area to be regraded is 37 acres. What disturbed areas are included in the 6.5 acre difference?***

Response: St. Cloud has reassessed the total acreage since the sediment ponds calculations and design has been completed. Sediment ponds 1 and 2 have been relocated from where they were shown in St.

Cloud's original submittal and their new location requires the construction of "swales" to direct water into the ponds. The design of the swales is shown on Drawing 6 of 7 of the Pond Design Documents (Attachment P) prepared by Thompson Engineering. St. Cloud has included these swales in the updated calculations of the Reclamation Cost Estimate (Attachment R). The swales will be reseeded at time of construction, and are expected to be well established, self-sustaining ecosystems at time of project completion. The swales are shown on Drawing 3 of 7 in the Pond Design Documents (Attachment P). St. Cloud has used a standard width of 10 feet for all swales, although Drawing 6 of 7 states a maximum width of 8 feet. The length of the west swale is 1,816 lineal feet, and the length of the east swale is 2,716 lineal feet, totaling 4,532 lineal feet. 4,532 ft. length x 10 ft. width = 45,320 square feet or 1.04 acres. Since these swales will be revegetated at construction, they will not require regrading or any other reclamation treatments other than seeding and mulching. This amount of area to be reclaimed (1.04 acres) is include in the Reclamation Cost Estimate (Attachment R) on page 7, Revegetation Costs.

St. Cloud has updated the total acreage under the revised project design for revegetation and monitoring at closure of the South Side 1 Project Area (Permit Modification 20-1 area), to 35.8 acres. This value has been updated in the Reclamation Cost Estimate and Excel Spreadsheets, which are included as Attachment R to this submittal.

- 9. *Attachment 7 page 5 does not include the calculations for ripping that are mentioned in the Production Rate for Ripping section. Please provide these calculations.***

Response: The entire page was not converted in the pdf conversion. This has been corrected and is included in the excel spreadsheet as well as a new pdf. This is provided in entirety as Reclamation Cost Estimate (Attachment R) to this submittal.

- 10. *Please provide the cost breakdown for the vegetation monitoring unit cost from Attachment 7 page 8.***

Response: Please see the response in our submittal of August 4, 2020.

- 11. *Please provide page 7 for Attachment 7 that is mentioned under Revegetation Costs section.***

Response: Please see the response in our submittal of August 4, 2020.

- 12. *MMD will require interim pit slopes to be no greater than 2:1.***

Response: Please see the response in our submittal of August 4, 2020.

- 13. *MMD's guidance for indirect costs requires a 1.5% of the labor cost for liability insurance. Please add this indirect to the cost estimate.***

Response: The Reclamation Cost Estimate Excel Spreadsheet (Attachment R) has been modified to include 1.5% for the labor cost for liability insurance as noted therein on page 10, Bond Summary, under Indirect Costs.

- 14. *Please provide MMD with the excel file for the updated cost estimate.***

Response: The excel file for the updated cost estimate is provided here as Attachment R.

- 15. MMD will require drill seeding where it is safe to do so in order to increase the effectiveness of the lighter grass seeds. Please update the cost estimate to reflect drill seeding where accessible.**

Response: Please see the response in our submittal of August 4, 2020.

- 16. MMD will require the following seed mix to be used on this new unit based on MMD's recent review of the ecological site description. The total seeding rate is 10.5 lbs. PLS/acre.**

Response: Please see the response in our submittal of August 4, 2020.

**Comments and questions posed by the New Mexico Environment Department are addressed below.**

- A. Memorandum dated May 27, 2020, from Rhett Zyla, Environmental Scientist & Specialist – Air Quality Bureau to Kurt Vollobrecht, Program Manager, Mining Environmental Compliance Section.**

**Comment:** As a point of clarification, the St. Cloud Zeolite Operation located in Sierra County, New Mexico mines only Clinoptilolite Zeolite and not Chabazite. The Air Quality Permit (GCP2-5510) was for the processing component of the St. Cloud Zeolite Operation in Sierra County, NM, which was added to process Chabazite Zeolite ore mined in Arizona and transported to the St. Cloud facility in New Mexico for processing. Permit Modification 20-1 to Permit SI006RE deals only with mining of the Clinoptilolite ore located within the Design Limits of the Permit SI006RE, Sierra County, New Mexico.

Response: Please see the response in our submittal of August 4, 2020.

- B. Memorandum from John Moeny dated June 15, 2020, Watershed Protection Section, Surface Water Quality Bureau to Anne Mauer, Mining Act Team Leader (Acting), Mining Environmental Compliance Section, Ground Water Quality Bureau of the New Mexico Environment Department.**

Response: Please see the response in our submittal of August 4, 2020.

- C. Letter from Mr. Richard Reycraft dated May 18, 2020, Staff Archaeologist for the State of New Mexico Department of Cultural Affairs, Historic Preservation Division dated May 18, 2020, HPD Log#113075, to Jenn Johnson.**

Response: Please see the response in our submittal of August 4, 2020.

- D. Letter from Matt Wunder, Ph.D., Chief, Ecological and Environmental Planning Division, State of New Mexico Department of Game & Fish dated 11 June 2020 to Jenn Johnson.**

Response: Please see the response in our submittal of August 4, 2020.

- E. Memorandum from Hamran H. Syed, Ph.D., P.E., Hydrology Bureau, through Ghassan Musharrafi, Ph.D., P.E. dated June 15, 2020 to Jenn Johnson.**

Response: Please see the response in our submittal of August 4, 2020.

We trust this constitutes a complete and sufficient response to all questions and comments submitted by NM MMD and other State agencies in regard to our Mine Modification Application 20-1. Please do not hesitate to contact me for any other information you may require.

We thank you for your consideration in granting the two time extensions required for us to prepare an adequate response to the issues raised and we appreciate your assistance throughout the process.

Sincerely,

A handwritten signature in black ink, appearing to read "J. P. Hunsley". The signature is written in a cursive, flowing style with a long, sweeping tail on the final letter.

# **ATTACHMENT P**

**St. Cloud Mining Company  
Zeolite Operations**

**Permit SI006RE**

**Permit Modification 20-1**

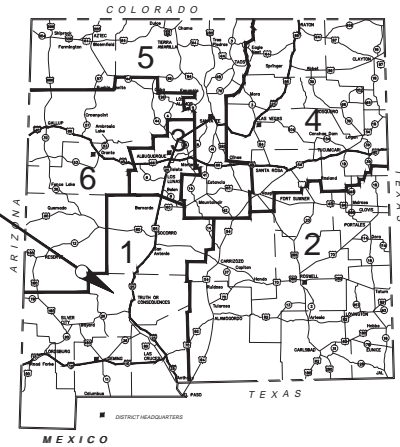
**Sediment Ponds Design and Calculations**

**Performed by:**

**David Thompson, P.E.**



ST. CLOUD MINING COMPANY  
T12S, R8W, SEC. 4  
SIERRA COUNTY  
NEW MEXICO



1. TITLE
2. GENERAL NOTES & VICINITY MAP
3. OVERALL MINING PLAN
4. POND A GRADING PLAN
5. POND B AND POND C GRADING PLAN
6. DETAILS
7. DRAINAGE BASIN MAP AND CALCULATIONS

CITY/COUNTY REVIEW		ST. CLOUD MININGS DRAINAGE IMPROVEMENT'S SERRANA COUNTY		NO.		REVISION		BY		DATE	
DEPARTMENT		SIGNAL		1		REMARK TITLE		1		8-31-20	
MAINTENANCE DIV.		WATER SERVICES		2		SUBMITTER SETS		1		3-21-20	
SUBDIVISION END.		STREETS		3		PROJECT		1		TRAIN BY: ZEM	
TRAILHEADS		TRAFFIC		4		DATE		1		CHECKED BY:	
FOR CITY/COUNTY USE ONLY		TITLE		1		HORIZ. SCALE		1		APPROVED BY:	
VERT. SCALE		FILE		1		1		1		1	

1. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT CONSTRUCTION PLANS, AND THE "NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" AND DETAILS, AS PREPARED BY THE NEW MEXICO CHAPTER, AMERICAN PUBLIC WORKS ASSOCIATION, LATEST EDITION, IN THAT ORDER OF PRECEDENCE AT THE TIME OF CONSTRUCTION BID.

2.THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM ALL JURISDICTIONAL AUTHORITIES PRIOR TO THE START OF CONSTRUCTION.

3. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, AND REGULATIONS CONCERNING CONSTRUCTION SAFETY, HEALTH, AND ENVIRONMENTAL PROTECTION.

4. UNLESS OTHERWISE NOTED, ALL ROADWAY STATIONING IS ALONG THE CENTERLINE OF THE ROADWAY RIGHT-OF-WAY.

5. THE OWNER SHALL BE RESPONSIBLE FOR DETERMINING, IN ADVANCE OF HISHER CONSTRUCTION OPERATIONS, IF OVERHEAD UTILITY LINES, SUPPORT STRUCTURES, POLES, GUYS, ETC., ARE AN OBSTRUCTION TO CONSTRUCTION OPERATIONS. IF ANY OBSTRUCTION IS EVIDENT, THE OWNER SHALL BE RESPONSIBLE FOR COORDINATING WITH THE APPROPRIATE UTILITY OWNER TO REMOVE OR SUPPORT THE UTILITY OBSTRUCTION. ANY COSTS ASSOCIATED WITH THIS EFFORT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

6. FACILITIES WHICH ARE NOT SPECIFICALLY LOCATED WITH ACTUAL VERTICAL AND HORIZONTAL CONTROLS ON THE CONSTRUCTION DOCUMENTS, ARE SHOWN AS APPROXIMATE AND IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION PROVIDED BY VARIOUS OWNERS OF THE FACILITIES, AND SUPPLEMENTED BY VISUAL SURFACE INFORMATION WHERE APPROPRIATE. ACCURACY, LOCATION, AND COMPLETENESS OF THIS INFORMATION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHOULD BE VERIFIED, BY ANY MEANS NECESSARY, PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY SSCAFCA IMMEDIATELY.

7. THE OWNER SHALL CONFINE HIS WORK TO WITHIN THE CONSTRUCTION LIMITS TO PRESERVE EXISTING VEGETATION, LANDSCAPING, AND PRIVATE PROPERTY. APPROVAL OF THESE PLANS DOES NOT GIVE OR IMPLY ANY PERMISSION TO TRESPASS OR WORK ON PRIVATE PROPERTY. PERMISSION MUST BE GRANTED IN WRITING BY THE OWNER OF THAT PROPERTY.

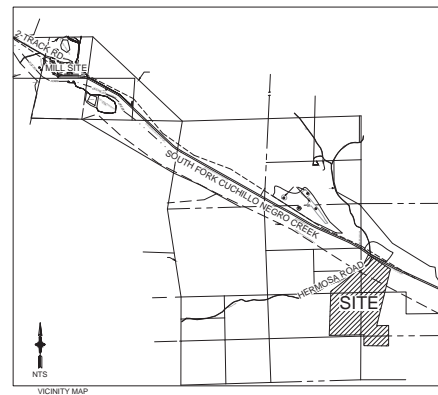
8. THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO THE START OF CONSTRUCTION.

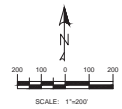
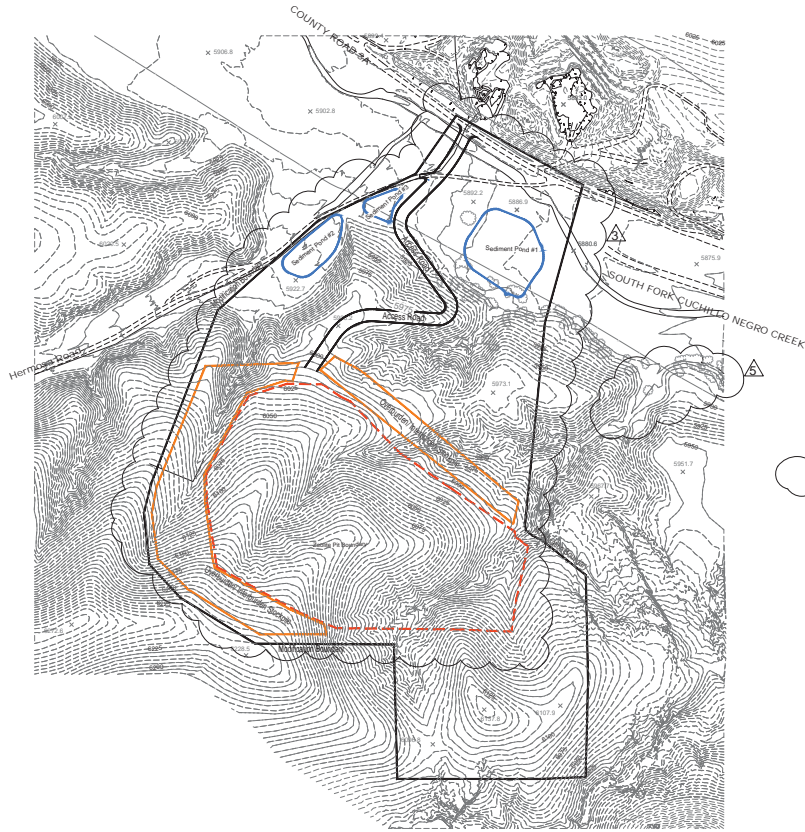
9. THE OWNER SHALL PREPARE A SWPPP PRIOR TO CONSTRUCTION.

10. THE EMBANKMENT FOUNDATION OF ALL PONDS SHALL BE CLEARED OF ALL VEGETATIVE MATERIAL, ALL SURFACES SHALL BE SLOPED TO NO STEEPER THAN 1 HORIZONTAL : 1 VERTICAL, AND THE ENTIRE FOUNDATION AREA SHALL BE SCARIFIED.

11. ALL FILL MATERIAL FOR THE PONDS SHALL BE FREE OF VEGETATIVE MATTER AND FROZEN SOIL.

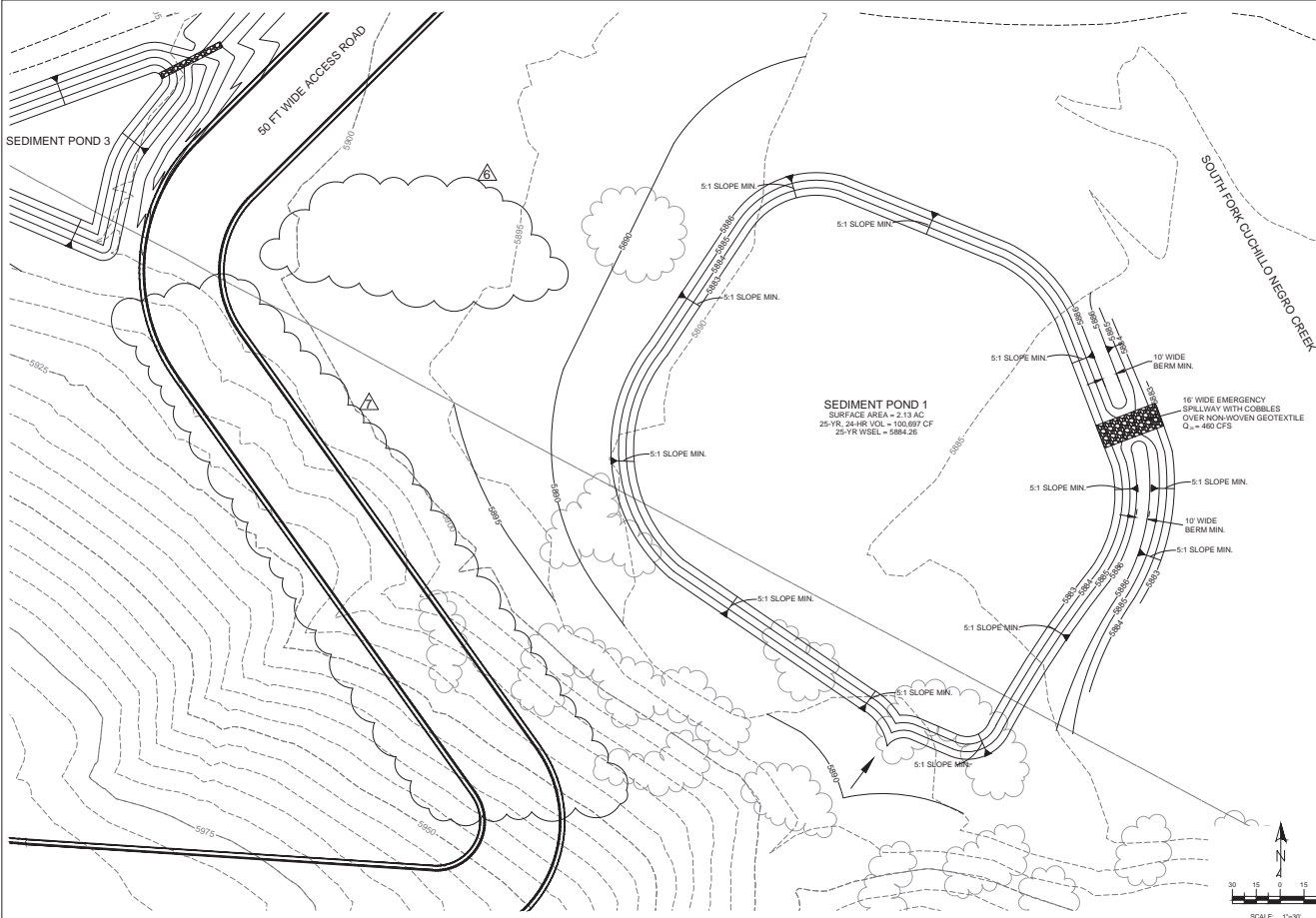
12. ALL PLANS AND SPECIFICATIONS ARE IN ACCORDANCE WITH NMAC 19.10

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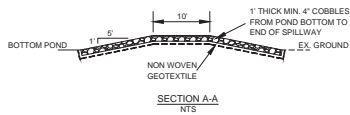
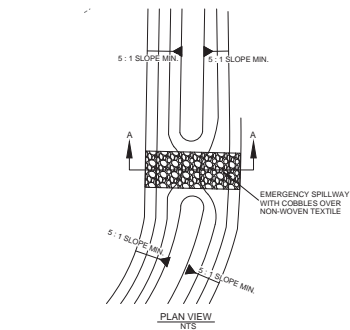
CITY/COUNTY REVIEW		ST. CLOUD MINING DRAINAGE IMPROVEMENTS SIERRA COUNTY		NO. REVISION		DATE
DEPARTMENT	SECTION	DATE		3	RE-DRAWN	8-21-20
WASTEWATER MGMT. DIV.				4	DETAIL FLOWLINE	8-21-20
WATER SERVICES				5	DETAIL FLOWLINE	8-21-20
SUBDIVISION ENG.						
STREETS						
TRAFFIC						
FOR CITY/COUNTY USE ONLY			PRODUCT		DESIGNED BY: DM	
			DATE		CHECKED BY:	
			HORIZ. SCALE:		APPROVED BY:	
			VERT. SCALE:		FILE	

T. Thompson  
Engineering, Inc.  
1000 N. 10TH STREET  
SUITE 100  
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916.781.1111  
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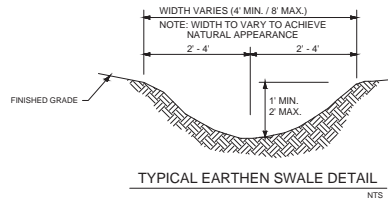
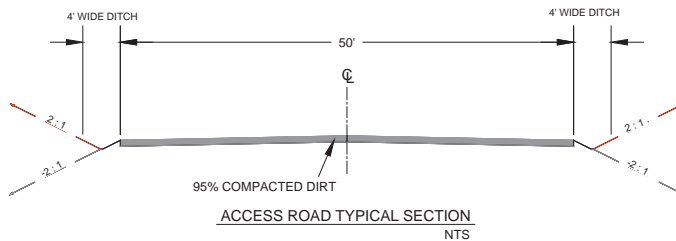


NO.		REVISION	BY	DATE
1	DELETE FLOWLINE			8-21-20
2	DELETE FLOWLINE			8-21-20
PROJECT		DATE	CHECKED BY	APPROVED BY
ST. CLOUD MINING				
DRAINAGE IMPROVEMENTS				
SIERRA COUNTY				
POND A GRADING PLAN				
CITY/COUNTY REVIEW		FOR CITY/COUNTY USE ONLY		
DEPARTMENT	DATE			
WASTEWATER WRT. DIV.				
WATER SERVICES				
SUBDIVISION ENG.				
STREETS				
TRAFFIC				
DRAWING NO.		4 OF 7		





EMERGENCY SPILLWAY  
NTS



		NO.	REVISION	BY	DATE
PROJECT: ST. CLOUD MINING PRODUCT: DRAINAGE IMPROVEMENTS DATE: 10/1/2019 DRAWN BY: JEM CHECKED BY: JEM APPROVED BY: JEM HORIZ. SCALE: 1" = 40' HORIZ. VERT. SCALE: 1" = 4' VERT.		CITY/COUNTY REVIEW DEPARTMENT: WATER SERVICES DIVISION: SUBDIVISION ENG. STREETS: TRAFFIC FOR CITY/COUNTY USE ONLY			
ST. CLOUD MINING DRAINAGE IMPROVEMENTS SIERRA COUNTY		DETAILS			
DRAWING NO. 6 OF 7					





# **ATTACHMENT R**

**St. Cloud Mining Company  
Zeolite Operations**

**Permit SI006RE**

**Permit Modification 20-1**

**Reclamation Cost Estimate Calculations**



**St. Cloud Mining Company Zeolite Operation****BOND AMOUNT CALCULATION**

New Mexico Mining and Minerals Division

**General Information***Page 1*

Permit No. SI006RE

Permit Modification 20-1

South Side 1 Project

September 1, 2020

REV 1 - Sept 2020

Applicant	St. Cloud Mining Company	Contact:
	PO Box 198	Joe McEnaney
	Winston, New Mexico 87943	(575) 743-5215
Permit Number	SI006RE	
Number of Acres	35.8	
Type of Operation	Existing Surface Mine / Zeolite	
Location	Sierra County, New Mexico	
<b>Cost Estimate Calculation</b>		<b>\$180,916</b>
<b>Escalated Estimate</b>		<b>\$202,700</b>

**St. Cloud Mining Company Zeolite Operation****BOND AMOUNT CALCULATION**

New Mexico Mining and Minerals Division

***Reclamation Description****Page 2*

Permit No. SI006RE

Permit Modification 20-1

South Side 1 Project

September 1, 2020

	<b>Area/Acres</b>
<b>Earthmoving</b>	
Backfill South Side 1 Project Pit Areas	24.5
Excavate Sediment Ponds Spillways	1
<b>Ripping</b>	
Rip 1,575 x 100 feet of project access road	3.61
<b>Grading</b>	
Regrade reclaimed South Side 1 Project Pit Areas	24.5
Regrade overburden/interburden stockpile areas	9.3
Regrade Sediment Ponds Spillways (3)	2
<b>Regrade Total</b>	<b>35.8</b>
<b>Revegetation</b>	
Revegetation of Pit area, overburden/interburden stockpile area, sed and ditches and swales	35.8
<b>Other</b>	
Monitor vegetation regrowth	35.8

**St. Cloud Mining Company Zeolite Operation****BOND AMOUNT CALCULATION**

New Mexico Mining and Minerals Division

**Material volumes**

Page 3

Permit No. SI006RE

Permit Modification 20-1

South Side 1 Project

September 1, 2020

≤ 3H : 1V Final Reclamation Slopes

<b>South Side 1 Project Pit</b>		Dozer/ Backfill Volume	Origin	Destination	ave. Haul/Push Distance (ft)	Grade	Equipment
Item	Description	(lcy)					
1	NW area of Pit _ backfill/final grade	56,296	E, W & S OB/IB + Stockpile	pit	150	-30%	D9T
2	Mid area of Pit _ backfill/final grade	42,963	E, W & S OB/IB + Stockpile	pit	150	-30%	D9T
3	SE area of Pit _ backfill/final grade	53,611	E, W & S OB/IB + Stockpile	pit	200	-30%	D9T
4	Sediment Ponds Spillway Excation	150	Pond Spillways	adjacent areas	100	-30%	D9T
Earth volume to move (lcy)		153,020					

St. Cloud Mining Company Zeolite Operation				Permit No. SI006RE	
BOND AMOUNT CALCULATION				Permit Modification 20-1	
New Mexico Mining and Minerals Division				South Side 1 Project	
Bulldozer Performance				September 1, 2020	
Page 4					
Description:		Backfill NW Area of Pit with advancement of Pit to SE			
Equipment:		D9T			
		Adjacent areas + OB/IB stockpile; 200' average push downhill			
Volume		56,296 cy	Time	66.44 hours	
			Productivity	847 cy/hr-dozers	
PERFORMANCE FACTORS					
material		1.20	operator	0.75	
grade		1.60	work hour	50	min/hr
soil weight correction		2,606 lb/cy	visibility	1.00	
prod. method/blade		1.00	elevation	1.00	
normal production		800 cy/hr	direct drive trans.	1.00	
Description:		Backfill Mid Area of Pit with continued advancement of Pit to SE			
Equipment:		D9T-			
		Adjacent material + OB/IB stockpile; 200' average push downhill			
Volume		42,963 cy	Time	51 hours	
			Productivity	847 cy/hr-dozers	
PERFORMANCE FACTORS					
material		1.20	operator	0.75	
grade		1.60	work hour	50	min/hr
soil weight correction		2,606 lb/cy	visibility	1.00	
prod. method/blade		1.00	elevation	1.00	
normal production		800 cy/hr	direct drive trans.	1.00	
Description:		Backfill SE Pits (N + S) with advancement of Pit to SE			
Equipment:		D9T-			
		Adjacent material + OB/IB stockpile; 250' average push downhill			
Volume		53,611 cy	Time	63 hours	
			Productivity	847 cy/hr-dozers	
PERFORMANCE FACTORS					
material		1.20	operator	0.75	
grade		1.60	work hour	50	min/hr
soil weight correction		2,606 lb/cy	visibility	1.00	
prod. method/blade		1.00	elevation	1.00	
normal production		800 cy/hr	direct drive trans.	1.00	
Equipment:		D9T-			
		Sediment Ponds Spillways Excavation total 150 cy			
Volume		200 cy	Time	0.24 hours	
			Productivity	847 cy/hr-dozers	
PERFORMANCE FACTORS					
material		1.20	operator	0.75	
grade		1.60	work hour	50	min/hr
soil weight correction		2,606 lb/cy	visibility	1.00	
prod. method/blade		1.00	elevation	1.00	
normal production		800 cy/hr	direct drive trans.	1.00	

**St. Cloud Mining Company Zeolite Operation**  
 BOND AMOUNT CALCULATION  
 New Mexico Mining and Minerals Division  
*Grading & Ripping - Productivity and Hours for Dozer Use*  
 Page 5

Permit SI006RE  
 Permit Modification 20-1  
 South Side 2 Project  
 September 1, 2020

<b>Description:</b>	Recontour all disturbed areas Rip / scarify compacted soils
<b>Equipment:</b>	D9T-Grade reclaimed slopes at -30% grade or flat at pit bottom

<b>Area</b>	<b>35.8 ac</b>	<b>Time</b>	<b>13.5 hours</b>
		<b>Productivity</b>	<b>2.66 ac/hr-dozer</b>
PERFORMANCE FACTORS			
material	1.00	operator	0.75
grade	1.40	work hour	50 min/hr
soil weight correction	2606 lb/cy	visibility	1.00
prod. method/blade	1.00	elevation	1.00
effective blade width	14.2 feet	direct drive trans.	1.00
speed	2 miles/hr		

Includes grading of mine pit areas after backfilling

Includes grading of access road

Includes grading sediment ponds spillways (3)

Includes grading of overburden/interburden stockpile areas after backfilling pits

<b>Description:</b>	Rip interior roads	0.5 acres
<b>Equipment:</b>	D9T	

<b>Volume</b>	<b>1,210 bcy</b>	<b>Time</b>	<b>1.3</b>
		<b>Productivity</b>	<b>964.29 bcy/hr</b>
Performance Factors			
Rip Spacing	5.00 ft	Speed	1.00 miles/hr
Penetration	1.50 ft	Speed	88 ft/min
Rip distance	1,573 ft	Turn around time	0.25 min
Road width	100.00 ft	Cycle time	18 min/cycle
Work hour	50.0 min/hr	Cycles / hr	2.76 cycles / hr
Efficiency (experience)	1	Volume per cycle	437 bcy / cycle
Max Production	1205 bcy / hr		

Total Hours: 14.7

<b>St. Cloud Mining Company Zeolite Operation</b>							Permit SI006RE	
BOND AMOUNT CALCULATION							Permit Modification 20-1	
New Mexico Mining and Minerals Division							South Side 2 Project	
<i>Summary Calculation of Earthmoving Costs</i>							September 1, 2020	
<i>Page 6</i>								
<b>Total Cost</b>				<b>\$60,207</b>				
Equipment	Ownership /	Labor	Time	Total	Total	Prod.	Unit	
Type	Operating Cost	Cost	Req'd	Cost	Production	Unit	Cost	
	(\$/hr)	(\$/hr)	(hrs)	(\$)			(\$/unit)	
<b>Dozers-Earthmoving - Cross Section Area A- A'</b>								
D9T	\$274.35	\$34.17	66.4	\$20,499	56,296	cy	\$0.36	
<b>Dozers-Earthmoving - Cross Section B - B'</b>								
D9T-	\$274.35	\$34.17	50.7	\$15,644	42,963	cy	\$0.36	
<b>Dozers-Earthmoving - Cross Section C ' C'</b>								
D9T-	\$274.35	\$34.17	63.3	\$19,522	53,611	cy	\$0.36	
<b>Dozers-Grading &amp; Ripping</b>								
D9T - Grade Pit, Stockpiles + Pond								
Spillways	\$274.35	\$34.17	13.5	\$4,155	35.8	ac	\$116.05	
Rip interior roads	\$274.35	\$34.17	1.3	\$387	1,210.0	bcy	\$0.32	
<b>TOTALS</b>				<b>195.1</b>	<b>\$60,207</b>			

**St. Cloud Mining Company Zeolite Operation****BOND AMOUNT CALCULATION**

New Mexico Mining and Minerals Division

**Revegetation Costs**

Page 7

Permit No. SI006RE

Permit Modification 20-1

South Side 1 Project

September 1, 2020

**Description:**

Apply seed mix and mulch to areas

Area (acres): 35.8

<b>No Location Adjustments</b>	100.0%
<b>Total Cost</b>	<b>\$42,960</b>

	Area	Unit	Subtotal
	(acres)	Cost	Cost
Area		(\$/acre)	(\$)
Zeolite Pit areas	24.5	\$1,200	\$29,400
Stockpiles, Sed Ponds, interior roads, misc.	11.3	\$1,200	\$13,560
	35.8		\$42,960

Revegetation Materials Costs:	Cost/acre
Revegetation Seed Mix (Table 1)	\$163.00
Mulch (2 tons/acre)	\$172.00
Labor & Equipment	\$765.00
<b>TOTAL:</b>	<b>\$1,100.00</b>

**St. Cloud Mining Company Zeolite Operation****BOND AMOUNT CALCULATION**

New Mexico Mining and Minerals Division

***Other Reclamation Activity Costs****Page 8*

Permit No. SI006RE

Permit Modification 20-1

South Side 1 Project

September 1, 2020

Revegetated Area		35.8		
			Unit Cost	Item Cost
Activity	Quantity	Unit	(\$/unit)	(\$)
Vegetation monitoring		12 years	700	\$8,400
<b>Total</b>				<b>\$8,400</b>



**Reclamation Costs**

Page 9

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**Pits Backfill Volume Calculations - South Side 1 Project Pit**

**Cross Section Area Calculations**

**Northwest Section (Scale 1"=50')**

Area conversion: 1 inch = 50 feet

Material Volume determine by plotting cross sections on graph paper at a scale of 1" = 50', with cells measuring 5 cells per inch = each cell equaling 10 square feet. Cells falling within geologic units were manually tabulated to determine volumes within area of cross sections.

Backfill volume requirements were determined by calculating average pit length x average pit width x average pit backfill depth to achieve  $\leq 3H : 1V$  final reclamation ground slope.

Zeolite ore shown as cross hatch in cross sections.

Pit benches  $\leq 25$  feet

All non-zeolite geologic material left unshaded and categorized as Overburden/Interburden

Overburden/Interburden mined materials volume is given in loose cubic yards (lcy), with a 20% swell factor.

**NW AREA \_ Upper and Lower Pits**

	Upper Pit	Lower Pit
Pit area average length	150 ft	250 ft
Pit area average width	200 ft	200 ft
Average Backfill material depth	19 ft	19 ft
Pit backfill volume to achieve final Reclamation Ground Slope =	56,296 lcy	

**MID AREA \_ Upper and Lower Pits**

	Upper Pit	Lower Pit
Pit average length	150 ft	200 ft
Pit area average width	200 ft	200 ft
Average Backfill material depth	24 ft	11 ft
Pit backfill volume to achieve final Reclamation Ground Slope =	42,963 lcy	

**SW AREA \_ Upper and Lower Pits**

	Upper Pit	Lower Pit
Pit average length	150 ft	120 ft
Pit average width	250 ft	250 ft
Average Backfill material depth	29 ft	12 ft
Pit backfill volume to achieve final Reclamation Ground Slope =	53,611 lcy	
TOTAL:	152,870	

---

**Material Weight Calculations for Reclamation Cost Estimate**

loose overburden/interburden weight	=	97 lbs / cu ft
		2,606 lbs / cu yd

**St. Cloud Mining Company Zeolite Operation****BOND AMOUNT CALCULATION**

New Mexico Mining and Minerals Division

**Reclamation Bond Summary**

Page 10

Permit No. SI006RE

Permit Modification 20-1

South Side 1 Project

September 1, 2020

**DIRECT**

<b>COSTS</b>	1st time revegetation		\$42,960
	Earthmoving		\$60,207
	Revegetation @ 5%/yr failure rate	25%	\$8,950
	Other (vegetation monitoring, etc)		\$8,400
	<b>Subtotal</b>		<b>\$120,517</b>
	Cost Escalation Period (years)	0	
	Cost Escalation Rate	0.0%	
	<b>Adjusted Actual Cost Subtotal</b>		<b>\$120,517</b>

**INDIRECT**

<b>COSTS</b>	Mobilization and Demobilization (1%-10%)	5%	\$6,026
	Contingencies (2%-10%)	6%	\$7,231
	Engineering Redesign Fee (2%-10%)	4%	\$4,821
	Contractor Profit and Overhead	15%	\$18,078
	Project Management Fee	10%	\$12,052
	MMD Procurement Cost (2%-10%)	5%	\$6,026
	Bonding and Insurance	4%	\$4,485
	Labor Liability Cost	1.5%	\$1,682
	<b>Subtotal</b>		<b>\$60,399</b>

**TOTAL****BOND**

<b>AMOUNT</b>	51%	<b>\$180,916</b>
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Cost Escalation Period	5 years
Cost Escalation Rate	2.3 %

<b>TOTAL ESCALATED BOND AMOUNT</b>	<b>\$202,700</b>
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(Escalation applied to both direct and indirect costs.)