DATE: July 20, 2018  
TO:   Directors & Members  
FROM: Kevin Abernathy, General Manager

MPC Friday Market Update

<table>
<thead>
<tr>
<th>CHICAGO CHEDDAR CHEESE</th>
<th>CHICAGO AA BUTTER</th>
<th>NON-FAT DRY MILK</th>
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<tr>
<td>Blocks</td>
<td>Weekly Change</td>
<td>Week Ending</td>
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<td>Barrels</td>
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<td>Dairy Market News</td>
<td>Prior Week Ending 7/6 &amp; 7/7</td>
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Fred Douma’s price projections…

| July 20 Est: | Quota cwt. $15.59 | Overbase cwt. $13.89 | Cls. 4a cwt. $13.70 | Cls. 4b cwt. $14.09 |
| Last Week:   | Quota cwt. $15.63 | Overbase cwt. $13.93 | Cls. 4a cwt. $13.63 | Cls. 4b cwt. $14.20 |

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Market commentary

By Sarina Sharp, Daily Dairy Report, sarina@dailymilkreport.com

Milk & Dairy Markets

The sweltering heat dissipated this week and so did the cheese market. CME spot Cheddar barrels tumbled 15.25¢ to $1.27 per pound. Blocks slipped 4¢ to $1.52. The summer grilling season usually boosts barrel demand, but sales have been lackluster. Cheese plants have been running at a slower pace as high temperatures and humidity have sapped milk production over the past few weeks. Cheese inventories are high, but they’re probably not growing. Thus, nearby Class III futures lost ground this week, but deferred contracts moved higher.

CME spot dry whey moved up a quarter-cent this week, to a new all-time spot market high of 42¢. Whey inventories are tight and humidity has slowed the drying process; some manufacturers are scrambling to keep pace with orders. Despite the new 25% tariff on U.S. whey exports to China, product continues to move there. For now, parties on both sides of the
transaction are splitting the added levy. However, it remains to be seen if Chinese buyers will find alternative sources for new contracts.

CME spot butter rallied 2.5ȼ this week to $2.25. Cream is seasonally expensive and churning has slowed. Domestic demand remains solid, but export opportunities are diminishing as the U.S. discount to product from other major exporters – outside Europe – has eroded.

Spot nonfat dry milk (NDM) climbed 3ȼ this week to 78.5ȼ, the highest value since mid-June. The U.S. milk powder market has been impressively resilient in the face of worsening trade relationships and lower prices abroad. That helped Class IV futures to regain much of the ground lost last week. The August to December contracts settled 23ȼ to 30ȼ higher than last Friday.

Milk powders improved but the other products moved lower at Tuesday’s Global Dairy Trade (GDT) auction. The GDT index fell 1.8%, compounding the 5% decline at the previous event. Butterfat was unexpectedly weak; the average winning price for butter dropped 8.1%, and anhydrous milkfat fell 5.2%. Cheddar fell 3.3%. These declines were steep enough to outweigh a 0.8% increase in skim milk powder (SMP) prices and a 1.5% improvement for whole milk powder (WMP), despite the fact that milk powders account for most of the GDT volume and make up a much larger share of the trade-weighted index. The GDT index now stands at six-month lows.

This week the European Commission managed to sell just 5.3 million pounds of SMP out of its Intervention storage program, a pittance compared to the nearly 580 million pounds the government still owns. The Commission lowered its minimum selling price to €1,125 per metric ton, down 70€ from the June tender. That puts this week’s sales at the rough equivalent of 64ȼ/lb. Bids are scant as buyers seem to be in no rush to tie up more product. It’s the summer holiday lull, and they’ve had ample opportunity to stock up on milk powder at affordable values.

U.S. milk production totaled 18.3 billion pounds in June, up 1.2% from a year ago. It was unusually hot in June, with the third-highest average temperatures and second-highest average minimum temperatures on record. Nonetheless, the year-over-year gain was driven entirely by improved milk production per cow. At 9.404 million head, the dairy herd is exactly the same size as it was a year ago and on par with the previous month, according
to USDA’s assessment. But many of those cows have new homes. There are 14,000 fewer cows in California than there were a year ago, and the dairy herd was down 4,000 head in Michigan, Pennsylvania, and Wisconsin, and 5,000 head in Minnesota and Ohio. Meanwhile, dairy producers added 17,000 head in Colorado, 11,000 head in Texas, 7,000 head in Kansas, and 6,000 head in Idaho.

Once again, growth originated in the Southwest. Output was up 10.7% in Colorado, driven completely by expansions in the milk-cow herd. Production was up 7.4% in Kansas, 6.6% in Texas and 6.3% in Utah. Production was down on the coasts, with declines of 3.7% in Florida and 2.8% in Oregon and Virginia. Output dropped 1.7% year over year in Ohio, but was higher in most Midwest dairy states. In July, the heat and humidity are likely to slow year-over-year growth. In the longer run, financial pressures may result in a more sustained contraction in U.S. milk output.

**Grain Markets**
The corn and soybean crops wilted this week. Three weeks of oppressive heat and inadequate rains are finally starting to take their toll on crop conditions. The share of the corn crop in good or excellent condition dropped three percentage points last week to 72%, a still historically high rating. Much of the corn crop in the key states of Iowa, Illinois, and Nebraska remains in fine fettle. However, second-tier states, including Kansas, Michigan, and South Dakota, report much lower condition ratings. Soybean conditions declined two points, with 69% of the crop in good or excellent condition. Both crops are maturing well ahead of schedule, which suggests that this year’s silage, grain, and soybean harvests may be unusually early.

When the feed markets touched last week’s lows, the trade seemed to be pricing in record-breaking yields. Above-trend yields are certainly possible, but there are enough trouble spots to warrant higher prices and a cushion in case rains continue to disappoint. September corn settled today at $3.5525 per bushel, up 14¢. After bottoming last week, September soybeans closed at $8.5525, up more than 20¢.

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Page 3 of 6
SGMA: What is it, what’s happening and where we are headed on groundwater supply and sustainability in the Central Valley?
By Geoff Vanden Heuvel, MPC Director of Regulatory and Economic Affairs

The passage of the Sustainable Groundwater Management Act (SGMA) in 2014 set in motion a process that will forever influence and affect agriculture in California’s Central Valley. That process is well underway, and in my new position with Milk Producers Council, I am attending meetings and conferences with the intention to learn everything I can about how this is going. I thought I would share with you some initial first impressions.

First of all, SGMA requires that every square foot of California sitting over groundwater be assigned to a Groundwater Sustainability Agency (GSA). Local communities had the choice to create their own GSA’s made up of some combination of local water agencies or other local government entities, such as a city. Areas that did not voluntarily create a GSA became the responsibility of the County where they were located. Amazingly, virtually every area in California complied with this requirement and is now part of a GSA.

“Critically Overdrafted” areas of California now have until 2020 to produce a Groundwater Sustainability Plan (GSP) that addresses eliminating what the law calls “Undesirable Results”. So, what are Undesirable Results? First, the law defines Undesirable Results as the chronic lowering of groundwater levels indicating significant and unreasonable depletion. Secondly, the law mentions a reduction of groundwater storage, followed by seawater intrusion, then degraded water quality and land subsidence, and finally an undesirable result can be the depletion of surface water.

This law is complicated and given the vast differences that exist in California, not only between coastal regions and the Central Valley, but also within regions and even neighborhoods, trying to implement this law is a huge challenge.

So where are we now? In the meetings I attend, I see very serious work being done by true professionals who are doing their best to identify how much water there is. They are gathering data and plugging it into groundwater simulation models. They are figuring out what they know, what they think they know and what they do not have the data to know. Getting good information is vital to making good decisions. What we are trying to measure is below ground and not visible, and because groundwater moves and also exists in various different strata deep underground, it will take a long time to really understand the full picture with regards to the current groundwater conditions of each region.

Some regions have experienced subsidence, which is the permanent lowering of the surface of the ground due to depletion of the water under the ground. This situation can cause significant damage to the infrastructure of the community causing very real economic impacts. It seems likely to me that those subsidence areas will be the most proactive in putting together plans and rules that will address the subsidence issue.

In other areas, trying to define a minimum groundwater threshold becomes more subjective. At what point does the lowering of groundwater levels become “chronic, significant and unreasonable?” It seems to me that this is subject to interpretation and in fact the law does assign the duty to make that interpretation to the local GSA’s, who must do that in agreement with their neighbors.
Many GSA consultants are at a point where they are beginning to put up preliminary recommendations about these minimum thresholds. It is important that they do that, but it is equally important that the local GSA boards, made up of real people who will be impacted by these thresholds understand the implications, including costs, of these proposed standards. It is very important to remember that SGMA requires a plan but it does not expect or require that “sustainability” be achieved right away. Critically Overdrafted regions have until 2040 to achieve that goal and that reality should be taken into account as the GSA’s put their plans together.

In the meantime, what needs to happen? In addition to putting in place the monitoring networks that will provide much better data about what is happening underground, conservation and capturing more water has to be part of the strategy.

Most of the surface water that is easy to capture has already been spoken for and belongs to somebody. There really is only one major tranche of water in California that is still available to be put to beneficial use. It is that water that appears two or three years out of 10 when we have those very wet winters which create flood flows. Putting in place the infrastructure to capture those flows is the challenge worthy of our commitment. The spikes in the chart below show the frequency and volume of water that flows through the Central Valley in those flood years.

**Inflows into the Central Valley from local rivers and precipitation on the valley floor**

![Graph showing inflows into the Central Valley from local rivers and precipitation on the valley floor.](image)

*Source: "Replenishing Groundwater in the San Joaquin Valley" – Public Policy Institute of California*
Putting infrastructure in place to slow those flows up and disperse them broadly so they can be recharged into the aquifer is expensive and has seemed inefficient in the past because in most years it sits idly by. But here is where the State can be most helpful. While we all get frustrated by the restrictions the state and environmental laws have put in place that limit the delivery capability of the major State and Federal water projects, we should not let that frustration prevent us from coming up with projects that will capture those flood flows and percolate them into the ground and ask the State to help us pay for them. There are hundreds of millions of dollars in Proposition 3 on the November ballot to help the Central Valley do these types of projects. I believe that is just the beginning of what will be available over the next 20 years as we wrestle with SGMA.

As I have traveled through the Valley attending meetings over the past six weeks, I am incredibly impressed by the beauty and enormity of the Central Valley. The vineyards, fields and orchards look lush and green and stretch for miles upon miles. The agriculture industry that has been built here is truly amazing. I do not think our coastal neighbors have any idea about the incredible value the Central Valley brings to California, the country and the world through the amazing products that are grown here.

SGMA at its core is about allocating pain. And since SGMA does not change any of the water priority law that has existed for decades in California, that pain is not equally dispersed. We need to work together to minimize as much as possible that pain while taking every opportunity to maximize the efficient use of the water we have. Will we be up to the challenge? Time will tell, but from what I see so far, I am hopeful that we will.

*Geoff Vanden Heuvel is Director of Regulatory and Economic Affairs for Milk Producers Council. During his 39-year career as a dairy farmer in Chino in Southern California, he served on the Chino Basin Watermaster Board representing agriculture for 20 years and the Chino Basin Water Conservation Board for 28 years. Following his retirement from dairy farming in June 2018, Geoff and his wife moved to Tulare in Central California.*