

Minnesota Department of Natural Resources

500 Lafayette Road • St. Paul, MN • 55155-40



December 8, 2009

Mr. David Naftzger
Executive Director, Great Lakes-St. Lawrence River Basin Water Resources Council
Secretary, Great Lakes-St. Lawrence River Water Resources Regional Body
c/o Council of Great Lakes Governors
35 East Wacker Drive, Suite 1850
Chicago, Illinois 60601

Subject: Water Management Program Report and Water Conservation and Efficiency
Program Report Submitted on behalf of Minnesota

Dear Mr. Naftzger:

On behalf of the State of Minnesota, please find enclosed a Water Management Program Report; and, a Water Conservation and Efficiency Program Report being sent pursuant to and in satisfaction of the obligations included in Section 3.4 of the Great Lakes-St. Lawrence River Basin Water Resources Compact.

If you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink that reads "Kent Lokkesmoe". The signature is written in a cursive style with a long, sweeping underline.

Kent Lokkesmoe

Director

Minnesota Department of Natural Resources, Division of Waters
Alternate of Governor Pawlenty, Member, Great Lakes-St. Lawrence River Basin Water Resources Council

cc: Peter Johnson, Program Director, Council of Great Lakes Governors



Great Lakes- St. Lawrence River Basin Water Resources Compact

Agreement Article 300 – Compact Section 3.4

Water Management Program Review

State of Minnesota

1. Lead agency/agencies and contact person(s)

Minnesota Department of Natural Resources (DNR), Division of Waters mndnr.gov/waters
Kent Lokkesmoe, Director
Jim Japs, Assistant Director

2. Water management program implementing laws, regulations and policies.

The statutes and rules listed below are available at <http://www.leg.state.mn.us>

Primary:

[Minnesota Statutes, sections 103A.001-103A.301 Water policy](#)

[Minnesota Statutes, sections 103G. 001-103G.101 Water law, definitions, conservation](#)

[Minnesota Statutes, sections 103G.255 -103G.315 Water allocation priorities, water supply management & permit procedures](#)

[Minnesota Statutes, section 103G.801, Great Lakes – St. Lawrence River Basin Water Resources Compact](#)

[Minnesota Rules, parts 6115.0010-6115-0120 Permit, inspection and monitoring](#)

[Minnesota Rules, parts 6115.0600 – parts 6115.0600 – 6115.0810 Water appropriations and use permits and use management plans.](#)

Related:

[Minnesota Statutes, section 103B.235 Local water management plan](#)

[Minnesota Statutes, chapter 103H. Groundwater Protection](#)

[Minnesota Statutes, chapter 103I. Wells, Borings, and Underground Uses](#)

[Minnesota Statutes, section 116B.01 Environmental Rights](#)

[Minnesota Statutes, chapter 116D. Environmental Policy](#)

3. Water management program scope and thresholds.

A water appropriation permit from the DNR is required for groundwater and surface water withdrawals that exceed 10,000 gallons per day or one million gallons per year. Permit requirements apply statewide to all water use sectors. Permit holders annually report monthly water use volumes.

Describe specifically how Water Withdrawals in the State or Province are managed by:

a. Sector. All water use sectors are subject to water use permitting and annual reporting requirements. Water appropriation permits specify the authorized source of water, withdrawal rates, annual water volumes, allowable uses, and withdrawal exclusion dates. Permit applications are evaluated to determine adequacy of water supplies, natural resource impacts, impacts on other users, and water conservation practices. Permits are permissive only and subject to modification, suspension or termination for violation of permit terms or to protect public interests and natural resources. Self-supply domestic uses for less than 25 persons for general residential purposes and agricultural drainage that does not impact Public Waters are exempt from permit requirements. Permits have not been required for in-stream uses for run-of-the-river hydroelectric power production where the water is not removed from the source.

b. Water source. Permit requirements apply to “waters of the state”, which include surface and underground waters. Applications and permits identify the source of water and the Withdrawal location. Separate applications are required for each source of water (groundwater, water basin, watercourse).

c. Quantity. Permits are required for water withdrawals that exceed 10,000 gallons per day or one million gallons per year. Authorized water volumes and withdrawal rates are specified on permits. Permit holders submit an annual report of water use that includes monthly volumes.

d. Location. Water withdrawals are managed by location and water source in order to assess individual and cumulative impacts. Permits identify authorized withdrawal locations.

e. Specific exemptions as allowed in the Agreement and the Compact. Transportation and emergency use exemptions in the Agreement and Compact are exempt from permit requirements or are covered by a general permit.

4. Standard of Review and Decision.

a. Decision Making Standard for Withdrawals, Consumptive Uses. Statutes and rules cited in Item 2 define the standards for review and decisions on Water use proposals. All applications must consider alternatives, including conservation, and are evaluated for impacts to natural resources and other water users. Minnesota’s existing program and regulations meet or exceed the Standard of Review.

b. Exception Standard for Diversions. Diversions are subject to provisions in the Compact, which has been codified in Minnesota Statutes 103G.801.

5. Database of Withdrawals, Consumptive Uses and Diversions. Water appropriation permittees are required to submit an annual report of water use on paper forms (example attached) that request monthly water volumes and other information. There has been a 99.9% compliance rate with water use reporting requirements (failure to submit a report can result in permit termination). Minnesota Statutes require flow meters to measure water use, but other methods of measurement can be approved by the DNR (information attached). Permit and water use data are entered into the [State Water Use Data System](#) (SWUDS) and data are available electronically on the DNR’s web site. Consumptive use data are reported to the Great Lakes Commission using factors that estimate water losses by sector.

6. Permit applications and other program information. Copies of a permit application and permit form are attached. Additional program information is available at www.dnr.state.mn.us/waters. Minnesota Rules 6116.600 – 6115.0810 define standards for evaluating water appropriation permit requests.

7. Summary of initiatives to support an improved scientific understanding of the Waters of the Basin and impacts from Withdrawals, Consumptive Uses, and Diversions.

The framework for improved scientific understanding and sustainable management of Minnesota's water resources is centered in three program areas: mapping; monitoring; and managing. A statewide overview of these programs is attached (Minnesota DNR Programs for Water Sustainability).

There are a number of mining operations within the Basin and along the Basin boundary so much of the geology has been mapped. Ambient and permit required monitoring networks provide data on groundwater levels, surface water levels and flows, precipitation, and water use that are used to evaluate individual and cumulative impacts. Statutes and rules provide for the establishment of resource protection limits including, safe yields for groundwater, protection elevations for water basins, and protected flows for watercourses. Water supply plans and permits must address potential resource impacts and are subject to modification.

The Minnesota DNR is currently working on an initiative to merge the Division of Waters with the Division of Ecological Resources. This initiative will improve the integration of ecological services with water resource management decisions.

8. Additional information

Mining is one of the largest industries within the Basin and requires large volumes of water. Some of these operations are located along the watershed divide and watershed modifications have been occurring for over one hundred years. The hydrology along the Basin boundary has been and will continue to be altered by mining activities. DNR has issued permits to mine which require the post mining hydrology to be restored as much as practicable. The approved boundaries and water flow will not be effective until after mining stops and gravity drainage resumes, which could be 50 to 70 years from now or longer.

Attachments

Related legal citations
Measuring Water Use & Flow Meter Requirements
Annual Water Use Report Form (public water supply)
[Permit Application non-irrigation](#)
Permit Form (surface water source, non-irrigation)
Minnesota DNR Programs for Water Sustainability

December 8, 2009

Water Management Program Related Legal Citations

Minnesota Statutes, section 103B.235 Local water management plan

Minnesota's Board of Water and Soil Resources provides guidance, plan review, and financial assistance for local water management plan development. These plans link many land-use decisions with local goals for surface and groundwater protection and management. These are the key concepts of local water management programs:

- Make local water management a high priority;
- Build local expertise and management capacity;
- Identify future problems and prevent them;
- Engage citizens and community leaders;
- Lead responsibility is at the local level;
- Foster state and local partnerships.

Minnesota Statutes, chapter 103H. Groundwater Protection

It is the goal of the state that groundwater be maintained in its natural condition, free from any degradation caused by human activities. Under this statute, each state agency that has a program affecting activities that may cause or contribute to groundwater pollution is to identify and develop best management practices to ensure that the program is consistent with and is effective in achieving this goal. For those activities which may cause or contribute to pollution of groundwater, but are not directly regulated by the state, best management practices are to be promoted through education, support programs, incentives, and other mechanisms.

Minnesota Statutes, chapter 103I. Wells, Borings, and Underground Uses

The Minnesota Department of Health protects both public health and groundwater by assuring the proper construction of new wells and borings, and the proper sealing of unused wells and borings. Wells and borings used for drinking water, irrigation, industry, groundwater monitoring, heat pumps, hydraulic elevators, and other purposes must be properly constructed, maintained, and sealed when removed from service, to protect both public health and groundwater resources.

The MN Department of Health:

- Establishes standards for construction and sealing of wells and borings.
- Licenses contractors who construct, repair, and seal wells and borings.
- Administers permits and notifications to construct and seal wells and borings.
- Inspects the construction of new wells and borings, and the sealing of old wells and borings.
- Follows up with property owners after property transfer to seal unused wells.
- Maintains records on wells and borings.
- Provides information, training, and technical assistance to contractors, other professionals, and the public.
- Responds to well and well water quality problems caused by groundwater contamination events and natural disasters such as floods.

Minnesota Statutes, section 116B.01 Environmental Rights

Minnesota declares that each person is entitled by right to the protection, preservation, and enhancement of air, water, land, and other natural resources located within the state and that each person has the responsibility to contribute to the protection, preservation, and enhancement of these. Minnesota also declares its policy to create and maintain within the state conditions under which human beings and nature can exist in productive harmony in order that present and future generations may enjoy clean air and water, productive land, and other natural resources with which this state has been endowed. This statute provides a procedure for pursuing a civil remedy to protect air, water, land and other natural resources located within the state from pollution, impairment, or destruction.

Minnesota Statutes, chapter 116D. Environmental Policy

The purposes of this chapter are to declare a state policy that will encourage productive and enjoyable harmony between human beings and their environment; to promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of human beings; and to enrich the understanding of the ecological systems and natural resources important to the state and to the nation.

Minnesota state agencies are directed to:

- Use a systematic, interdisciplinary approach to ensure the integrated use of the natural and social sciences and the environmental arts in planning and in decision making which may have an impact on the environment.
- Identify and develop methods and procedures to ensure that environmental amenities and values, whether quantified or not, will be given at least equal consideration with economic and technical considerations in decision making.
- Study, develop, and describe appropriate alternatives to recommended courses of action for any proposal which involves unresolved conflicts concerning alternative uses of available resources.
- Make available to federal and state government agencies, counties, municipalities, institutions and individuals, information useful in restoring, maintaining, and enhancing the quality of the environment, and in meeting the policies of the state set forth throughout the Environmental Policy Act.
- Initiate the gathering and utilization of ecological information in the planning and development of resource oriented projects.

Measuring Water Use & Flow Meter Requirements

Flow Meter Requirements

Minnesota Statutes § 103G.281, Subdivision 2, requires all installations for appropriating water to be equipped with a flow meter to measure the quantity of water appropriated within the degree of accuracy required by rule (10%). The commissioner may approve alternate methods of measurement based on the quantity of water used, the method of appropriating or using water and any other information supplied by an applicant.

Why require Flow Meters ?

The law is aimed at improving the accuracy of water use reporting and has many benefits. Careful monitoring of water withdrawals can be used to provide valuable information for management of the resource, detect well and pump problems, improve irrigation efficiency, and determine pumping plant efficiency. As a management tool, accurate flow monitoring can help to conserve both energy and water resources. Accurate data is necessary to evaluate the capability of the resource to sustain water withdrawals and is also important for investigation of well interference complaints.

Does everyone need a flow meter ?

All new permitted installations will be required to have flow meters unless prior DNR approval has been given for an alternate method. Existing systems may be allowed to use an approved alternate method. Depending upon the type of system, water use and quantity of water used, the commissioner may approve alternate methods for measuring water use. Requests for approval of alternate methods must be submitted in writing to DNR Waters. Proper record keeping is required for all approved methods of determining water use.

When is a flow meter required ?

Flow meters are required when alternate methods cannot provide an accurate measurement of water use. Flow meters will be required where the following circumstances exist:

1. Systems with widely fluctuating discharge rates or when variable speed pumps are used.
2. Systems with alternating zone coverage, such as golf course irrigation systems.
3. Instances where the permit holder has a history of providing inaccurate pumping reports or has failed to submit water use fees and reports.
4. Situations where the adequacy of the resource is a concern or there is a history of well interference problems.

What methods are approved ?

The following methods are approved for measuring water use:

1. Flow meters with a totalizer.
2. Flow rate meters used with timing devices. † ‡
3. Timing devices (hour meters and electric meters). † ‡
4. Vehicle gallon capacities (i.e. water trucks). †

† Daily records of water use and time pumped must be kept for these methods.

‡ Methods 2 and 3 are required to have a constant pumping rate.

What if I am using a gravity flow system ?

Special instructions regarding gravity flow operations are available by calling DNR Waters and requesting the "Measuring Appropriations from Gravity Flow Installations" information sheet.

Which methods are not approved ?

The following methods are not approved for measuring water use:

1. Rain gauges or other methods using application rates, such as irrigation systems that are set to apply a certain amount of water per acre or pass.
2. Buckets used to measure discharge rates.
3. Fuel consumption by gasoline or diesel engines.
4. Estimates using a set volume of water per person or animal.

How do I get my method approved ?

Each year permittees are required to sign an affidavit of compliance on the water use report indicating compliance with the law requiring a flow meter or an approved measuring device. The affidavit of compliance and the annual report of water use are due by February 15 of each year.

Permittees using a method of measurement that has not been approved must submit a written request for approval of an alternate method. Requests should include a detailed description of the proposed method (i.e. diagrams, calculations). Requests for approval of an alternate method should be sent to DNR Waters, Permits Unit, 500 Lafayette Road, St. Paul, MN 55155-4032. Only methods that measure water use within 10 percent accuracy will be considered for approval. Records of water use must be kept for all methods of water use.

Failure to have an approved method is a violation of Minnesota Statutes and permit conditions and is punishable as a misdemeanor with fines up to \$700 and/or 90 days in jail.

General

To obtain information about the purchase and/or installation of a flow meter, contact a licensed well driller, irrigation equipment dealer or plumbing supply company.

(continued on next page)

Minnesota DNR Waters

651-259-5700

This information is available in an alternative format upon request.

Calculating Monthly Water Use

To calculate monthly water use from:

A. **Flow Meter:** Subtract the reading at the beginning of the month from the reading at the end of the month. If the meter is in cubic feet, multiply the monthly use by 7.48 to convert the usage into gallons.

B. **Timing Device:** Multiply the hours pumped for the month by the pump rate (in gallons per minute, gpm) times 60 (minutes). [Example: 150 hrs x 800 gpm x 60 min/hr = 7,200,000 gallons].

Hourly timing device options:

1. An hourly time clock connected directly to irrigation pumping plant system.
2. **Kilowatt Hours:** Monthly hours of pumping determined by dividing monthly electric usage by electric meter's monthly power demand rate (Kw). [Example: 3000 KWh of electricity was used in the month of June and the electric meter recorded a peak demand for the month of 25 Kw, then the total hours pumped is found by dividing 3000 Kwh by 25 Kw, which yields 120 hours pumped for the month. To find water use take 120 hrs x 300 gpm x 60 min/hr = 2,160,000 gallons].

* Approved Alternatives for Estimating Water Pumping Rate from Agricultural Irrigation Systems

The following alternate methods are approved by the Department for agricultural irrigation systems:

- Pumping flow rate test.
- Center pivot/linear system's manufacturers nozzle chart.
- for a center pivot with a corner swing unit, refer to the following section.
- Traveling gun nozzle chart.
- Lateral line irrigation systems nozzle chart.

- _____ gph per 100' of trickle tube* _____ feet/100 = _____ gpm
- Open discharge pump's manufacture curve.

ESTIMATING DISCHARGE OF A CENTER PIVOT WITH CORNER UNIT

A good average discharge flow rate estimate for a center pivot with a corner arm can be determined by taking the average of the discharge rate when the corner arm is fully extended and fully retracted. The water discharge from a center pivot with a corner swing arm varies depending on the position of the swing arm, usage of flow control/regulators, and the slope of the pump performance curve.

STEPS TO ESTIMATE GPM FOR A TRAVELING GUN

1. Determine nozzle size to nearest 1/100th of an inch and nozzle type (bore or ring). [ex: 1-1/4" = 1.25 inches taper & bore nozzle].
 2. Determine average operating pressure at the base of the sprinkler. If pressure varies between first and last travel runs, take the average between the first and last runs: [ex: 1st run = 95 psi, last run = 85 psi, average = (95 + 85)/2 = 90 psi].
 3. Select the appropriate discharge table (bore or ring nozzle) listed below and find the estimated gpm for your nozzle size and average operating pressure or use gun manufacturer's published discharge table.
- If your nozzle size or operating pressure values follow between the table numbers, make an interpolation between the smaller and larger numbers to get a more accurate estimate of flow: [ex: have 1.25" bore nozzle @ 90 psi; table gives at 90 psi 405 gpm @ 1.2" and 545 @ 1.4", then to estimate the gpm for 1.25" nozzle calculate as follows:

$$\begin{aligned} \text{gpm} &= 405 \text{ gpm} + [(1.25" - 1.2") / (1.4" - 1.2")] * (545 \\ &\quad \text{gpm} - 405 \text{ gpm}) \\ &= 405 + (0.05/0.20) * 140 \\ &= 405 + 0.25 * 140 \\ &= 405 + 35 = 440 \text{ gpm} \end{aligned}$$

Typical Discharges for Single Large Nozzle Sprinkler Guns

Sprinkler Pressure (psi)	Straight or taper bore nozzle sizes (inches)				
	0.8	1.0	1.2	1.4	1.6
60	145	225	330	445	585
70	155	245	355	480	630
80	165	260	380	515	675
90	175	275	405	545	715
100	185	290	425	575	755
110	195	305	445	605	790
120	205	320	465	630	825
	Ring Nozzle Sizes (inches)				
	0.9	1.1	1.3	1.5	1.7
(psi)	Sprinkler discharge in gpm				
60	110	185	275	385	510
70	120	200	295	410	550
80	130	215	310	435	585
90	135	225	325	460	620
100	140	240	340	485	655
110	150	250	350	510	690
120	155	260	360	530	720

Table Sources: Nelson Irrigation Corp. - sprinkler charts. Rain Bird, Agri Products Division - sprinkler charts. SCS National Sprinkler Irrigation Book - Chapter 15.

*Prepared by: Jerry Wright, Extension Agricultural Engineer, University of Minnesota, 1990.

Equal opportunity to participate in and benefit from programs of the Minnesota Department of Natural Resources is available to all individuals regardless of race, color, national origin, sex, sexual orientation, marital status, status with regard to public assistance, age or disability. Discrimination inquiries should be sent to: MN/DNR, 500 Lafayette Road, St. Paul, MN 55155-4031, or the Equal Opportunity Office, Department of the Interior, Washington, D.C. 20240.

The DNR Information Center phone numbers:

Twin Cities: (651)296-6157
 MN Toll Free: 1-888-646-6367 (or 888-MINNDNR)
 Telecommunication Device for the Deaf: (651)296-5484
 1-800-657-3929 MN Toll Free

**2008 MN DNR - Annual Report of Water Use
Fee Calculation Worksheet**

Permit: **1979-2007** Permitted Volume (MG/Y): **80.0**
Use: **Municipal Waterworks**

Permitted Installations: **3**

Please correct address if needed:

Phone: _____

1. Enter the total volume of water from all installations of this permit. _____ gallons
2. Divide line 1 by one million, round to the nearest decimal place. _____ million gallons
3. If the amount on line 2 is less than 50 million gallons, skip to line 5.
If 50 million gallons or greater, enter the **Fee Rate** from the table. \$ _____ per million gallons

Volume Pumped (from line 2)		Fee
Less than 50 million gallons		Minimum fee \$140
		Fee Rate
50 to 100	million gallons	\$3.50
100 to 150	million gallons	\$4.00 per
150 to 200	million gallons	\$4.50 million
200 to 250	million gallons	\$5.00 gallons
250 to 300	million gallons	\$5.50
300 to 350	million gallons	\$6.00
350 to 400	million gallons	\$6.50
400 to 450	million gallons	\$7.00
450 to 500	million gallons	\$7.50
over 500	million gallons	\$8.00

Maximum Fee	
Classification	Fee
entity with 1 to 3 permits	\$50,000
entity with 4 to 5 permits	\$75,000
entity with more than 5 permits	\$250,000
city of the first class	\$250,000

4. Multiply line 2 by line 3 (when volume is 50 MG or greater). \$ _____
5. Fee Determination \$ _____
 - a) If the amount on line 2 is less than 50 million gallons, enter the minimum permit fee of \$140.
 - b) If the amount on line 4 is greater than the maximum fee, enter the applicable maximum fee.
 - c) Otherwise, enter the amount from line 4.
6. Enter the Summer Surcharge fee in whole dollars. \$ _____
7. **Add lines 5 and 6.** Return this fee with the water use reports and any additional information required. \$ _____

Make checks payable to: "MN DNR Waters"
Mail forms and fees to: Minnesota DNR - OMB
500 Lafayette Rd Box 10
St Paul MN 55155

Check Amt \$
Check #

**2008 MN DNR - Annual Report of Water Use
Summer Surcharge Worksheet**

A surcharge of \$20 per million gallons will be applied to the volume of water used in each of the months of June, July, and August that exceeds the volume of water used in January. The summer surcharge applies to community water supplies, golf course irrigation and landscape irrigation. This surcharge is in addition to the water use fee based on the yearly total volume.

For the months listed, total the individual installation volumes for the month in gallons. If the surcharge volume is negative, report zero for that month. Subtract the January total from each of the summer monthly values.

June Total - January Total = June Surcharge Volume

July Total - January Total = July Surcharge Volume

August Total - January Total = August Surcharge Volume

Total Surcharge Volume
(Sum of monthly surcharge volumes)

Total Surcharge

divide by 1 million to show in millions of gallons _____ x \$20 = \$ _____

The fee applies when the summer surcharge volume is at least 0.1 million gallons on the last line. Report this fee on line 6 of the Fee Calculation Worksheet. Round down to the nearest whole dollar.

2008 MN DNR - Annual Report of Water Use
Installation Worksheet

Permit: 1979-2007 Installation: 1

Permittee: CITY

Use: **Municipal Waterworks**

Well Unique Number: **241445**

Source Type: **Ground Water**

Twp: **48** Rng: **16** Sec: **7** Qtr: **BBAC**

Source Name: **QWTA**

Carlton County

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed 2. Emergency Source
 - 3. Water received from an alternate source, specify:
 - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008. Pumping Rate (GPM): _____

January	_____	July	_____
February	_____	August	_____
March	_____	September	_____
April	_____	October	_____
May	_____	November	_____
June	_____	December	_____
		Total	<div style="border: 1px solid black; width: 150px; height: 20px;"></div>

C. Measurement method (indicate one)

- 1. Flow Meter
- 2. Flow Rate Meter with: Totalizer or Hour meter
- 3. Timing Device with: Hour Meter or Electric meter
- 4. Alternate method: If not already approved, enclose request for approval
- 5. Estimated: An approved measuring device or method is required (describe below)

Signature _____

Date _____

Phone _____

**2008 MN DNR - Annual Report of Water Use
Installation Worksheet**

Permit: **1979-2007** Installation: **3**

Permittee: **CITY**

Use: **Municipal Waterworks**

Well Unique Number: **111700**

Source Type: **Ground Water**

Twp: **48** Rng: **16** Sec: **7** Qtr: **BBA**

Source Name: **QBAA**

Carlton County

A. If no water was withdrawn this year, indicate the reason.

- 1. Well Sealed
- 2. Emergency Source
- 3. Water received from an alternate source, specify:
- 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008. Pumping Rate (GPM): _____

January	_____	July	_____
February	_____	August	_____
March	_____	September	_____
April	_____	October	_____
May	_____	November	_____
June	_____	December	_____
		Total	<div style="border: 1px solid black; width: 100px; height: 20px;"></div>

C. Measurement method (indicate one)

- 1. Flow Meter
- 2. Flow Rate Meter with: _____ Totalizer or _____ Hour meter
- 3. Timing Device with: _____ Hour Meter or _____ Electric meter
- 4. Alternate method: If not already approved, enclose request for approval
- 5. Estimated: An approved measuring device or method is required (describe below)

Signature _____

Date _____

Phone _____

**2008 MN DNR - Annual Report of Water Use
Installation Worksheet**

Permit: **1979-2007** Installation: **4**

Permittee: **CITY**

Use: **Municipal Waterworks**

Well Unique Number: **563088**

Source Type: **Ground Water**

Twp: **48** Rng: **16** Sec: **7** Qtr: **BCA**

Source Name: **QWTA**

Carlton County

- A. If no water was withdrawn this year, indicate the reason.
- 1. Well Sealed 2. Emergency Source
 - 3. Water received from an alternate source, specify:
 - 4. Other, specify:

B. List the number of **gallons** withdrawn in each month of 2008. Pumping Rate (GPM): _____

January	_____	July	_____
February	_____	August	_____
March	_____	September	_____
April	_____	October	_____
May	_____	November	_____
June	_____	December	_____
		Total	<div style="border: 1px solid black; width: 100px; height: 20px;"></div>

- C. Measurement method (indicate one)
- 1. Flow Meter
 - 2. Flow Rate Meter with: _____ Totalizer or _____ Hour meter
 - 3. Timing Device with: _____ Hour Meter or _____ Electric meter
 - 4. Alternate method: If not already approved, enclose request for approval.
 - 5. Estimated: An approved measuring device or method is required (describe below)

Signature _____	Date _____	Phone _____
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**2008 MN DNR - Annual Report of Water Use
Permit Data Verification Form**

1979-2007
2008

Enter the number from line 2 of the Fee Calculation Worksheet: _____ million gallons

If this number is greater than **80.0** million gallons and you expect to exceed this volume in the future, an amendment is required.

If no permit changes are required, you do not need to submit this page.

1. Amendment: To change the number of permitted installations, pumping rate or permitted volume, enclose the applicable items listed below with your report and water use fees:

- a. A written amendment request describing changes needed to the existing permit. Please verify all information printed on the report forms.
- b. A statement justifying why additional water or new wells are needed.
- c. Requests for an increase in the authorized volume of water must be in accordance with your water supply plan and include documentation to justify the volume of water requested.
- d. Requests for new wells must include a copy of the water well record, water level/test pumping data, the proposed pumping rate, and a map showing the locations of all wells.
- e. A copy of the current rate structure and a statement describing public education and water conservation programs that are currently implemented to reduce demands. Please note: Public water suppliers serving more than 1000 people must adopt a conservation rate structure before an increase in authorized volume can be approved. See: www.mndnr.gov/waters/watermgmt_section/appropriations/conservation.html

2. Installation Removal: If you need an installation removed with no other changes to the permit, please explain below. No fee is required for the removal of an installation. Provide a copy of the well sealing record.

3. Transfer to new owner (for private systems) include the name, address, and phone of the new property owner. Proof of ownership is required from the new owner.

Signature _____

Date _____

Phone _____

If an amendment or transfer is required, a \$150 processing fee will be invoiced separately.

Fee Exemptions based on Minnesota Rules 6115.0120 and Minnesota Statutes 103G.271

1. A change in mailing address or authorized agent when land ownership has not changed
2. A change in pump location on surface water sources for the same operation
3. A replacement well completed at a similar depth in the same aquifer
4. A decrease in the permitted pumping rate, amount of water authorized, or irrigated acreage
5. A federal governmental agency or state agency as defined in statute 16B.01, subd. 2

**2008 MN DNR - Annual Report of Water Use
Public Water Supply Inventory**

Public water suppliers that serve more than 1,000 people must complete this form. Smaller communities are encouraged to complete this form and maintain water use data by customer categories. Please provide your own definitions if you maintain records of customer categories that are different than the given definitions.

Permittee: CITY Permit: 1979-2007

1. a) Population served by your system: _____

b) Source of population data:
1. US Census 2. Local Census 3. Other (specify) _____

2. **Residential:** Enter the information on water used for normal residential purposes such as: drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, watering lawns and gardens here:

Gallons Sold	# Connections	# Metered Connections
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3. **Commercial:** Enter the information on water used for motels, hotels, restaurants, office buildings, commercial facilities, and institutions both civilian and military here:

Gallons Sold	# Connections	# Metered Connections
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4. **Industrial:** Enter the information on water used for thermoelectric power (electric utility generation) and other industrial uses such as: steel, chemical and allied products, paper and allied products, mining, and petroleum refining here:

Gallons Sold	# Connections	# Metered Connections
--------------	---------------	-----------------------

5. **Agricultural:** Enter the information on water used for agricultural purposes here:

Gallons sold	# Connections	# Metered Connections
--------------	---------------	-----------------------

6. **Other:** Enter the information on water used for categories not listed above here:

Gallons Sold	# Connections	# Metered Connections
--------------	---------------	-----------------------

Specify other uses:

7. Totals:	Total Gallons Sold	Total Reported Withdrawals (Gallons)
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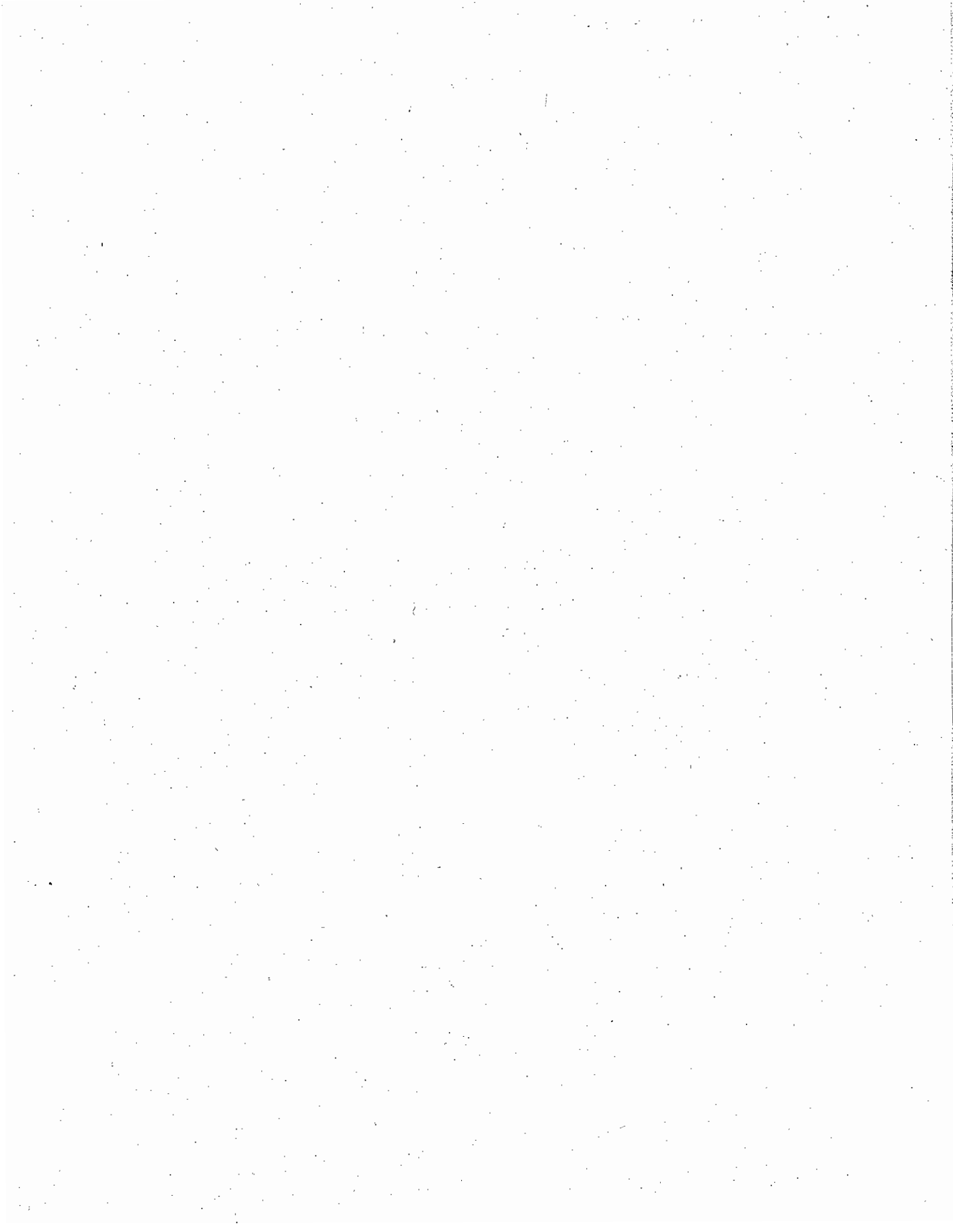
8. **2008** Maximum day volume _____ gallons Month/Day _____

9. If you maintain water level information on production or observation wells, please send water level data to the Department. A computer spreadsheet is available for recording/reporting the information. Contact the Ground Water Data System Coordinator at: gwlevelcoordinator@dnr.state.mn.us

10. Indicate the type of rate structure your city uses (attach a copy of the water rate schedule)

- 1. Uniform
- 2. Flat
- 3. Declining Block
- 4. Increasing Block
- 5. Seasonal Rate
- 6. Individualized Goal Rate
- 7. Excess Use Rate
- 8. Time of Day Rate
- 9. Other _____

Signature _____ Date _____ Phone _____





A-02623-06
(Rev. 3/06)

Minnesota
DNR Waters

Permit Application for Appropriation of Waters of the State NON-IRRIGATION

WARNING: ALL INFORMATION AND SUPPORTING DOCUMENTS SUBMITTED AS PART OF THIS APPLICATION BECOME PUBLIC INFORMATION. Omission of any data requested will delay the processing of your application and may result in its denial.

WHO APPLIES: Any individual, agency, corporation, or entity appropriating in excess of 10,000 gallons/day and/or 1 million gallons/year must obtain a Water Appropriation Permit from the Department of Natural Resources as prescribed by Minnesota Statutes, Chapter 103G and Minnesota Rules 6115.0600-6115.0810.

PROCEEDING WITHOUT A PERMIT. Any appropriation in excess of the above stated amounts without a permit constitutes a misdemeanor.
Note: Other federal, state, or local permits or approvals may also be required which are the responsibility of the applicant to obtain.

Application Instructions

Each number below corresponds to the appropriate section on the application form. Read ALL instructions carefully before filling out the application. Please type or print clearly.

APPLICANT

1-6. Fill in as directed.

PROJECT INFORMATION

7. **PURPOSE:** Mark the box that best describes your project and provide a written explanation of what the water will be used for. Attach a letter of explanation if there is not enough space on the application to completely describe the purpose of the project and how the water is used.

Note: Temporary appropriations are one-time projects that do not continue from year to year. Temporary permits are issued for appropriations with durations of up to 12 months. Time extensions may be requested, but the total length of time the permit remains in force cannot exceed two years.

8. **SOURCE OF WATER:** Mark only one box.

Note: Submit one application for each source of water or system. For example, several wells in the same aquifer manifolded into one system constitute one source; however, a stream and a gravel pit are two sources of water and would require separate applications. (Contact a DNR Waters office if you are unsure whether your project would require one or more applications).

a. **WELL** - Submit 1) a copy of the official **Water Well Record**, 2) test hole logs and 3) pumping test data, all of which are available from the driller.

Note: Applications for dewatering projects can be submitted before the wells are constructed. Information on the estimated diameter, depth and location of all dewatering wells must be submitted with the application. Water Well Records must be submitted upon completion of well construction. When Water Well Records are not required by Minnesota Rules relating to wells and borings, then a summary of the actual depth, diameter, static water level and location of each well must be submitted.

b. **MANIFOLD WELLS** - Indicate the number of wells to be manifolded into one system. Submit the SAME information requested in 8.a. for EACH well to be used.

Note: If your well(s) is located in an aquifer for which hydrologic data are limited or unavailable, you may request to submit data regarding area wells.

c. **STREAM, DITCH, or RIVER** - Identify it and submit a **contingency plan** describing the alternatives you would utilize if the appropriation is restricted because of low water conditions. If no alternative water supply is available, you must submit a written statement agreeing to withstand the results of no appropriation.

Note: Only temporary appropriations from designated trout streams may be approved.

d. **WETLAND, LAKE or IMPOUNDMENT** - Identify it and submit the following:

1) A contingency plan (see 8.c.).

2) For basins less than 500 acres in size you must:

a) Notify all riparian landowners and submit a list of those landowners.

b) Obtain a signed statement from as many of those riparian landowners as possible which states their support of the proposed appropriation.

c) Provide an accounting of the number of signatures of riparian owners you are unable to obtain.

e. **OTHER** - Gravel pits, farm ponds, dug pits, etc. Submit information on:

1) Physical dimensions (length-width-depth)

2) Depth to water from land surface.

Note: Any proposed alteration of the beds or banks of the above mentioned water basins or streams may require a public waters permit from this Department. This may also include the construction of a pit in a wetland area. Contact a DNR Waters office for details.

9. POINT(S) OF TAKING/PUMPING SITE(S): Indicate the location of your well(s) or pumping site by completing a.-e. Indicate this location to the nearest 10-acre tract by completing a. (ex. NW1/4 of NE 1/4 of SE 1/4). If you plan to install multiple wells or pumping sites, attach a letter of explanation including the legal description of each well/pump site, its pumping rate and method of measurement.

10. MEANS OF TAKING AND RATE: If you mark "d", specify the method to be used and the rate of taking (in gallons per minute or cubic feet per second). If multiple wells or pump sites are to be used, attach a letter of explanation (see #9).

11. METHOD OF MEASUREMENT: Fill in as appropriate.

Note: Flow meters are required by Minnesota Statutes 103G.281, Subdivision 2, for measuring the quantity of water appropriated within the degree of accuracy required by rule (10%). The DNR can approve other methods of measurement. Timing devices, including hour meters and electric meters, are approved devices if there is a constant rate of appropriation. To obtain approval for other methods of measurement, applicants must submit a written request with the application that includes a description of the proposed method.

Also of Note: All permit holders are required to measure and keep monthly and yearly records of the quantity of water used or appropriated.

12. MEANS OF CONVEYANCE: Fill in as appropriate.

13. LEGAL DESCRIPTION: Describe the property that will be affected by your project (example: T101N, R14W, Section 5, NW1/4 and N1/2 SW1/4). **If property other than what you own will be affected, you must attach a copy of the land agreement** which includes a) the legal description of the property, b) the termination date of the agreement, and c) the signature of all parties.

14. MONTHS OF APPROPRIATION: Fill in as appropriate.

15. SCHEDULE OF APPROPRIATION: Mark only one box to indicate your schedule. For temporary projects, the appropriate year(s) should be included with the beginning/ending dates.

16. TOTAL ANNUAL USE: (In million of gallons per year).

Note: Appropriation in excess of 2 million gallons/day or 30 million gallons/month requires the preparation of an Environmental Assessment Worksheet. Appropriations that exceed these limits may also require legislative approval (See Minnesota Statutes 103G.265, Subdivision 3, for exemptions).

17-19. Complete if applicable. In Question 17, indicate the quantity of water to be discharged.

20. ADDITIONAL REQUIREMENTS: Submit the following as part of your application. All applications must include:

- a. Map or air photo showing the project site.
- b. Describe alternative sources of water and methods, including conservation practices that were considered and why the proposed alternative was selected.
- c. Additional documents, letters, or statements required.

21. APPLICATION FEE: A minimum application fee of \$150 is required for each permit application. An application fee of \$300 is required for after-the-fact permit applications. Water use reporting and fees for years in which water appropriations occurred without a permit will also apply. **Please do not submit fees with the permit application, you will be billed separately.** Permits cannot be issued until all fees have been paid.

MAILING: Submit the following to the appropriate DNR Area office (see map on back page for addresses):

- 1) application (keep a copy for your records).
- 2) supporting documents.
- 3) **do not send application fee with the application. You will be billed separately.**

Make sure that you furnish all information that is requested. Forms that are incorrectly filled out or lack requested information will cause a delay in your application.

LOCAL REVIEW: Minnesota Statutes allow local units of government 30 days to review your project and submit comments to the DNR.

A copy of your application will be submitted by the DNR to:

- 1) local soil & water conservation district
- 2) watershed district
- 3) city

ADDITIONAL DATA: You may be required to submit additional information regarding your project. You will be notified if this information is required.

Questions

If you have any questions on the procedure for completing the application, please contact the DNR Area office serving you. The address and telephone number of each DNR office can be found on the back side of the application form.



A-02623-04
(Rev. 3/06)

Minnesota
DNR Waters

Permit Application for Appropriation of Waters of the State NON-IRRIGATION

OFFICE USE ONLY	P.A. No. _____	Date(s) Served _____
	<input type="checkbox"/> SWCD _____	
	<input type="checkbox"/> WSD _____	
	<input type="checkbox"/> CITY _____	

NOTICE OF WARNING: All information provided on this form is considered to be public information in accordance with the Minnesota Data Privacy Act (M.S. 15.1611 to 15.1698).

▶ SEE INSTRUCTIONS...TYPE OR PRINT CLEARLY

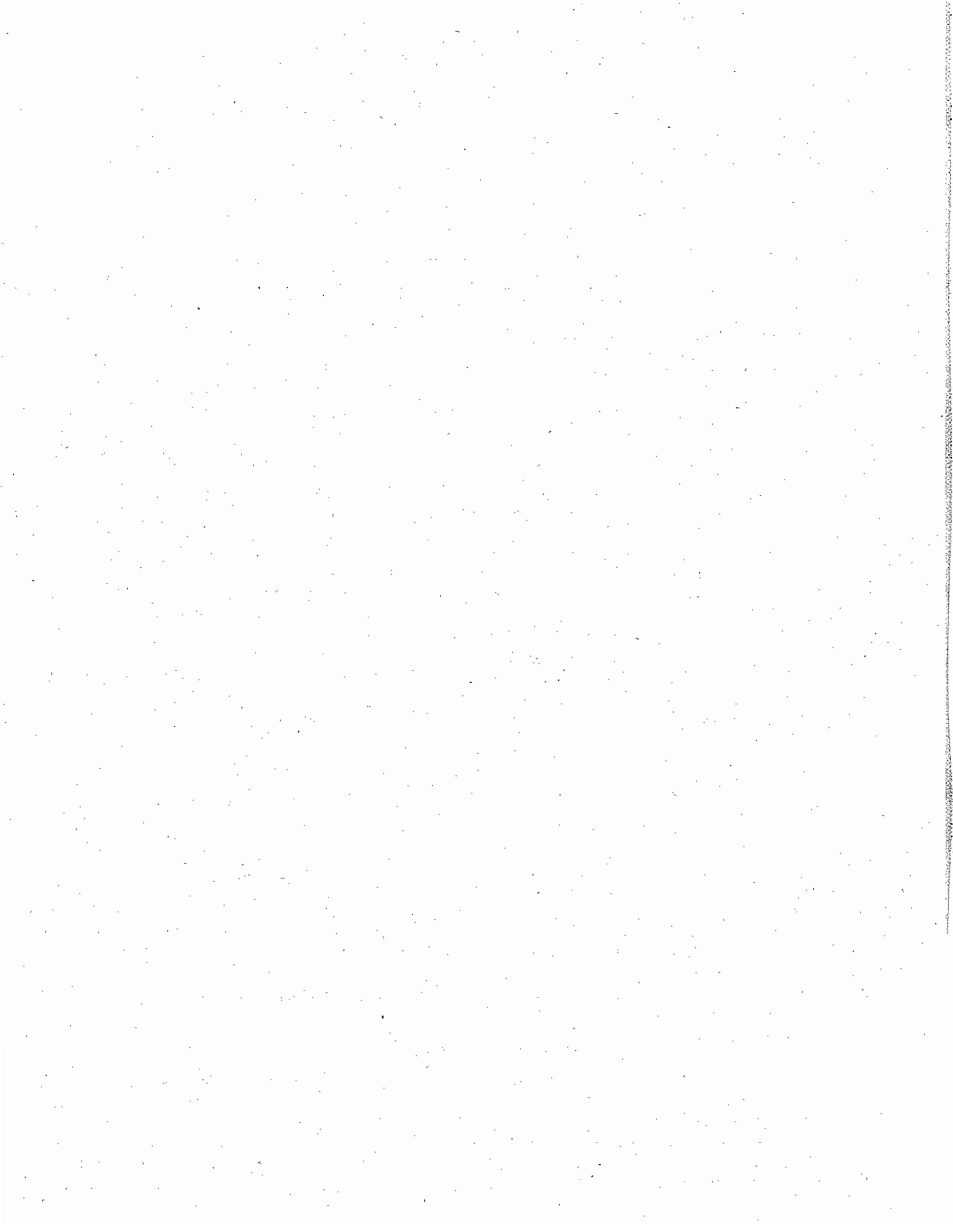
1. Applicant Name (landowner or renter) _____		2. Business Name _____																					
3. Authorized Agent (if applicable) _____		4. Phone Numbers (with area codes) _____																					
5. Mailing Address _____		6. City, State, Zip Code _____																					
7. Purpose (Explain what the water will be used for) <input type="checkbox"/> Public Water Supply <input type="checkbox"/> Commercial/Industrial <input type="checkbox"/> Water Level Maintenance <input type="checkbox"/> Pollution Containment <input type="checkbox"/> Temporary (1 year or less) <input type="checkbox"/> Other _____																							
8. Source of Water ("X" one and complete) ▶ Additional information MUST be supplied for each source. Refer to instructions (8 & 9) for requirements. a. <input type="checkbox"/> One well b. <input type="checkbox"/> _____ manifolded wells c. <input type="checkbox"/> Stream, ditch, or river (name) _____ d. <input type="checkbox"/> Wetland, lake, or impoundment (name) _____ e. <input type="checkbox"/> Other _____		9. Point of Taking/Pumping Site a. _____ 1/4 of _____ 1/4 of _____ 1/4 b. Section No. _____ c. Township No. _____ d. Range No. _____ e. County _____																					
10. Means of Taking and Rate a. <input type="checkbox"/> Stationary Pump(s) at _____ gpm b. <input type="checkbox"/> Portable Pump at _____ gpm c. <input type="checkbox"/> Gravity Flow at _____ gpm/cfs d. <input type="checkbox"/> Other _____ gpm/cfs (circle one)		11. Method of Measurement a. <input type="checkbox"/> Flow Meter b. <input type="checkbox"/> Timing Device c. <input type="checkbox"/> Electric Power Consumption d. <input type="checkbox"/> Other _____																					
12. Means of Distribution a. <input type="checkbox"/> pipe _____ diam. _____ length b. <input type="checkbox"/> tank _____ gal. capacity c. <input type="checkbox"/> channel _____ length d. <input type="checkbox"/> other _____		13. Legal Description-Land Owned/Rented * <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Township No.</th> <th style="width: 20%;">Range No.</th> <th style="width: 20%;">Section</th> <th style="width: 40%;">Fractional Sect. Gov't. Lots</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>		Township No.	Range No.	Section	Fractional Sect. Gov't. Lots																
Township No.	Range No.	Section	Fractional Sect. Gov't. Lots																				
14. Months of Appropriation <input type="checkbox"/> JAN <input type="checkbox"/> JUL <input type="checkbox"/> FEB <input type="checkbox"/> AUG <input type="checkbox"/> MAR <input type="checkbox"/> SEP <input type="checkbox"/> APR <input type="checkbox"/> OCT <input type="checkbox"/> MAY <input type="checkbox"/> NOV <input type="checkbox"/> JUN <input type="checkbox"/> DEC		15. Schedule of Appropriation ("X" one and complete) a. <input type="checkbox"/> Continuous _____ hrs./day _____ days/mo. _____ mo./yr. b. <input type="checkbox"/> Seasonal Beginning date _____ c. <input type="checkbox"/> Temporary End date _____ 16. Total Annual Use (Gallons per Year) _____																					
17. Discharge To and Quantity a. <input type="checkbox"/> Stream, Ditch or River _____ (name) _____ () MGY b. <input type="checkbox"/> Wetland, Lake or Impoundment _____ (name) _____ () MGY c. <input type="checkbox"/> Sewer System _____ () MGY d. <input type="checkbox"/> Other _____ () MGY		* Rental Agreement MUST Be Submitted																					
18. Discharge Point a. _____ 1/4 of _____ 1/4 of _____ 1/4 b. Section No. _____ c. Township No. _____ d. Range No. _____ e. County _____		19. Means of Discharge and Rate a. <input type="checkbox"/> _____ stationary pump(s) at _____ gpm ea. (no.) b. <input type="checkbox"/> _____ portable pump(s) at _____ gpm ea. (no.) c. <input type="checkbox"/> Gravity Flow at _____ gpm/cfs d. <input type="checkbox"/> Other _____ gpm/cfs (circle one)																					
20. Additional Requirements: a. <input type="checkbox"/> Map or Air Photo which shows: 1) Point of Taking or Pumping Site 2) Test Hole Location 3) Boundaries of Property Controlled and Area of Use 4) Discharge Point b. <input type="checkbox"/> \$150 Minimum Application Fee will be billed after receipt of application. c. <input type="checkbox"/> Statement of Justification/Alternative Sources d. <input type="checkbox"/> Additional Documents Required																							

▶ I hereby make application pursuant to Minnesota Statutes Chapter 103G.261 and all supporting rules for a permit to appropriate water in accordance with all supporting maps, plans, and other information submitted with this application. The information submitted and statements made concerning this application are true and correct to the best of my knowledge.

21. Signature of Landowner or Authorized Agent	22. Date
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▶ **IMPORTANT:** Submit this application and all supporting data to the DNR Office serving you (see back for addresses).
 APPLICANT: KEEP A COPY FOR YOUR RECORDS.

This information is available in an alternative format upon request.





Non-Irrigation – Surface Water WATER APPROPRIATION PERMIT

PERMIT NUMBER *
COUNTY * (#)

IN THE MATTER OF THE APPLICATION FOR APPROPRIATION OF WATERS OF THE STATE, PERMISSION IS HEREBY GRANTED TO:

PERMITTEE (landowner or lessee)	Business Name and/or Authorized Agent	
Mailing Address		
Phone (*)		
To appropriate from: (See conditions 7, 8, and 9). (sw source name) (*-P or W) by means of (#) pumps at a rate not to exceed * gallons per minute. Point of Taking: ¼ ¼ ¼ ¼, Section , Township North, Range West. UTM Zone 15 Easting: UTM Zone 15 Northing:		
Purpose: Use Code (2**) (category title here)		
Property owned or leased (includes point of taking and project area): ¼, Section , Township North, Range West. PID#: Township (name) Riparian Acreage: * acres in the ¼ or Govt Lot *, Section , Township North, Range West. (name) Watershed (#)		
Authorized Signature	Title	Date

This permit is granted subject to the following **CONDITIONS**:

1. QUANTITY:

The Permittee is authorized to appropriate water at a rate not to exceed ___*___ gallons per minute.

The total amount of water appropriated shall not exceed ___*___ acre-feet or ___*___ million gallons per year.

2. LIMITATIONS:

(a) Any violation of the terms and provisions of this permit and any appropriation of the waters of the state in excess of that authorized hereon shall constitute a violation of Minnesota Statutes, Chapter 103G.

(b) This permit shall not be construed as establishing any priority of appropriation of waters of the state.

(c) This permit is permissive only. No liability shall be imposed upon or incurred by the State of Minnesota or any of its employees, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the Permittee relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person other than the state against the Permittee, for any damage or injury resulting from any such act or omission, or as estopping or limiting any legal claim or right of action of the state against the Permittee, for violation of or failure to comply with the provisions of the permit or applicable provisions of law.

(d) In all cases where the doing by the Permittee of anything authorized by this permit shall involve the taking, using, or damaging of any property, rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the Permittee, before proceeding therewith, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights, and interests necessary therefore.

(e) This permit shall not release the Permittee from any other permit requirements or liability or obligation imposed by Minnesota Statutes, Federal Law, or local ordinances relating thereto and shall remain in force subject to all conditions and limitations now or hereafter imposed by law.

(f) Unless explicitly specified, this permit does not authorize any alterations of the beds or banks of any public (protected) waters or wetlands. A separate permit must be obtained from the Department of Natural Resources prior to any such alteration.

(over, please)

3. PERMITTEE'S RESPONSIBILITIES:

(a) FLOW METER.

The Permittee shall equip each installation for appropriating or using water with a flow meter, unless another method of measuring the quantity of water appropriated to within ten (10) percent of actual amount withdrawn is approved by the Department.

(b) REPORTS.

Monthly records of the amount of water appropriated or used shall be recorded for each installation. Such readings and the total amount of water appropriated or used shall be reported annually to the Director of DNR Waters, on or before February 15 of the following year, upon forms supplied by the Division. Any processing fee required by law or rule shall be submitted with the records whether or not any water was appropriated during the year. Failure to report shall be sufficient cause for terminating the permit 30 days following written notice.

(c) TRANSFER OR ASSIGNMENT.

Any transfer or assignment of rights, or sale of property involved hereunder shall be reported within 90 days thereafter to the Director of DNR Waters. Such notice shall be made by the transferee (i.e., new owner) and shall state the intention to continue the appropriation as stated in the permit. This permit shall not be transferred or assigned except with the written consent of the Commissioner.

(d) MODIFICATION.

The Permittee must notify the Commissioner in writing of any proposed changes to the existing permit. This permit shall not be modified without first obtaining the written permission from the Commissioner.

4. COMMISSIONER'S AUTHORITY:

(a) The Commissioner may inspect any installation utilized for the appropriation or use of water. The Permittee shall grant access to the site at all reasonable times and shall supply such information concerning such installation as the Commissioner may require.

(b) The Commissioner may, as he/she deems necessary, require the Permittee to install gages and/or observation wells to monitor the impact of the Permittee's appropriation on the water resource and require the Permittee to pay necessary costs of installation and maintenance.

(c) The Commissioner may restrict, suspend, amend, or cancel this permit in accordance with applicable laws and rules for any cause for the protection of public interests, or for violation of the provisions of this permit.

5. PUBLIC RECORD:

All data, facts, plans, maps, applications, annual water use reports, and any additional information submitted as part of this permit, and this permit itself are part of the public record and are available for public inspection at the offices of DNR Waters. The information contained therein may be used by the Division as it deems necessary. The submission of false data, statements, reports, or any such additional information, at any time shall be deemed as just grounds for revocation of this permit.

6. WETLAND CONSERVATION ACT:

Where the work authorized by this permit involves the draining or filling of wetlands not subject to DNR regulations, the permittee shall not initiate any appropriation under this permit until the permittee has obtained official approval from the responsible governmental unit as required by the Minnesota Wetland Conservation Act.

7. INTAKE:

All pump intakes must be screened to prevent fish from being drawn into the system.

8. SUSPENSION:

The Department may require the suspension of appropriation during periods of low water in order to maintain minimum water levels within the basin/watercourse/watershed.

9. CONTINGENCY:

If directed by DNR Waters to cease pumping the permittee agrees to withstand the results of no appropriation as stated in the contingency statement submitted with the application.

10. CONSERVATION:

All practical and feasible water conservation methods and practices must be employed to promote sound water management and use the least amount of water necessary, such as reuse and recycling water, saving devices, and water storage.

11. DISCHARGE AUTHORIZATION:

This permit is valid only in conjunction with all required discharge authorizations from local, state, or federal government units.

12. RAIN SENSOR SHUTOFF:

All automatically operated landscape irrigation systems must be equipped with rain sensors that inhibit or interrupt operation of the irrigation system during periods of sufficient moisture (Minnesota Statutes 103G.298).

ec: , Regional Hydrologist
County SWCD
Central Office SWUDS

Minnesota DNR Programs for Water Sustainability

<p>Mapping – understanding the distribution of the state's surface and groundwater resources to determine monitoring needs and provide information needed to manage the resource.</p>	<p>Monitoring – measuring changes in water supplies over time and evaluating impacts from water withdrawals.</p>	<p>Managing – planning and permitting to assure sustainable water resources for future generations.</p>
<p>County Geologic Atlas Program – DNR and the MN Geological Survey (MGS) produce maps of geology, hydrology, and pollution sensitivity of groundwater resources.</p> <p>Aquifer Characterization Studies and Springshed Mapping – DNR conducts studies that define aquifer properties, ground water flow paths, and interactions of surface water and groundwater.</p> <p>Watershed Delineations – DNR creates detailed watershed maps used to develop surface water budgets and identify priority areas for restoration and protection efforts.</p>	<p>Precipitation – DNR manages a volunteer network of gage readers that provide precipitation data for approximately 1,500 locations around the state. The DNR State Climatology Office develops precipitation data and maps that are used to assess flood and drought conditions.</p> <p>Stream Flow – DNR maintains over 190 gages in cooperative efforts with state and local governments. Seventy state owned satellite telemetry gages provide real time stream stage and flow information for flood protection, water supply management, and recreational use.</p>	<p>Permitting – DNR administers a permit program for water withdrawals that exceed 10,000 gallons per day or one million gallons per year. Provides the basis for resource management and the resolution of water use conflicts and well interferences.</p> <p>Resource Protection Limits – DNR establishes protection levels for groundwater resources and protected flows and levels for surface water resources. Special protections are required for trout streams, calcareous fens and other resources of concern.</p>
<p>Ordinary High Water Levels (OHW) – DNR surveys land and water elevations to support technical studies and permitting decisions, understand water level changes over time, and determine local unit of government or DNR jurisdiction for shoreland and Public Waters.</p> <p>High Resolution Digital Elevation (LiDAR) – DNR develops and uses data that improves the quality of hydrologic mapping and technical studies.</p> <p>County Biological Surveys – DNR maps terrestrial vegetation and unique natural resource features, such as calcareous fens, to help assess ecological changes.</p>	<p>Lake Levels – DNR manages a volunteer network of gage readers that provide water level data for approximately 1,000 lakes around the state.</p> <p>Groundwater Levels – DNR maintains a network of approximately 750 observation wells that are used to determine resource trends and impacts from water withdrawals.</p> <p>Water Use – DNR maintains a data base of 6,800 permitted water users and collects annual water use reports that include monthly water use volumes.</p> <p>Modeling – DNR mapping and monitoring efforts provide data needed for surface and groundwater models. Resource level (aquifer) models inform management decisions.</p>	<p>Water Supply Planning – DNR works with stakeholders to assure that water supplies are adequate and sustainable. DNR approves water supply plans, which public water suppliers must update every ten years. Other current planning efforts include the Metro Master Water Supply Plan, the Great Lakes Water Resources Compact, and other regional and resource specific plans.</p> <p>Water Conservation – Using water efficiently is critical for balancing resource protection and use. DNR requires efficient use for approvals of permits, water supply plans and public water supply well construction. DNR is implementing new requirements for water conservation rate structures and is eliminating inefficient groundwater uses for once-through cooling and lake augmentation.</p>

