Wisconsin Water Use
2012 Expanded Withdrawal Summary

Water supply systems in Wisconsin capable of withdrawing 100,000 gallons per day are required to register and report withdrawals. In 2012, total statewide withdrawals exceeded 2.25 trillion gallons of water from over 14,000 wells, ponds, streams, rivers and lakes. This amount is roughly equal to 3 times the volume of water in Lake Winnebago or enough water to cover the surface area of Wisconsin in about 2 inches of water. Total 2012 withdrawals were up 4.80% from 2011.

How and when water is withdrawn varies seasonally. Monthly withdrawal volumes typically vary throughout the year following temperatures and precipitation patterns. Extreme weather events in 2012 amplified monthly variation for irrigation and cranberry production.

- Summer heat drives municipal water demand and cooling water demand for power and paper production.
- Agricultural irrigation withdrawals in July and August nearly doubled from 2011 withdrawals due to drought.
- In addition to the usual flooding for fall harvest and winter frost protection, many cranberry growers needed to flood cranberry beds in the unseasonably warm March and April to prevent their crop from growing too early.

2012 Withdrawals by Use
Total Withdrawals = 2.258 Trillion Gallons

- Power Generation 73%
- Municipal Public Water 9%
- Agricultural Irrigation 6%
- Paper Manufacturing 5%
- Cranberry Production 4%
- All other uses 3%

Monthly Variation in Top 5 Withdrawals
(Billion Gallons/Month)
Each circle represents a single 2012 point of withdrawal. The size of the circle varies according to the total 2012 volume of water withdrawn from that point.
Surface water withdrawals totaled 1.963 trillion gallons from 995 sources.

- The largest volume of water withdrawn in the state (1.64 trillion gallons) was used by power production facilities. These facilities are concentrated along Lake Michigan and the Wisconsin and Mississippi Rivers.

- Many surface water withdrawals are used and discharged near their point of withdrawal. This results in little water lost from the original source relative to the size of the withdrawal.

Power plants represented the majority of withdrawals in the five top ranked counties of Milwaukee (#1), Manitowoc (#2), Kewaunee (#3), and Ozaukee (#4) and Buffalo (#5).

Surface water is key to producing some of Wisconsin’s top products:

- Paper in Brown (#8), Wood (#7), Marathon (#11) and Outagamie (#12) counties.
- Cranberry in Wood (#7), Monroe (#13), and Jackson (#14).

Surface water withdrawals increased by about 1% from 2011 to 2012.

- Several sectors decreased including Aquaculture (-10%), Mining (-8%), Power (-2%), and Municipal Supply (-2%).
- Increases were seen in Paper (+5%) and Cranberry Production (+122%).

For counties with > 1 Bgal, the bottom number represents % change from 2011.

Blank counties have no registered surface water withdrawals.

2012 Total Surface Water Withdrawals by County

Top number indicates ranking of total withdrawal (#1 = highest, #66 = lowest)

- Municipal Public Supply 5.2%
- Paper Production 5.2%
- Power Generation 83.3%
- All Other Uses 0.9%
- Mining 0.5%
- Cranberry Production 4.9%
2012 Groundwater Annual Withdrawals

Each circle represents a single 2012 point of withdrawal. The size of the circle varies according to the total 2012 volume of groundwater withdrawn from that point.

- < 10 Mgal
- 10 - 100 Mgal
- 100 - 1,000 Mgal
- > 1,000 Mgal

Mgal = Million Gallons

- Agricultural Irrigation
- Aquaculture
- Municipal Public Water
- Golf Course
- Industrial
- All other uses
Groundwater withdrawals totaled 292 billion gallons from over 13,000 high capacity wells.

Agricultural irrigation represented the largest use of groundwater in the state, up from second place in 2011. Agricultural irrigation withdrawals increased 83%: from 74 billion gallons in 2011 to 135 billion gallons in 2012.

Municipal Public Water Suppliers are typically owned by cities and deliver water for residential, commercial, institutional and industrial uses. These providers represented the second largest groundwater withdrawal at 99 billion gallons.

Groundwater withdrawals were most concentrated in urban areas not supplied by surface water and vegetable-producing regions with high irrigation demand.

- Portage (#1), Adams (#2), and Waushara (#3) comprise much of the central sands area of the state. This area is known as a globally significant vegetable and potato producing region.
- Dane (#4), Rock (#5), and Waukesha (#6) have large urban/suburban populations that rely on groundwater to meet their needs.

Groundwater withdrawals are smallest in the far north where populations are lower and groundwater is less readily accessible.
Changes from 2011

- Power production withdrawals declined in 2012 mostly due to decreased withdrawals at several large coal-fired plants.

- Withdrawals for irrigation spiked in 2012 due to the prolonged drought. Agricultural irrigation withdrawals increased 83.3% and golf course irrigation withdrawals increased 87.3% from 2011.

- Cranberry production withdrawals were up dramatically in 2012 due to the record heat in early spring, increased irrigation demand during summer and low reservoir levels in autumn.

- Municipal public water withdrawals were up 2.6%. This increase was somewhat reduced by conservation strategies and ordinances implemented by municipalities.

- Non-metallic mining withdrawals were down 4.3% mostly because lowered water tables decreased the need for quarry pit dewatering.

<table>
<thead>
<tr>
<th>Number of Sources</th>
<th>% of 2012 Sources</th>
<th>% of 2012 Total Withdrawal</th>
<th>% Change from 2011 Withdrawal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Irrigation</td>
<td>4042</td>
<td>28.5%</td>
<td>6.1%</td>
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<tr>
<td>Other</td>
<td>2924</td>
<td>20.6%</td>
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<tr>
<td>Non-Municipal Public</td>
<td>2263</td>
<td>16.0%</td>
<td>0.4%</td>
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<tr>
<td>Municipal Public</td>
<td>1729</td>
<td>12.2%</td>
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<td>Industrial</td>
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<td>Dairy Farming</td>
<td>540</td>
<td>3.8%</td>
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<td>Cranberry Production</td>
<td>506</td>
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<td>4.5%</td>
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<td>Golf Courses</td>
<td>499</td>
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<td>Mining</td>
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<td>Aquaculture</td>
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<td>Paper Manufacturing</td>
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<td>Power Generation</td>
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<td>Total</td>
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<td>4.8%</td>
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For more information regarding the Water Use Reporting program or to request more specific information on withdrawals, please visit our website or contact Water Use Program staff:

dnr.wi.gov keyword “Water Use”

DNRWaterUseRegistration@Wisconsin.gov 606.266.2299