West Des Moines Water Works

WEST DES MOINES WATER WORKS
BOARD OF TRUSTEES MEETING COMMUNICATION

DATE: December 17, 2018

ITEM:

7. Recommendations from Staff
   - d. Motion – Receive and File Bids Received for Water Treatment Chemicals
   - e. Motion – Awarding Contract to Water Treatment Chemical Suppliers

FINANCIAL IMPACT:

The ultimate financial impact depends upon the dosage rates of applied chemicals and quantity of water produced during 2019. However, based on the bids received and estimated quantities bid upon, the Water Works is projecting to spend $553,520 on chemicals in 2019.

SUMMARY:

These actions provide for receiving and filing the bids received on December 5, 2018, for water treatment chemicals, designating the recommended bidders and awarding contracts to these bidders for the upcoming year.

Chemical Price Change Summary Report 2018 to 2019

Chemical	New Price	Old Price	Percent Change	Estimated Usage	Unit of Measure	2019 Total
Sodium Hypochlorite	$ 0.94000	$ 0.96000	-2.08%	75,000	gallon	$ 70,500.00
Soda Ash	$ 0.15691	$ 0.14865	5.56%	280,000	pounds	$ 43,934.80
Salt	$ 0.13300	$ 0.13000	2.31%	80,000	pounds	$ 10,640.00
Liquid Ferric Chloride	$ 0.35700	$ 0.33900	5.31%	40,000	pounds	$ 14,280.00
Lime	$ 181.15000	$ 166.50000	9.09%	2,100	tons	$ 380,415.00
Carbon Dioxide	$ 135.00000	$ 135.00000	0.00%	250	tons	$ 33,750.00

BACKGROUND:

We received prices from 11 companies for 6 chemicals.

Lime is typically included in the competitive bid for water treatment chemicals, however for calendar year 2019 WDMWW will be working with a selected supplier to test a higher quality product. This product should allow us to reduce our dosage rate by approximately 5.5%. Less required product translates into less chemical purchase and less lime residual being hauled away, which has become a large cost of lime softening treatment. Additionally, since changing to this product DMWW has seen a reduction in wear on their slakers and pumps as well as less waste generated from inert materials in the lime product.

RECOMMENDED ACTION BY THE BOARD OF TRUSTEES:

To concur with the recommendation from staff and receive and file the tabulation of bids received on December 5, 2018 for water treatment chemicals for 2019 and to awarding contracts to the recommended bidders, as marked on the tabulation of bids.

Prepared by: _____

Approved for Content by: _____

BID TABULATION - WATER CHEMICALS 2019

WEST DES MOINES WATER WORKS

	Sodium Hypochlorite		Liquid Ferric Chloride		Soda Ash		Carbon Dioxide		Salt	
	75,000 gal.		40,000 lbs.		280,000 lb.		250 tons		80,000 lb.	
Bidder and Address	Unit Price	Extended Price	dry weight Unit Price	Extended Price	Unit Price	Extended Price	Unit Price	Extended Price	Unit Price	Extended Price
ACCO Unlimited Corporation										
Airgas Corbonic										
Air Liquide Industrial										
BHS Marketing dba DuBois					**$0.15691**	**$43,934.80**				
Brenntag Great Lakes										
Carus Corporation										
Ciner Resources Corp										
Culligan, Inc. West Des Moines, IA									**$0.133**	**$10,640.00**
DPC Industries, Inc. Omaha, NE	$0.945	$70,875.00							$0.180	$14,400.00
Graymont Western Lime										
Harcros Chemicals Inc										
Hawkins Water Treatment Group, Inc.										
Hickman, Williams & Company										
Interstate Chemical Co. Inc.										
KA Steel Chemicals										
Kemira Water Solutions, Inc.			**$0.357**	**$14,280.00**						
Lhoist North America										
Linde LLC										
Linwood Mining & Materials										
Mississippi Lime Co. Alton, IL										
Olin Corporation										
PQ Corporation										
Poet Ethanol Products										
Praxair, Inc. Burr Ridge, IL							**$135.00**	**$33,750.00**		
Rainsoft of Des Moines									$0.135	$10,800.00
Rowell Chemical Corp	$1.250	$93,750.00								
Sterling Water Technologies										
TATA Chemicals										
Thatcher Company, Inc.					$0.15920	$44,576.00				
Univar USA, Inc					$0.15900	$44,520.00			$0.220	$17,600.00
Vertex Chemical Corporation	**$0.940**	**$70,500.00**								

Note: Entries marked by bold and highlighted type are those recommended to The Board of Trustees for purchase.

MISSISSIPPI® LIME

Discovering what's possible with calcium

LIME PERFORMANCE REPORT

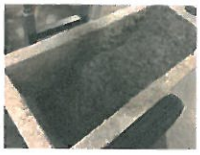
WEST DES MOINES

NOVEMBER 12TH, 2018

Mississippi Lime Company ("MLC") has developed this Lime Performance Report as a tool to uncover quicklime slaking inefficiencies, identify performance improvement and cost reduction opportunities, introduce higher performing calcium products, and provide general technical support for lime systems.

SAMPLE COLLECTION:

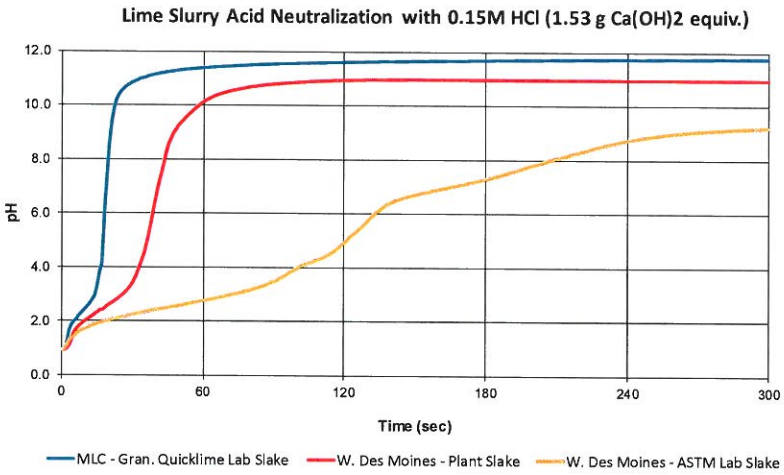
Process samples of lime feed, lime slurry, raw water, slaker grit and primary sludge were collected on 10/23/18 for lab analysis to produce a Lime Performance Report.



SLURRY REACTIVITY:

Lime slurry sample was **more reactive** to ASTM slurry created in our lab from quicklime feed collected which indicates a good slaking process.

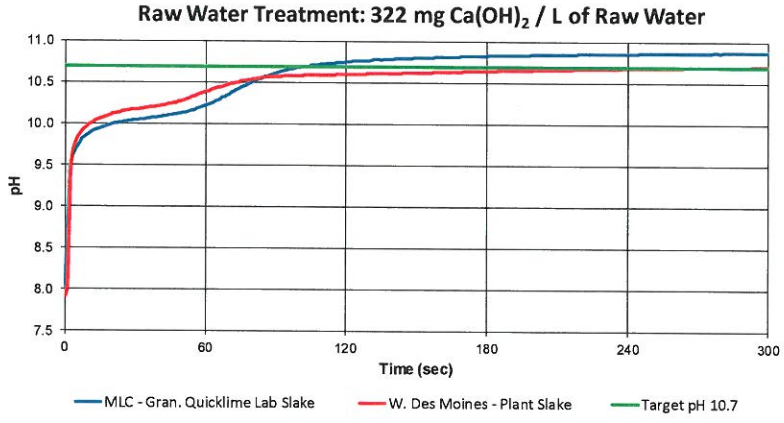
Acid neutralization testing identified **MLC's** higher performing **Granular Quicklime** to have **2.5** times faster reaction speed in lab testing. The lab slake average of the competitors material prepared under the same conditions as the MLC Granular Quicklime, failed to reach the target pH of 10.0.



WATER TREATMENT:

Plant slurry sample tested as **5.94% solids** as collected.
A **dosage of 322 mg $Ca(OH)_2$ per liter** had the neutralization capacity to reach the target pH of 10.7 using the collected raw water sample.

In lab testing, a **5.5%** dosage reduction could be made using slurry made from **MLC's** higher performing **Granular Quicklime** to achieve the same neutralization capacity.



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LIME PERFORMANCE REPORT

WEST DES MOINES (CONTINUED)

NOVEMBER 12TH, 2018

GRIT & SLUDGE ANALYSIS:

Composition analysis from grit sample collected indicates **68.6%** Portlandite (**Calcium Hydroxide**). This indicates hydrated lime that has not incorporated into the slurry thru **slaker inefficiencies**.

Sludge sample collected was observed to be majority crystalline calcium carbonate (Calcite) which supports a good primary clarifier reaction. The pH of the sample was measured at 11.01.

	Component	%
Grit	Portlandite	68.5
	Quartz low	16.5
	Calcium Carbonate	5.0
	Periclase	3.5
	Larnite	5.5
	Cristobalite	0.7
	Anhydrite	0.4

LIME FEED PURITY:

MLC's Granular Quicklime indicates **superior quality** versus competitor quicklime sample. MLC's greater CaO%, offers more functional lime per unit cost and lower +30 Mesh Residue (g) contributes to operational savings being reduced slaker wear and tear.

Competitor's higher Sulfur% level, can "retard" the slaking reaction.

	Result (wt/wt%)	Mississippi Lime (Avg.)	Competitor
Calcium & Grit	Available CaO%	94.0	90.7
	Total CaO %	97.0	96.5
	Reactivity 30 sec. (°C)	33	18
	Reactivity 180 sec. (°C)	53	39
	Total Temperature Rise (°C)	55	47
	Total Reactivity Time (sec.)	240	416
	+30 Mesh Residue (g)	1.00	11.30
Incidental Minerals	MgO %	0.75	1.92
	SiO2 %	0.70	0.87
	Fe2O3%	0.11	0.45
	Al2O3 %	0.11	0.15
	Sulfur%	0.05	0.20
	K2O %	0.13	0.04
	SrO %	0.01	0.02
	TiO2 %	0.01	0.01
	MnO ppm	23	676

To further discuss our findings from this report and learn more about our higher performing calcium products, please contact:

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