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Water Use Section
Wisconsin DNR

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Wisconsin Dells, WI
Water Use Reporting Program: Non-Metallic Mining Products

Dimension Stone
- Landscape stone
- Building stone

Aggregate
- Crushed stone
- Gravel
- Sand

Industrial Sand
- Glass
- Castings
- Proppant or “frac” sand
Water Use in Wisconsin:
2012 Withdrawals

- <100 kGal
- 100 kGal - 1,000 kGal
- 1,000 kGal - 10,000 kGal
- 10,000 kGal - 100,000 kGal
- 100,000 kGal - 1,000,000 kGal
- > 1 Billion Gallons

- Surface Water
- Groundwater

- Agricultural Irrigation
- Aquaculture
- Cranberry Production
- Golf Course Irrigation
- Industrial
- Livestock
- Misc Irrigation
- Municipal Water Supply
- Non-Municipal Public Water Supply
- Non-Metallic Mining
- Paper Manufacturing
- Power Generation
- All other uses
In 2012, total withdrawals exceeded 2.25 trillion gallons of water from over 14,000 wells, ponds, streams, rivers and lakes.

- This is roughly equal to 3 times the water in Lake Winnebago
- Enough water to cover the surface of Wisconsin in about 2” of water.

Total 2012 withdrawals were up 4.80% from 2011.

Non-metallic mining ranked 7th in total withdrawals with 13 bGal or .56% of the total withdrawal.
2012 Surface water withdrawals totaled 1.963 trillion gallons from 995 sources up 1% from 2011.

Non-metallic Mining Ranked 5\textsuperscript{th} with 10 bGal or .5% of the total surface water withdrawal.

Several sectors reported decreased withdrawals including Aquaculture (-10%) , Mining (-8%), Power (-2%), and Municipal Supply (-2%).

Increases were reported in Paper (+5%) and Cranberry Production (+122%)
Surface Water Use in Wisconsin: 2012 Withdrawals

- <100 kGal
- 100 kGal - 1,000 kGal
- 1,000 kGal - 10,000 kGal
- 10,000 kGal - 100,000 kGal
- 100,000 kGal - 1,000,000 kGal
- > 1 Billion Gallons

- Agricultural Irrigation
- Aquaculture
- Cranberry Production
- Golf Course Irrigation
- Industrial
- Livestock
- Misc Irrigation
- Municipal Water Supply
- Non-Municipal Public Water Supply
- Non-Metallic Mining
- Paper Manufacturing
- Power Generation
- All other uses
292,303,941,228 groundwater gallons from 13,000 sources in 2012, up 37% from 2011.

- Agricultural Irrigation surpassed municipal public water in 2012 due to the drought.
- Could cover the land area of Wisconsin with ¼ inch of water.
- Enough water to fill Lambeau Field over 600 times.
Water Use Reporting Program: Required Registration

One or more wells or surface water pumps capable of withdrawing at 70 gpm.
  • Annual report
  • $125 fee

Multiple wells or surface water sources that are cumulatively capable of withdrawing at 70 gpm.
  • Annual report

Temporary sources or temporary sites should be registered, but
  • Annual report only if needed
  • In rare case a fee could be needed
Water Use Reporting Program:
Water Usage for Non-Metallic Mining - Dewatering

Dewatering

• For mining activities below the water table.

• Many have discharge permits.

• Water table varies by years, so do withdrawals.
Material wash and processing

- Used to wash sand, aggregate or rock.
- Most is drained back to settling ponds and reuses.
- Dust Suppression
- Wash water might be exclusively groundwater, exclusively storm water or a combination of both.
Industrial sand wash and processing

- Used to slurry sand for easier movement.
- Sand is frequently quarried and crushed at mining site and trucked to a process center.
- Used to wash sand, aggregate or rock.
  - Much is drained back to settling ponds and reused.
  - However, sand facilities lose water to evaporation during drying.
  - Drying operations may run year long.
- Dust Suppression
Non-Metallic Mining Withdrawals: Site Locations and Counts

<table>
<thead>
<tr>
<th>Year</th>
<th>Quarry Dewatering</th>
<th>Non-Metallic Mining Processing</th>
<th>Industrial Sand Mining</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>85</td>
<td>136</td>
<td>26</td>
</tr>
<tr>
<td>2012</td>
<td>88</td>
<td>147</td>
<td>47</td>
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<tr>
<td>2013</td>
<td>92</td>
<td>126</td>
<td>44</td>
</tr>
</tbody>
</table>
Non-Metallic Mining Withdrawals:
Total Withdrawal Volume

- **2011**: 9.24 Billion Gallons/yr
  - Quarry Dewatering: 4.49
  - Non-Metallic Mining: 4.49
  - Industrial Sand Mining: 1.47

- **2012**: 7.41 Billion Gallons/yr
  - Quarry Dewatering: 3.29
  - Non-Metallic Mining: 3.29
  - Industrial Sand Mining: 1.89

- **2013**: 9.95 Billion Gallons/yr
  - Quarry Dewatering: 2.01
  - Non-Metallic Mining: 2.01
  - Industrial Sand Mining: 1.53

Legend:
- **Orange Circle**: Dewatering Water
- **Blue Circle**: Process Water (excluding frac sand)
- **Brown Circle**: Industrial Sand Processing
Non-Metallic Mining Withdrawals: Average Withdrawal Volume

<table>
<thead>
<tr>
<th>Million Gallons/yr</th>
<th>Quarry Dewatering</th>
<th>Non-Metallic Mining Processing</th>
<th>Industrial Sand Mining</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>108.73</td>
<td>33.04</td>
<td>56.72</td>
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<tr>
<td>2012</td>
<td>84.22</td>
<td>22.38</td>
<td>40.14</td>
</tr>
<tr>
<td>2013</td>
<td>108.20</td>
<td>15.94</td>
<td>34.72</td>
</tr>
</tbody>
</table>
Defined by several very large withdrawers at and several very withdrawal locations.

- Ten companies withdrew 75% of the water withdrawn by non-metallic mining operations.
- Ten facilities withdrew 46% of the water withdrawn by non-metallic mining operations.
Non-metallic mining has been and continues to be an important component of Wisconsin's industrial and transportation sector.

Non-metallic mining relies on withdrawing and using water for multiple purposes.

Non-metallic operators reported their withdrawals at a strong rate (94.3%).

Registration, conservation and reporting presents several challenges for non-metallic mining operations.
For additional questions or copies of this presentation, please contact:

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