

October 14, 2021, 2021
Baldwin, Michigan 49304

Regular meeting of the Board of County Road Commissioners of the County of Lake was called to order at 9:00 a.m. by Chairman Truxton.

Present - Gary Truxton, *LCRC Commissioner*
Richard Haslock, *LCRC Commissioner*
Joan Runnels, *LCRC Commissioner*
Leroy Williams, *LCRC Manager*
Jessica LaPointe, *LCRC Finance & HR Manager*
Shawn MacDougall, *LCRC Road Foreman*
Tom Smith, *LCRC Road Foreman*
David Leusby, *LCRC Road Shop Foreman*
Al Dailey, *LCRC Finance & HR Assistant*

The following bills were presented and allowed for payment:

10/11	Payroll Voucher No. 5050 -----	\$	67,723.88
10/13	Material Voucher No. 5053 -----	\$	148,816.56
10/11	HRA Voucher No. 5052 -----	\$	1,336.41

APPROVAL OF MINUTES:

Motion made by Runnels to approve the September 23, 2021 meeting minutes as read. Supported by Haslock. Yeas- Truxton and Runnels. Nays - 0. Motion carried.

PUBLIC COMMENT:

None.

REPORTS FROM

MANAGEMENT: FINANCE & HR

MANAGER:

LaPointe presented the MTF

Report. Update on the CRRSAA

funds.

Paul Bunyan meeting will take place on November 18, 2021.

Met with Jennie from Alfac this week.

MANAGER:

Broadway Bridge is open.

Stevenson Road is proceeding, looking for fair market value for the easement.

Johnson Rd/9 Mile is going well.

DNR has asked if the road commission would be willing to remove trees from Horizon. Board agrees.

Trying to contact Bob Myers regarding the new Forest Service ORV regulations.

Williams won't be attending the Winter Conference, would like Al Dailey to go in his place.

ROAD FOREMAN:

MACDOUGALL -

Blading washouts.

Crews out cleaning up trees.

Ironwood is done.

Spoke with Sauble Township about utilizing the Local Road Program funds.

SMITH -

Edge ruts.

Working on Olga Lake Road.

Drove around with the Michigan State Police checking 800 Mhz radios in Lake County.

Waiting to hear if Smith will be accepted for the CDL course.

EQUIPMENT SUPERINTENDENT:

Grapple for loader is here.

Picking up the grapple for the skid steer today.

Cost of new brine trailer will be \$116,000.

Would like the Board to keep in mind how difficult it is to find mechanics when negotiating the contract.

Would like to use the money available in the equipment reserve to pay for the excavator that we have going back on lease.

OLD BUSINESS:

Motion made by Haslock to table the 2022 brine bids until October 21, 2021. Supported by Runnels. Yeas- Truxton and Runnels. Nays - 0. Roll call vote. Motion carried.

Motion made by Runnels to accept Policy # 1048 - Removal or Trimming of Trees and Other Vegetation. Supported by Haslock. Yeas- Truxton and Runnels. Nays - 0. Motion carried.

Motion made by Runnels to accept Intergovernmental Agreement for Winter Road Maintenance. Supported by Haslock. Yeas- Truxton and Runnels. Nays - 0. Motion carried.

Haslock doesn't feel it is the Board's decision on what to do with trucks in the fleet.

NEW BUSINESS:

Motion made by Runnels to purchase the leased excavator. Supported by Haslock. Yeas- Truxton and Runnels. Nays - 0. Roll call vote. Motion carried.

Williams had a quarterly safety meeting with the safety committee, and they identified some concerns.

COMMISSIONERS PRIVILEGE:

Haslock - Everyone is doing well. Glad to see Williams is back.

Truxton - Interested in seeing how much it would cost to construct a

tower at Nyland's pit and rent space to cellular companies to provide better service to the Star Lake area. Everyone is doing a good job.

Runnels - Commissioner Seminar wasn't that great.

Motion made by Runnels to enter closed session, requested by Jessica LaPointe for personnel evaluation. Supported by Haslock. Yeas- Truxton and Runnels. Nays - 0. Roll call vote. Motion carried. 11:47am

Motion made by Runnels to return to open session. Supported by Haslock. Yeas- Truxton and Runnels. Nays - 0. Roll call vote. Motion carried. 2:00pm

PUBLIC COMMENT:

None

ADJOURNMENT:

Motion to adjourn made by Runnels. Supported by Haslock. Yeas- Truxton and Runnels. Nays - 0. Motion carried. 10:45 am

Next Meeting Date: October 21, 2021 Time: 9:00 am

Respectfully submitted by:



Jessica L. LaPointe - Secretary

Approved by:



Gary A. Truxton - Chairman



Richard J. Haslock - Vice Chairman



Joan Runnels - Member



2022 Dust/Ice Control Bid Tab

Michigan Chloride Sales

	Per Gallon	Total Cost
# 1. Furnish & Loaded (26% min)	<u>.22</u>	_____
# 2. Furnish & Loaded (38% min)	<u>—</u>	_____
# 3. Furnish Storage Tanks	<u>included</u>	_____
# 4. Furnish & Apply (26% min)	<u>.24</u>	_____
	* 4 twp only *	

Northern A-1

	Per Gallon	Total Cost
# 1. Furnish & Loaded (26% min)	<u>.28</u>	_____
# 2. Furnish & Loaded (38% min)	<u>No bid</u>	_____
# 3. Furnish Storage Tanks	<u>Liner 325/unit</u>	_____
	<u>+ 292.5/unit</u>	_____
# 4. Furnish & Apply (26% min)	<u>.32</u>	_____

Beckman's Production Services

	Per Gallon	Total Cost
# 1. Furnish & Loaded (26% min)	<u>.34</u>	_____
# 2. Furnish & Loaded (38% min)	<u>No bid</u>	_____
# 3. Furnish Storage Tanks	<u>N/C</u>	_____
# 4. Furnish & Apply (26% min)	<u>.42</u>	_____



BID FORM: MINERAL WELL BRINE – SUPPLIED
To be Opened: 10:00 A.M., Thursday October 14, 2021

For one year, beginning October 15, 2021, with the mutually agreeable option of one (1) year extension.

Bidder to supply copy of brine analysis of all material bid including certification and perform all compliance testing.

Bidding information and minimum logistics:

- Approximate Annual Gallon Usage: 1.5 million gallons
- Frac Tank Capacity (each) and Locations: 21,000 gallons:
 - Two (2) in Lake County Road Commission Yard – Baldwin
 - One (1) in K&K Pit – Elk Twp
 - One (1) in Luther Pit – Newkirk Twp
- Usage/Consumption Rate: 120,000 gal/day maximum
- Advance Notification for Need: 24 HOURS ADVANCE NOTIFICATION NEEDED
- Frac Tank fill hose shall have a one-way check valve at the end of the fill hose/pump interface.
- Equipment utilized shall be Michigan Department of Agriculture approved regarding weights and measurement of product dispensed in accordance with P.A. 283 pf 1964 as amended.
- Load tickets are required.

Bid must be submitted in a sealed envelope bearing the name of the bidder and plainly marked as to the contents.

The Lake County Road Commission reserves the right to reject any, or all bids, and to accept the bid that is in the best interest of the county.

1. Furnish & loaded in storage facilities: Mineral Well Brine (min 26%) \$ 15¢ per gallon.
% Calcium 7.10 % Magnesium 2.14 % Sodium 20.1 % Total: 29.34
2. Furnish & loaded in storage facilities: Mineral Well Brine (min 38%) \$ _____ per gallon.
% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____
3. Furnish Storage Facilities (May 1st – Sept 15th) \$ _____ per unit
4. Furnish and apply: Mineral Well Brine (min 26%) \$ _____ per gallon
% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____

NOTES:

- Application rate is 2500 gallon/mile
- Map of area to be provided by LCRC
- Contractor shall apply total amount of product as shown in bid form
- Contractor to provide print out documentation and certification, signed and dated, to quantity and quality of material placed.
- Areas missed, shorter, or poorly placed shall be reapplied by contractor at his/her cost. No extra cost shall be authorized.
- LCRC and contractor shall coordinate application dates.
- Contractor to complete entire township prior to moving to next location.
- LCRC shall award to the bidder or bidders that are in the best interest of the township(s) and LCRC.
- LCRC shall inspect and notify the contractor within 48 hours of application of material of any discrepancy in quality of quantities of applications.
- Any coverage of material placed shall be the responsibility of the contractor. LCRC will not pay additional compensation except for extenuating circumstances.
- Material specifications to be included with bid.
- Billings shall be made directly to LCRC

Company Name: DeB Brine Inc.

Company Address: 437 S Evergreen Dr.

City, State & Zip White Cloud MT 49349

Bidder Signature Marvin R Deur Jr.

Print Bidder Name Marvin R Deur Jr.

Bidder Email mapleman2976@gmail.com

Phone 231-225-6138

Fax _____

Mobile 231-225-6138

(consolidated)

WO#: 2101138

Date Reported: 1/11/2021

CLIENT:	D & B Brines, Inc	Collection Date:	1/5/2021 12:00:00 PM
Project:	Dust Control	Received Date:	1/5/2021 3:15:00 PM
Lab ID:	2101138-02	Matrix:	BRINE
Client Sample ID:	T-1W	Sampled By:	Butch

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS

EPA 8260

Analyst: JS

Benzene	0.0335	0.00500	D	mg/L	5	1/8/2021 6:27:00 PM
Toluene	0.0224	0.00500	D	mg/L	5	1/8/2021 6:27:00 PM
Ethylbenzene	< 0.00500	0.00500	D	mg/L	5	1/8/2021 6:27:00 PM
m,p-Xylene	0.00550	0.00500	D	mg/L	5	1/8/2021 6:27:00 PM
o-Xylene	< 0.00500	0.00500	D	mg/L	5	1/8/2021 6:27:00 PM
Xylenes, Total	< 0.00500	0.00500	D	mg/L	5	1/8/2021 6:27:00 PM

METALS, AQUEOUS

EPA 200.8

Analyst: TE

Calcium	25800	250	D	mg/L	12500	1/5/2021 9:59:30 PM
Magnesium	5470	250	D	mg/L	12500	1/5/2021 9:59:30 PM
Potassium	< 1250	1250	D	mg/L	12500	1/5/2021 9:59:30 PM
Sodium	79800	250	D	mg/L	12500	1/5/2021 9:59:30 PM

ANIONS BY ION CHROMATOGRAPHY

EPA 300.0

Analyst: KS

Chloride	196000	0.100		mg/L	1	1/5/2021 10:19:00 PM
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BRINE SALTS

CALCULATION

Analyst: SB

Other Chlorides	< 0.0100	0.0100		%	1	1/6/2021 12:31:49 PM
Calcium Chloride	7.10	0.0100		%	1	1/6/2021 12:31:49 PM
Magnesium Chloride	2.14	0.0100		%	1	1/6/2021 12:31:49 PM
Sodium Chloride	20.1	0.0100		%	1	1/6/2021 12:31:49 PM

SULFIDE

EPA 376.2

Analyst: TE

Sulfide	< 0.250	0.250	D	mg/L	2.5	1/6/2021 8:13:34 AM
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Qualifiers:

- * Value exceeds Maximum Contaminant Level
- D Dilution was required
- MCL Maximum Contaminant Level
- RL Reporting Limit

- < Not Detected at the Reporting Limit
- H Holding times for preparation or analysis exceeded
- PL Permit Limit



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- Usage/Consumption Rate: 120,000 gal/day maximum
- Advance Notification for Need: 24 HOURS ADVANCE NOTIFICATION NEEDED
- Frac Tank fill hose shall have a one-way check valve at the end of the fill hose/pump interface.
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1. Furnish & loaded in storage facilities: Mineral Well Brine (min 26%) \$ _____ per gallon.
% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____
2. Furnish & loaded in storage facilities: Mineral Well Brine (min 38%) \$ _____ per gallon.
% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____
3. Furnish Storage Facilities (May 1st – Sept 15th) \$ _____ per unit
4. Furnish and apply: Mineral Well Brine (min 26%) \$ _____ per gallon
% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____

5. Supply Mineral Well Brine for loading at storage located on Layline's lease location \$6/c/gal. See attached Mineral Brine analysis

COMPANY: LAYLINE OIL & GAS
 PROJECT NO: 2-14-19
 LOCATION: VARIOUS
 MI
 SAMPLE MATRIX: WATER
 SAMPLE ID: WINT DEEP UNIT

GTA PROJECT NO: 021519-3
 GTA SAMPLE NO: 5
 DATE SAMPLED: 2/15/2019
 TIME SAMPLED: 10:00 AM
 DATE RECEIVED: 2/15/2019
 TIME RECEIVED: 11:47 AM

SAMPLED BY: MATT MACIAG/LAYLINE

EPA 8260B VOLATILE ORGANICS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Extracted</u>	<u>Date Complete</u>	<u>Prep Method</u>
Benzene	260	4.0	ug/L (PPB)	MR		2/18/2019	EPA 5030B
Toluene	66	4.0					
Ethylbenzene	1.6	1.0					
Xylene(Total)	10	3.0					

SOIL/SOLIDS CONCENTRATIONS ARE DETERMINED ON A DRY WEIGHT BASIS.
 ND = NOT DETECTED, RESULT < LOD
 LOD = LIMIT OF DETECTION

COMPANY: LAYLINE ENERGY

GTA PROJECT NO: 031320-1

PROJECT NO:

GTA SAMPLE NO: 4

LOCATION: VARIOUS

DATE SAMPLED: 3/9/2020

TIME SAMPLED: 11:00 AM

DATE RECEIVED: 3/13/2020

TIME RECEIVED: 9:45 AM

SAMPLED BY: MI
MATT/LAYLINE

SAMPLE ANALYSIS

<u>No:</u>	<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date</u>	<u>Sample</u>
	SAMPLE ID: WINTERFIELD DEEP UNIT						
	CHLORIDE EPA 300.0	360.000	2.000	mg/L (PPM)	L.V	3/17/2020	BRINE

ND = NOT DETECTED, RESULT < LOD
 LOD = LIMIT OF DETECTION
 s u = STANDARD pH UNITS REPORTED AT 25 C



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% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____
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% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____
3. Furnish Storage Facilities (May 1st – Sept 15th) \$ NO BID per unit
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% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____

NOTES:

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- Map of area to be provided by LCRC
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Company Name: LIQUID CALCIUM CHLORIDE SALES

Company Address: 2715 S. HURON ROAD

City, State & Zip KAWKAWLIN, MICHIGAN 48631

Bidder Signature Rodney Gerard

Print Bidder Name RODNEY GERARD

Bidder Email RODGERARD@GERARDGROUP.INFO

Phone 989-684-5860

Fax 989-684-9953

Mobile 989-239-5414



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1. Furnish & loaded in storage facilities: Mineral Well Brine (min 26%) \$ 0.22 per gallon.
% Calcium 18-22 % Magnesium 3-5 % Sodium 4-6 % Total: 26-30
2. Furnish & loaded in storage facilities: Mineral Well Brine (min 38%) \$ NO BID per gallon.
% Calcium N/A % Magnesium N/A % Sodium N/A % Total: N/A
3. Furnish Storage Facilities (May 1st – Sept 15th) \$ INCLUDED per unit
4. Furnish and apply: Mineral Well Brine (min 26%) \$ 0.24* per gallon
% Calcium 18-22 % Magnesium 3-5 % Sodium 4-6 % Total: 26-30

*APPLIED PRICE APPLICABLE FOR THE FOLLOWING TOWNSHIPS ONLY: CHASE, DOVER, NEWKIRK, AND SWEETWATER
* TERMS: NET 30 DAYS

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Company Name: MICHIGAN CHLORIDE SALES, LLC

Company Address: 402 W JACKSON ROAD

City, State & Zip ST. LOUIS, MI 48880

Bidder Signature 

Print Bidder Name KAREN VANDOOREN, PRESIDENT

Bidder Email KVANDOOREN@MICHIGANCHLORIDE.COM

Phone (989) 681-3221

Fax (989) 681-3574

Mobile (248) 444-7751

Mineral Well Brine Analysis

Michigan Chloride Sales

Sample ID: 96421-001 (Loading Rack)
Collect Date: 06/03/20

Parameter

Calcium	as calcium chloride	24.4 % (w/v)	19.5 % (w/w)
Magnesium	as magnesium chloride	4.2 % (w/v)	3.4 % (w/w)
Potassium	as potassium chloride	1.2 % (w/v)	1.0 % (w/w)
Sodium	as sodium chloride	6.6 % (w/v)	5.3 % (w/w)

total chlorides	<hr/>	36.44 % (w/v)	29.06 % (w/w)
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pH	5.18
Specific Gravity	1.254
Weight per Gallon	10.408 lbs. per gal.

8660 S. Mackinaw Trail	Cadillac, MI 49601	T: (231) 775-8368	F: (231) 775-8584
1914 Holloway Drive	Holt, MI 48842	T: (517) 699-0345	F: (517) 699-0388

lab@fibertec.us



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1. Furnish & loaded in storage facilities: Mineral Well Brine (min 26%) \$.34 per gallon.
% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____
- ~~2. Furnish & loaded in storage facilities: Mineral Well Brine (min 38%) \$ _____ per gallon.
% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____~~
3. Furnish Storage Facilities (May 1st – Sept 15th) \$ N/C per unit
4. Furnish and apply: Mineral Well Brine (min 26%) \$.42 per gallon
% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____


NOTES:

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- Billings shall be made directly to LCRC

Company Name: BECKMAN PRODUCTION SER.

Company Address: 3786 BEEBE RD.

City, State & Zip KALKASKA, MI. 49646

Bidder Signature 

Print Bidder Name DENNY WAY

Bidder Email LOGISTICS@BECKMANPRODUCTION.COM

Phone 231-437-0105

Fax -

Mobile SAME



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1. Furnish & loaded in storage facilities: Mineral Well Brine (min 26%) \$ 0.28 per gallon.
% Calcium 10 % Magnesium 4 % Sodium _____ % Total: 26% 35%
Chloride > 25%
2. ~~Furnish & loaded in storage facilities: Mineral Well Brine (min 38%) \$ _____ per gallon.~~
~~% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____~~
3. Furnish Storage Facilities (May 1st – Sept 15th) \$ 2925.00 per unit
Soft Liners \$ 325.00 Each = TOTAL \$ 1,300 (4 liners)
4. Furnish and apply: Mineral Well Brine (min 26%) \$ 0.32 per gallon
% Calcium 10 % Magnesium 0 % Sodium _____ % Total: 26% 35%
Chloride > 25%

Northern A-1 Services

Additional Information/Clarifications for Lake County Road Commission

2022 Mineral Brine Bid - Due October 14, 2021 at 10:00 am

Usage/Consumption Rate - 20,000 - 40,000 Gallons Maximum Per Day

Frac Tank Fill Hose - Northern A-1 will remove the hose after filling, we cannot unload through a check valve

Sampling of Mineral Brine is not a requirement by the State of Michigan. Once classified as a mineral well, there is no sampling required. If sampling is required by Lake County Road Commission, you would be responsible for the cost of sampling and analysis.

Lake County Road Commission is to be responsible to spread with a small truck what we cannot spread with our tanker.

Option: Northern A-1 can supply a 3,000-gallon vacuum truck at \$ 125.00 per hour portal to portal plus the price of brine \$ 0.32 per gallon.

Application will be 1,250 per lane mile

Northern A-1 cannot control nor be held liable if the road quality will not allow a truck to properly apply the brine.

Lake County Road Commission will be responsible for the cost of our truck to be pulled out or towed due to inadequate road conditions.

Northern A-1 cannot guarantee completion by the dates listed by Lake County Road Commission as this will be weather dependent. This also applies to LCRC inspecting the roads and notification within 48 hours as weather dependent on inclement weather



BID FORM: MINERAL WELL BRINE – SUPPLIED

To be Opened: 10:00 A.M., Thursday October 14, 2021

For one year, beginning October 15, 2021, with the mutually agreeable option of one (1) year extension.

Bidder to supply copy of brine analysis of all material bid including certification and perform all compliance testing.

Bidding information and minimum logistics:

- Approximate Annual Gallon Usage: 1.5 million gallons
- Frac Tank Capacity (each) and Locations: 21,000 gallons:
 - Two (2) in Lake County Road Commission Yard – Baldwin
 - One (1) in K&K Pit – Elk Twp
 - One (1) in Luther Pit – Newkirk Twp
- Usage/Consumption Rate: 120,000 gal/day maximum
- Advance Notification for Need: 24 HOURS ADVANCE NOTIFICATION NEEDED
- Frac Tank fill hose shall have a one-way check valve at the end of the fill hose/pump interface.
- Equipment utilized shall be Michigan Department of Agriculture approved regarding weights and measurement of product dispensed in accordance with P.A. 283 pf 1964 as amended.
- Load tickets are required.

Bid must be submitted in a sealed envelope bearing the name of the bidder and plainly marked as to the contents.

The Lake County Road Commission reserves the right to reject any, or all bids, and to accept the bid that is in the best interest of the county.

1. Furnish & loaded in storage facilities: Mineral Well Brine (min 26%) \$ No Bid per gallon.
% Calcium _____ % Magnesium _____ % Sodium _____ % Total: _____
2. Furnish & loaded in storage facilities: ^{Calcium Chloride} ~~Mineral Well Brine~~ (min 38%) \$ 0.4616 per gallon.
% Calcium 38 % Magnesium 0 % Sodium .5 % Total: 38.5
*****See attached Request Alternative to Bid Specification*****
3. Furnish Storage Facilities (May 1st – Sept 15th) \$ 0.00 per unit
4. Furnish and apply: ^{Calcium Chloride 38%} ~~Mineral Well Brine (min 26%)~~ \$ 0.5320 per gallon
% Calcium 38 % Magnesium 0 % Sodium .5 % Total: 38.5

NOTES:

- Application rate is 2500 gallon/mile
- Map of area to be provided by LCRC
- Contractor shall apply total amount of product as shown in bid form
- Contractor to provide print out documentation and certification, signed and dated, to quantity and quality of material placed.
- Areas missed, shorted, or poorly placed shall be reapplied by contractor at his/her cost. No extra cost shall be authorized.
- LCRC and contractor shall coordinate application dates.
- Contractor to complete entire township prior to moving to next location.
- LCRC shall award to the bidder or bidders that are in the best interest of the township(s) and LCRC.
- LCRC shall inspect and notify the contractor within 48 hours of application of material of any discrepancy in quality of quantities of applications.
- Any coverage of material placed shall be the responsibility of the contractor. LCRC will not pay additional compensation except for extenuating circumstances.
- Material specifications to be included with bid.
- Billings shall be made directly to LCRC

Company Name: Great Lakes Chloride, Inc.

Company Address: P.O. Box 634

City, State & Zip Grand Haven, Michigan 49417

Bidder Signature 

Print Bidder Name Zach Clothier

Bidder Email zclothier@glchloride.com

Phone 574-267-2286

Fax 574-527-2234

Mobile 574-527-0287



Cake County Road commission
1180 Michigan Avenue
Baldwin, Michigan 49304

October 11, 2021

To: Board of County Road Commissioners

Subject: Request Alternative to "Mineral Well Brine – Supplied" bid specification.

Great Lakes Chloride, Inc. would like to request an alternative to the current bid specification that would potentially reduce daily operational costs and provide a per mile product cost reduction for dust control. GLC would like to recommend the use of 38% LIQUIDOW™ calcium chloride. For the approximate annual usage of 1.5 million gallons of mineral well brine (raw brine) 38% LIQUIDOW™ equates to 770,808 gallons. The following information will explain how 38% Calcium Chloride will compare to the lab report provided taken from Benzie County brine storage.

Comparison of products:

$$\text{Equivalent application rates} = \frac{\text{CaCl}_2 \text{ App Rate} \times \text{CaCl}_2 \text{ density} \times \text{Actual \%}}{(\text{Brine density} \times \text{Equiv \% CaCl}_2)}$$

Example:

Current Bid Spec:	26% Mineral Brine	$(1,500,000 \text{ gallons} \times 10.34 \times 21.85\%)$	=	<u>3,388,935</u>
Purposed Spec:	38% Calcium Chloride	(11.57×38)	=	4.3966

Equivalent Application rate for current Bid Spec: $3,388,935 / 4.3966 = 770,808$ gallons.

Estimated operational cost savings:

For one full application of 415 miles of gravel roads using one 7,000 gallon applicator applying 1.5m gallons.

Application rate of 3,614 gallons /mile of 26% mineral brine = 1,500,000 gallons = 214 truck loads

Application Rate of 1,900 gallons / mile of 38% calcium chloride = 788,500 gallons = 112 truck loads

With a reduction of 102 truck loads +/- for one full application this will allow for equipment, manpower, and funds to be applied to another function of the road commission.

Effective dust control can reduce the overall cost to maintain unpaved roads by 30% or more

Please refer to the provided Michigan Dust Control Bid Guide & Best Practices brochure for further info regarding the benefits of LIQUIDOW™ over raw brines.

Lab Sample ID: S21310.03

Sample Tag: 38% Liquidow™ Calcium Chloride

Collected Date/Time: 02/04/2021 00:01

Matrix: Liquid

COO Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	No	RT	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	02/11/21 14:00	CCM	

Metals

Method: E200.8/E300.0, Run Date: 02/11/21 15:23, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Calcium as CaCl2*	38.1	1.2		%wt/wt	42553	7440-70-2	
Magnesium as MgCl2	Not detected	1.7		%wt/wt	42553	7439-95-4	
Potassium as KCl	1.1	0.8		%wt/wt	42553	7440-09-7	
Sodium as NaCl	Not detected	1.1		%wt/wt	42553		