



Regulatory Advisory
Prepared by Water Utility Committee
Michigan Section AWWA

**“Baseline Capacity” Issue in Implementation
of Recent Water Withdrawal Law**

February 21, 2007

This Regulatory Advisory was distributed to Michigan Section Utility members and Individual members associated with water utilities via e-mail on February 21, 2007, to inform Michigan utilities of recent developments in the “baseline capacity” issue of new water withdrawal laws.

On February 28, 2006, new water withdrawal requirements were enacted into law as Public Acts 33 through 37 of 2006. The impacts of these laws on public water suppliers were summarized in the April 24, 2006 Regulatory Advisory available on the Water Utility Committee page of the MI-AWWA website (www.mi-water.org). As the regulatory implementation process proceeded, a potential issue of concern was identified regarding determination of a system’s “baseline capacity”; this issue was reviewed in the May 16, 2006 Regulatory Advisory also available on the MI-AWWA website.

The determination of a system’s baseline capacity sets the point against which any future proposed increases in withdrawal will be reviewed for the need to comply with the new water withdrawal regulations. Above certain thresholds, proposed water withdrawals may be subject to environmental impact assessments, and may be required to show no adverse resource impact, consider water conservation measures, and be subject to public notice and consultation.

Michigan DEQ assembled a representative group of public water supply stakeholders to further review and discuss this issue, and has recently prepared a summary discussion of the intended process of baseline capacity determination for public water supplies (attached). The method of determination will affect different water supplies in different ways. Each utility is urged to review the attached DEQ summary discussion to determine the applicability and impact to their particular system. Should you have questions or concerns on how your utility may be affected, please contact your District Engineer or Jim Cleland of the DEQ.

For more information on this Regulatory Advisory, please contact Water Utility Committee Chair Terry Biederman or Section Chair Dave Koch. Please refer to the MI-AWWA website for contact information.

Baseline Capacity Public Water Systems

For the public water system sector, the definition of “baseline capacity” is in 1994 PA 451, Section 32701(C)(i)(A), and is as follows:

“For a community supply, the total designed withdrawal capacity for the community supply under the Safe Drinking Water Act, 1976 PA 399, MCL 325.1001 to 325.1023, on the effective date of the amendatory act that added this subparagraph.”

The effective date is February 28, 2006.

“Total designed withdrawal capacity” is not defined in the Michigan Safe Drinking Water Act. However, to make a withdrawal from either a groundwater or surface water source, it requires both a structure (well or intake) and a pumping system. The capacities of facilities downstream; treatment systems, high lift pumping, or treated water repumping are not directly related to withdrawal capacity.

MDEQ Water Bureau staff have met and discussed the various questions that have arisen in determining baseline capacity, and have recommendations to discuss. The issues and recommendations follow.

- 1. What entity does baseline capacity refer to? Should baseline capacity be specific to each watershed or aquifer, does it refer to a facility or to an entity such as a local unit of government?**

Discussion & Recommendation

On the groundwater side, we simply do not have adequate information to delineate water sources by aquifers, and substantial water exchange occurs within and between aquifers. For surface water systems, only Detroit employs multiple water treatment plants, and all five plants are using Great Lakes and connecting waters, essentially the same watershed.

The definition includes the phrase “for community systems”, which is the Type I public water system, which serves a community population, and could be public, private, or investor owned.

We recommend using the water utility as the entity. For multiple groundwater sources & pumps, we would add the permitted capacities. For Detroit, we will add the source water withdrawal facilities.

- 2. How do we establish baseline capacity when the actual withdrawal capacity is a function of two or more facilities (well capacity and pump capacity; intake capacity and pumping capacity)?**

Discussion and Recommendation

The actual withdrawal capacity is limited by the combination of facilities used to withdraw water from the source, and is established under conditions that can be variable over time. For example, pumps deliver varying capacity depending upon the suction and discharge head conditions; intake capacity and well capacity are dependent upon water levels in the surface water body or aquifer. Age, friction and appurtenances affect pipe capacity. Encrustation definitely affects well capacity. In some cases, source water is pumped and repumped for meeting maximum demands.

We examined the records of the MDEQ, and the most reliable data rating withdrawal capacity is for well pumps and pumping systems. Even when multiple pumps operate in a single pumping station, we do not normally have reliable data on the “pumping station capacity” because that has many hydraulic variables. To err on the conservative side from a water utility perspective, we recommend using “total installed pumping capacity”, although there are many examples where that number cannot be achieved because of intake, aquifer, or hydraulic limitations.

For surface water systems in Michigan, more than half have a total installed pumping capacity that exceeds the intake capacity. This results from the DEQ requirement to provide “firm pumping capacity” under the Safe Drinking Water Act, essentially rating the facility with the largest unit out of service.

3. How do we establish baseline capacity for shared facilities?

Discussion and Recommendation

Grosse Pointe Farms and Highland Park share an intake in Lake St. Clair, and Monroe and Frenchtown Township share an intake in Lake Erie. In both cases the combined pumping capacity of the two entities exceeds the intake capacity.

By using “total installed pumping capacity” for each community, we can easily establish baseline capacity, but it really has no direct relationship to the withdrawal capacity of the facilities.

4. Why not use the designed capacity of the intakes for a surface water plant?

Discussion and Recommendation

Intake capacity is often difficult to establish, because of hydraulic variables, such as:

- a. age and condition of the structures – affected by zebra mussels and other biologic accumulations
- b. insertion of chemical feed facilities
- c. emergency openings that can be used for icing or other interruptions in normal operation
- d. uncertainties in capacity associated with submerged intakes
- e. operating condition of standby intakes

While intake capacity is less than “total installed pumping capacity” for more than half the surface water systems in Michigan, the intake capacity for the other systems can often substantially exceed pumping capacity, because the intake was designed for long term needs at the time of construction.

But to make full use of long term intake capacity, communities will need to add significant new pumping capacity, and that is an appropriate time to permit a “new or increased withdrawal” under the intent of the statute.

5. How do we rate “standby equipment”?

Discussion and Recommendation

Many community systems have standby wells, both for systems supplied by groundwater and surface water. Flint has an entire standby water treatment plant of about 35 mgd capacity.

The “standby wells” are not wells that are used regularly or even intermittently; instead, they are maintained essentially for emergency use, when other wells fail, or a pipeline fails, or electric power is lost. They are operational; that is, they are connected electrically and hydraulically and monitored to assure adequate water quality, but they are not automatically or remotely activated.

We recommend including the capacity of standby wells in the determination of baseline capacity for the community owning the facilities. (If two water systems are interconnected for reliability, we do not count the total capacity of the two systems for each community’s baseline capacity).

6. What if a community who purchases water develops their own source and disconnects from the existing supplier? Was their previous purchased capacity considered baseline capacity?

Discussion and Recommendation

When the “purchasing” community adds new capacity and disconnects from the original supplier, they are not affecting the original supplier’s baseline capacity unless there is a subsequent diminishment or transfer of capacity.

Thus, we recommend that the “purchasing” community developing a new source have a baseline capacity of zero – unless there is a clear transfer of baseline capacity from the original supplier.

- 7. How do we deal with communities who switch sources, from groundwater to surface water or the reverse?**

Discussion and Recommendation

This situation is fairly common, especially switching from groundwater to purchased surface water when a regional water system extends service. Less often, a groundwater system will go to a surface water source on its own (Lexington is a recent example).

Under the first scenario (extension of regional system), the community giving up the groundwater system will forfeit its existing baseline capacity, unless the wells are maintained in standby status. If the regional system has to expand to supply service, it will be a new or increased use beyond baseline capacity.

In the second case, the new surface water source will be a replacement for the existing groundwater baseline capacity on a one-for-one basis.

If an existing water system using surface water abandons that source in favor of a new groundwater system, we should again consider this a one-for-one replacement in baseline capacity assuming we are using a water system basis, not a facility basis, for determination of baseline capacity. However, an adverse resource impact on the characteristic fish population is far more likely in this third scenario, if the surface water withdrawal was from a Great Lake or connecting water. A change from inland surface water to groundwater is likely to improve the stream base flow.

We would recommend that the water withdrawal assessment tool be used and those results be considered before a change in source is considered, if the change is from Great Lakes and connecting water to a groundwater source.

- 8. How do replacement facilities affect baseline capacity?**

Discussion and Recommendation

When a new facility is added, such as a new well to replace the capacity of a well that no longer functions or is not wanted for use because of poor water quality, the new facility is normally not a new or increased use. It may be a new or increased use if: the replacement is a higher capacity than the original facility (only the increase in capacity beyond original would be a new or increased use) or the original facility is retained in standby status.

If you have facilities that count toward baseline capacity as of February 28, 2006, any new facilities replacing capacity one-for-one are still baseline capacity. If a pump is replaced for any reason at the same capacity, the new pump is part of baseline capacity.

- 9. When permits are specifically required for new or increased uses above baseline capacity (not just a SDWA permit for an addition or modification), there are conditions that must be met, including considering water conservation measures. Do those requirements extend to wholesale customer water systems, or are they limited to the entity applying for the permit?**

Discussion

Good question. We believe that this issue may need to be studied legally and we have not addressed it yet.

- 10. Is this entire discussion consistent with Annex 2001 implementing agreements?**

Discussion

The short answer is “No”. This discussion only refers to the state withdrawal legislation passed in February, 2006. Annex 2001 implementation agreements and draft state legislation to implement the Annex have many different provisions and some of them conflict with the current state withdrawal legislation.

- 11. How will the state implement the baseline capacity determination for community water systems?**

Discussion and Recommendation

Our data are far from perfectly accurate, although we tried to use credible sources, such as engineering reports, construction permits and sanitary surveys. Since the community public water sector is not reporting baseline capacity through the Water Use Reporting system under Part 327, we propose to use our best information to calculate baseline capacity, send a notice to individual water systems with an explanation of how baseline capacity was determined, and rely on the water systems to correct errors.