Troxler Moisture Management System
Moisture in this stockpile varied from 1.2% to 4.9%

Hard to manage stockpiles depending on weather, available stock area or availability of product.
Moisture variation is like a Ghost no one notices. It sneaks in and when you're not looking …A bucket of slop or bone dry stock!!!! It shows up as an asphalt content that in itself is not so alarming.

But you will feel it Like a chill When you evaluate PWT
MMS can help
## Test series

### Intentional variation of moisture of feed stock

<table>
<thead>
<tr>
<th>TPH</th>
<th>9.5mm</th>
<th>Composote</th>
<th>MMS</th>
<th>Calculated</th>
<th>MMS vs Sample</th>
<th>calc vs Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>WET</td>
<td>3.7</td>
<td>3.3</td>
<td>3.7</td>
<td>-0.4</td>
<td>0</td>
</tr>
<tr>
<td>250</td>
<td>DAMP</td>
<td>2.5</td>
<td>2.3</td>
<td>2.6</td>
<td>-0.2</td>
<td>-0.1</td>
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<tr>
<td>250</td>
<td>DRY</td>
<td>1.6</td>
<td>1.7</td>
<td>1.7</td>
<td>0.1</td>
<td>-0.1</td>
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<tr>
<td>315</td>
<td>WET</td>
<td>3</td>
<td>2.9</td>
<td>3.34</td>
<td>-0.1</td>
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<tr>
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<td>DAMP</td>
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<td>2.6</td>
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<tr>
<td>315</td>
<td>DRY</td>
<td>2.2</td>
<td>2</td>
<td>1.78</td>
<td>-0.2</td>
<td>0.42</td>
</tr>
</tbody>
</table>
This Chart depicts differences in Lab tests compared to the MMS

Blue = Calculated from Stockpile moisture tests
Green = MMS moisture readings
Red = Samples taken from belt cuts
Automation/Monitor Controls

- The MMS can be utilized strictly as a moisture monitor or linked to the Automation.
- The automation component is pretty straightforward with addition of failsafe tolerances.
- The device is linked to the automation with tolerance limits to assure that any unforeseen malfunction cannot affect mix quality.
Automation

- The system will track moistures and use the real-time value unless it exceeds the user-set limits from calculated moisture based on stockpile testing.
- If the limits are exceeded the system reverts back to the original Moisture based on the lab testing.
- If a change is apparent the operator will contact the technician for direction. i.e. maintain calculated content until additional stockpile samples are tested.
In the Real world

- The composite moisture from stockpile tests is calculated to be 3%.
- But as the fresh stock is depleted the loader moves into old wet stock!
- Rain from the weekend left the coarse aggregates damp but with poor drainage the loader occasionally hits the bottom and takes a scoop of soup….

  - The composite moisture is now at 6%
  - Seems extreme but is not uncommon

This could easily lead to variations of up to 0.2% Asphalt content in the finished mix. !!!!