Monitoring Assessments

Wisconsin Department of Natural Resources
Monitoring Assessment Program

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Wisconsin DNR
Madison, Wisconsin

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Section 1: Executive Summary

The Wisconsin Department of Natural Resources (DNR) may issue monitoring waivers to eligible public water systems under primacy authority granted by the U. S. Environmental Protection Agency (EPA). Monitoring waivers are issued through the DNR's monitoring assessment program. The monitoring assessment program is allowed under Phase II and Phase V of the National Primary Drinking Water Regulations. The DNR's monitoring assessment program has operated under primacy authority since granted approval by the EPA in September 1992.

The DNR may grant monitoring waivers based on specific monitoring assessment criteria and an evaluation of previous source water monitoring results. The monitoring assessment criteria include an evaluation of contaminant use in an area and an evaluation of the water source's vulnerability to contamination. A complete assessment includes:

- Identification of a water source's proximity to potential contaminant sources;
- Analysis of local geology;
- Evaluation of well construction criteria; and
- Review of previous source water analytical results.

Monitoring waivers are based on specific monitoring schedules established in the Standardized Monitoring Framework under Phase II, IIB & V federal rules. The monitoring framework consists of nine-year cycles subdivided into three three-year periods. The framework establishes monitoring schedules for specific contaminant groups including: asbestos, volatile organic compounds, synthetic organic compounds and inorganic compounds. Monitoring waivers allow public water supply systems to reduce sampling frequencies by three, six, or nine years.

Public water supply owners need to submit a monitoring waiver application to be eligible for waivers. Monitoring waivers may decease a public water system's sampling frequency for specific contaminant groups.

The objective of the monitoring assessment program is to reduce the frequency of monitoring while assuring the safety of the drinking water. As a result, monitoring waivers can provide cost savings to public water system owners. DNR estimates the average monitoring waiver cost savings per source water well to be $2,500 per monitoring period. DNR may grant monitoring waivers based on an evaluation of a complete monitoring assessment for each well in a public water supply system. No fees are charged to process and implement monitoring waivers or to evaluate information for potential reduced monitoring requirements.

This document includes revisions and updates to the DNR's 1992 monitoring assessment program and establishes new procedures for implementing vulnerability assessments and monitoring waivers.

Section 2: Monitoring Assessment Waiver Authority

DNR may grant monitoring waivers under rules established in Chapter NR 809 *Safe Drinking Water*, Wis. Admin. Code. This chapter provides safe drinking water regulation authority for rules specified under the federal Safe Drinking Water Act (40 CFR 141), and establishes minimum standards and procedures for the protection of the public health, safety and welfare in the production and distribution of safe drinking water for public water supply systems. Chapter NR 809 specifies drinking water monitoring requirements for public water supply systems and procedures for the DNR to grant monitoring waivers and to reduce monitoring requirements for specific contaminant groups.

Section 3: Monitoring Waiver Eligibility

Public water systems, including community (municipal and other-than-municipal) and non-transient, non-community (NTNC) water systems are eligible for monitoring waivers. Transient non-community water systems are not required to monitor for contaminants covered by monitoring waivers. A public water supply system owner must prepare an application to be eligible for a monitoring waiver. DNR monitoring assessment program staff prepare and distribute a monitoring waiver application letter, instructions, form, map, and supporting documents to eligible public water supply system owners. The system owners must return the waiver documents within appropriate time frames (typically 30 days) to be eligible for monitoring waivers. Public water supply system owners that do not apply or re-apply for monitoring waivers will have all existing waivers invalidated.

Public water systems with groundwater sources are eligible for monitoring waivers based on entry point monitoring. Surface water systems are eligible for asbestos and benzo(a)pyrene monitoring waivers based on an assessment of potential contaminant sources in the water supply distribution system (e.g. water main pipes constructed of asbestos). Surface water systems may also be eligible for waivers of inorganic compounds.

Section 4: Available Contaminant Waivers

CONTAMINANT WAIVERS GROUPS AND STATE & FEDERAL RULE REFERENCE		
Contaminant Group	*Wisconsin Administrative Code Reference*	*Code of Federal Regulation Reference*
Synthetic Organic Contaminants(SOC)	NR 809.205(3)	40 CFR 141.24(h)
Volatile Organic Contaminants (VOC)	NR 809.245(3)	40 CFR 141.24(f)
Asbestos	NR 809.115(2)(b)	40 CFR 141.23(b)
Benzo(a)pyrene	NR 809.205(3)	40 CFR 141.24(h)
Industrial *	NR 809.205(3)	40 CFR 141.24(h)
Cyanide	NR 809.115(3)(c)	40 CFR 141.23(c)
Dioxin	NR 809.205(3)	40 CFR 141.24(h)
Ethylene dibromide (EDB)	NR 809.205(3)	40 CFR 141.24(h)
Inorganic Contaminants (IOC)	NR 809.115(3)(c)	40 CFR 141.23(c)

* *Industrial Compounds include Di(2-ethylhexyl)adipate & Di(2-ethylhexyl)phthalate*

Section 5: Monitoring Assessment Waiver Criteria

Monitoring waivers are based on the assessment of three primary criteria:

1) Defined assessment area;
2) Well vulnerability;
3) Contaminant susceptibility.

The DNR public water supply specialist or engineer uses a source water assessment area (assessment area) to determine where potential contaminant sources near a well may increase susceptibility to contamination. An assessment area is an estimate of the land area from which contaminants released from a contaminant source are likely to move toward and impact a public water supply well.

The DNR public water supply program determines assessment areas in multiple ways. For most community and NTNC public water supply wells, a calculated fixed radius is used. Many of these calculated fixed radius delineations default to the circular area within a radius of 1,200 feet around a well. The default assessment area is based on minimum potential contaminant source separation distances for developing new groundwater sources as specified in Chapter NR 811 *Requirements for the Operation and Design of Community Water Systems*, Wis. Admin. Code [NR 811.12(5)(d)9].

In several cases the DNR may have assessment areas delineated by professional scientists using groundwater flow models developed through the source water assessment program. The assessment areas represent the portion of a recharge area equivalent to a 5-year time-of-travel to the well.

In cases where there is no groundwater flow model assessment area, the DNR may use a community's well head protection area for its assessment area. Municipal public water supply systems with wells constructed after May 1, 1992, are required to prepare a wellhead protection plan. The plan delineates a wellhead protection area as the portion of a recharge area equivalent to a 5-year time-of-travel to the well.

Well Vulnerability: Well vulnerability criteria include an assessment of geology, hydrogeology and well construction. A well vulnerability assessment for monitoring waivers includes an evaluation of the following criteria:

Unconsolidated Formation - Well Vulnerability – If a well terminates in an unconsolidated surficial deposit the well is considered *vulnerable*. The only exception is the presence of a thick confining layer of clay (≥ 60 feet) deposited over a large aerial extent that exists within limited areas of the Great Lakes basins. The confining layer of clay must be of consistent thickness and possess a composition of strong structural integrity. A composition of strong structural integrity contains minimal fractures and minimal chemical and physical weathering that would increase the hydraulic conductivity of the deposits.

Consolidated (Bedrock) Rock Formation - Well Vulnerability – If a well terminates in a consolidated rock formation (*competent bedrock*) and the rock formation is overlain by ≥ 60 feet of another deposit or a confining layer (clay or shale), the well is *not* considered *vulnerable*. The well grouted casing must extend through ≥ 60 feet of overlying material and be seated in the bedrock of the aquifer except when evaluating well susceptibility to volatile organic compound (VOC) contaminants; the well grouted casing must be ≥ 100 feet for VOCs.

Competent Bedrock is defined for monitoring assessment purposes as consolidated rock that exhibits strong structural integrity and is composed of lithified or cemented sediments that include sandstone and shale or igneous and metamorphic rock. Competent bedrock contains minimal fractures and minimal chemical and physical weathering that would increase the hydraulic conductivity of the bedrock. Bedrock is exposed at the surface or overlain by soil or other unconsolidated surficial deposits (e.g. sand, gravel, clay, glacial till).

Well Contaminant Susceptibility: Well contaminant susceptibility criteria include an assessment of contaminant detections in the monitoring history of a water source (e.g. detectable concentrations of VOCs on past analytical results). The assessment also includes the identification of potential contaminant sources within the monitoring source water assessment area (e.g. leaking underground fuel storage tanks within the source water assessment area). *Specific susceptibility and vulnerability criteria are described in Appendix D*.

Section 6: Types of Monitoring Waivers

6.1 Synthetic organic compounds (SOC)

A public water supply groundwater system which does not detect a SOC contaminant specified in NR 809.20 (Appendix C) in a source water well may apply for a use or susceptibility waiver after the collection and analysis of one complete SOC sample (excludes analysis for industrial, PCBs, benzo(a)pyrene and dioxin contaminants if eligible for separate waivers). A SOC waiver evaluation includes the following factors:

- Knowledge of previous use of a contaminant including transport, storage or disposal within the assessment area.
- Well vulnerability; including ≥ 60 feet of grouted casing (see Appendix D).

- If the previous use of a contaminant is unknown or a contaminant has been used, additional assessment factors include:
  1) Previous analytical results;
  2) Proximity to potential contaminant sources;
  3) The environmental persistence and transport of the contaminants;
  4) Elevated nitrates at the water supply source;
  5) Well vulnerability;
  6) Use of PCBs in equipment used in the production, storage or distribution of water.

- Use Waiver (SOC) - A SOC use waiver may be granted where there is no previous use of the contaminant within the assessment area; or where a potential contaminant source exists within the assessment area and the source water well is *not* vulnerable as determined by an evaluation of all the assessment factors listed above. Use includes contaminant transport, storage or disposal. One SOC sample must be collected and analyzed as described in this section from the source water well to be eligible for a use waiver. A use waiver period is six years (one sample every six years); a monitoring assessment is required every three years.

- Susceptibility Waiver (SOC) – A SOC susceptibility waiver may be granted where several factors affecting well vulnerability have been evaluated (e.g. geology, well construction, and analytical history) and there has been no contaminant use within the assessment area. One SOC sample must be collected and analyzed as described in this section from the source water well to be eligible for a susceptibility waiver. The waiver period is three years (no sample required in waiver period); a monitoring assessment is required every three years.

6.2 Volatile organic compounds (VOC)*

A public water supply groundwater system which does not detect a VOC contaminant specified in NR 809.24 (Appendix C) may apply for use waiver after completion of the initial monitoring requirements. A VOC waiver evaluation includes the following:

- Knowledge of previous use of a contaminant including transport, storage or disposal within the assessment area.
- Well vulnerability including ≥ 100 feet of grouted casing (see Appendix D).

If the previous use of a contaminant is unknown or a contaminant has been used, additional assessment factors include:

1) Previous analytical results;
2) Proximity to potential contaminant sources;
3) The environmental persistence and transport of the contaminants;
4) Well vulnerability;
5) The population served by the system and the proximity of a smaller system to a larger system.

- Use Waiver (VOC) - Use waivers may be granted where there is no previous use of the contaminant within the assessment area and the source water well is not vulnerable. Use includes contaminant transport, storage or disposal. A use waiver period is six years (one sample every six years) and a monitoring assessment is required every three years. Initial VOC monitoring requirements must be complete with analytical results showing no detection of contaminants (> 0.5 ug/L VOCs, except vinyl chloride > 0.2 ug/L) to be eligible for a use waiver.

A source water well that is not eligible for a VOC use waiver may be eligible for reduced monitoring (note: the DNR does *not* allow VOC *susceptibility* waivers). An evaluation for reduced VOC monitoring can be conducted after a public water supply system completes a well's initial VOC monitoring and three consecutive years of annual monitoring with no detection of contaminants. If granted, reduced VOC monitoring requires the collection and analysis of one sample during each three year compliance period. No monitoring assessment application is required (*not a waiver).*

*VOCs identified as disinfection byproduct (DBP) compounds are not eligible for waivers or reduced monitoring as described in this section (total trihalomethanes, bromodichloromethane, bromoform, chloroform, and dibromochloromethane).

6.3 Asbestos

- Asbestos Waiver - Public water supply systems are eligible for an asbestos waiver. If a water supply system believes it is not susceptible to asbestos contamination in its source water or due to corrosion asbestos-cement pipe, or both, the public water supply system may apply for an asbestos waiver. Public water systems are considered susceptible to asbestos contamination if the distribution systems are comprised of unlined asbestos cement pipe.

  Public water supply systems with distribution piping comprised of asbestos cement pipe material and that have corrosive water (Langelier Index < -1) must monitor for asbestos. Waivers are issued to systems if the Langelier Index is ≥ - 1. Public water supply systems are required to update the potential for asbestos contaminant susceptibility by submitting documentation every three years to the DNR and reporting whether the distribution system is comprised of asbestos containing materials.

  An asbestos waiver may be granted based on an evaluation of the following:

  1) Potential asbestos contamination from the source water;
  2) Use of asbestos cement pipe for finished water distribution;
  3) Corrosive nature of the water in the system.

6.4 Benzo(a)pyrene

- Benzo(a)pyrene Waiver – Public water supply systems where coal tar is not known to be used to line or seal distribution tanks or pipes are eligible for a benzo(a)pyrene use waiver. No sample results or monitoring is required to be eligible for a use waiver. Systems constructed of distribution materials comprised of benzo(a)pyrene may be eligible for a susceptibility waiver if the system samples for benzo(a)pyrene and there is no detection of benzo(a)pyrene. The susceptibility waiver period is six years (one sample every six years); a monitoring assessment is required every three years.

6.5 Industrial [Di(2-ethylhexyl)adipate; Di(2-ethylhexyl)phthalate] **Cyanide; Dioxin**

- Use Waiver (Industrial, Cyanide, Dioxin) – A use waiver may be granted where there is no previous use of the contaminant within the assessment area and the source water well is not vulnerable. Use includes transport, storage or disposal area. The waiver period is three years (no sample required in waiver period); a monitoring assessment is required every three years.

- Susceptibility Waiver (Industrial, Cyanide, Dioxin) – A susceptibility waiver may be granted where a potential contaminant source exists within the assessment area for a well and several factors affecting well susceptibility have been evaluated (e.g. geology, well construction, well vulnerability, analytical

history). The waiver period is six years (no sample required in waiver period); a monitoring assessment is required every three years.

6.6 Ethylene dibromide (EDB) - Dibromochloropropane (DBCP)

- Areawide Use Waiver – An areawide use waiver is defined as a statewide ban of pesticide application that includes the contaminants:
    - Ethylene dibromide (EDB)
    - Dibromochloropropane (DBCP)

  A statewide use waiver exists for ethylene dibromide (EDB). A source water well is eligible for a waiver unless there is a detection of specific gasoline constituents. EDB was used as an additive for leaded gasoline. A source water well must have at least one previous EDB sample result with no detection before a waiver will be granted, if any of the following gasoline indicator compounds is newly detected: benzene, toluene, ethylbenzene, xylene or 1, 2-dichloroethane. Previous EDB analytical results may be used to evaluate the need for additional EDB monitoring. The use waiver period is three years (no sample required in monitoring waiver period); a monitoring assessment is required every three years.

- A susceptibility (EDB, DBCP) waiver may be granted where several factors affecting well susceptibility have been evaluated (e.g. geology, well construction, and analytical history) and where there has been no contaminant use within the assessment area. The waiver period is six years (no sample required in waiver period); a monitoring assessment is required every three years.

6.7 Inorganic Compounds (IOC)*

Surface water and groundwater systems are eligible for a monitoring waiver of certain inorganic compounds (excludes nitrates, nitrite, fluoride and sodium; cyanide and asbestos are listed separately). A surface water system is eligible for a waiver if the system has monitored an intake annually for IOCs for at least three years; groundwater systems must have monitored a source water well in at least three compliance periods. The IOC waiver period is nine years for groundwater systems and three years for surface water systems.

One round of sampling is required during the waiver period. DNR limits the issuance of IOC waivers based on the prevalence of certain naturally occurring IOC compounds (e.g. arsenic) found in some stratigraphic formations. IOC waivers also may be limited based on a comparative cost evaluation of monitoring analytical costs versus monitoring assessment costs required to properly evaluate IOC waivers.

An IOC waiver evaluation is based on all of the following:

- The reported IOC concentrations from all previous monitoring;
- All previous analytical results must be below the maximum contaminant level (MCL);
- The degree of variation in IOC concentrations;
- Other factors that may affect the IOC contaminant concentrations:
    1) Change in groundwater pumping rate;
    2) Change in public water system's configuration;
    3) Change in public water systems operating procedures;
    4) Change in stream flow or characteristics.

*excludes nitrates, nitrite, fluoride and sodium; cyanide and asbestos waivers are listed separately.

Section 7: Monitoring Waiver Periods

Contaminant monitoring requirements and monitoring schedules are based on EPA's standardized monitoring framework. The framework establishes monitoring timelines for certain regulated contaminant groups including: inorganic compounds (IOCs); synthetic organic compounds (SOCs); and volatile organic compounds (VOCs). The monitoring framework consists of nine-year *cycles*; the cycles are subdivided into three three-year compliance *periods*. The "First Cycle" began in 1993 and subsequent, numerically titled nine-year cycles have followed. Monitoring waivers may apply for a single three-year compliance period or through a nine-year compliance cycle. A detailed table describing the *Contaminant Waiver Groups and Standardized Monitoring Framework* is included in Appendix B. A general description of available contaminant waivers and monitoring frequency is listed in the following table:

Available Contaminant Waivers	**Contaminant Waiver Type and Monitoring Frequency**	
	USE	SUSCEPTIBILITY
VOCs*	6 years	-
SOCs*	6 years[1]	No sample[1]
Benzo(a)pyrene*	No sample	6 years
Dioxin*	No sample	No sample
EDB*	No Sample	No sample
IOCs	-	9 years -Groundwater 3 Years – Surface
Asbestos*	-	No sample
Cyanide*	No Sample	No sample

- Not applicable
* Monitoring assessment information must be updated every three years regardless of the length of the waiver period.
[1] An initial SOC sample is required prior to granting a use or susceptibility waiver.

Section 8: Application Timelines

The DNR prepares application letters, documents, and maps for distribution to public water supply system owners. The waiver application and monitoring assessment materials are distributed to system owners at the end of January of the year before the applicable monitoring waiver period. The DNR requests system owners submit the monitoring assessment documents within 30 days of receipt in order to be eligible for waivers. System owners are required to submit monitoring assessment information and waiver application documents every three years to be eligible for waivers.

Section 9: Monitoring Assessments and Waiver Evaluations

DNR staff complete the monitoring waiver evaluations by May 1 or within 60 days of receipt of a complete monitoring waiver application. DNR staff review the monitoring assessment information and waiver application materials in consideration of the following: 1) complete application; 2) complete potential contaminant source updates to the system's source water assessment area map; 3) complete source water analytical data, well construction, and local geology information. A quality assurance \ quality control process (QA\QC) is applied to the DNR's monitoring assessment program. Preliminary waiver approvals completed by staff are given a final approval by DNR program staff. Monitoring assessment information and potential waivers for each water source in a public water supply system are given final review before approval of the system's monitoring waivers. Monitoring waiver approvals are completed by August 1.

Public water supply system owners are notified of the monitoring waiver approvals in the preliminary monitoring schedules. The DNR notifies public water supply system owners in a letter distributed in August of the availability of the preliminary monitoring schedules. The preliminary monitoring schedules are specific to a public water supply system and include the system's monitoring requirements and waivers for the upcoming year. The approved monitoring waivers are also identified on the final system monitoring schedules which are distributed to public water supply system owners or operators in January.

Section 10: Monitoring Assessment Reductions

Monitoring assessments include evaluations for potential reduced monitoring for volatile organic compounds (VOCs) and radionuclides. DNR staff review VOC and radionuclide analytical data concurrently with the monitoring waiver application process to determine if a source of water is eligible for reduced monitoring. Monitoring reductions are based on a source water's analytical results. DNR staff may also consider a source water's proximity to known or potential contaminant sources, well construction criteria, and local geology before granting a monitoring reduction. Monitoring reductions do not require a monitoring assessment application and are not a waiver.

Section 11: Termination of Monitoring Waivers

DNR may invalidate a public water supply system's monitoring waivers based on noncompliance of applicable waiver criteria specified in Chapter NR 809, Wis. Adm. Code and any of the following:

1. The monitoring requirements or assessment criteria as a condition of the waiver are not met.
2. The public water supply system fails to provide DNR the monitoring assessment information or the waiver application within 3 years of the initial or subsequent waiver determination.
3. Well vulnerability conditions change during the waiver period.
4. New or unknown potential contaminant sources are identified during the monitoring waiver period.
5. A waiver-related maximum contaminant level, contaminant trigger level, or detection limit is exceeded.
   - Maximum contaminant levels are listed in the "Regulated Contaminants" table in Appendix C.
   - The trigger action level for VOCs is 0.5 ug/L except for vinyl chloride which is 0.2 ug/L.
   - The detection limits for SOC contaminants are listed in the following table*:*

SOC Contaminant Detection Limits (ug/L)					
Alachlor	0.2	Di(2−ethylhexyl)phthalate	6.0	Methoxychlor	0.1
Aldicarb	0.5	Dinoseb	0.2	Oxamyl	2.0
Aldicarb sulfoxide	0.5	Diquat	0.4	Picloram	0.1
Aldicarb sulfone	0.8	Endothall	9.0	Polychlorinated biphenyls	0.1
Atrazine	0.1	Endrin	0.01	Pentachlorophenol	0.04
Benzo[a]pyrene	0.02	Ethylene dibromide	0.01	Simazine	0.07
Carbofuran	0.9	Glyphosate	0.006	Toxaphene	1.0
Chlordane	0.2	Heptachlor	0.04	2,3,7,8−TCDD (Dioxin)	0.000005
2,4-D	0.1	Heptachlor epoxide	0.02	2,4,5-TP(Silvex)	0.2
Dalapon	1.0	Hexachlorobenzene	0.1		
Dibromochloropropane	0.01	Hexachlorocyclopentadiene	0.1		
Di(2−ethylhexyl)adipate	6.0	Lindane	0.02		

APPENDIX A
Outline of Monitoring Assessment Process

Outline of Monitoring Assessment Process

I. DNR staff distributes monitoring assessment documents to eligible public water supply owners.

II. Eligible public water system owners request monitoring waivers through the DNR's monitoring assessment program.

III. Public water supply owners must complete the necessary monitoring assessment documents and submit the information to the appropriate DNR district office to be eligible for a monitoring waiver. Required information includes:

a. Entry point locations for placement on the DNR's Vulnerability Assessment GIS layer.
b. A defined source water assessment area (i.e. 1200' calculated fixed radius, groundwater flow model area, or well head protection area).
c. Identification of potential contaminant sources within the source water assessment area.

IV. Owners must complete all required initial and routine entry point monitoring requirements, as necessary, prior to an evaluation for monitoring waivers.

V. DNR staff review the monitoring assessment documents for evaluation of monitoring waivers. The evaluation process includes:

a. Review of well construction and geology to determine well vulnerability.

b. Complete updates (addition\deletion) of potential contaminant sources in the source water assessment area on the DNR Vulnerability Assessment GIS layer.

c. Potential contaminant sources within the source water assessment area are evaluated for potential impacts to a water source.

d. A review of the historical contaminant detections in a water source is completed for waiver and reduced monitoring considerations.

VI. Monitoring waivers are evaluated for preliminary approval by DNR staff for the following contaminant groups:

a. Synthetic organic contaminants (SOC)
    1. Use waiver
    2. Susceptibility waiver
b. Volatile organic contaminants(VOC)
    1. Use waiver
    2. Reduced monitoring (not a waiver)
c. Asbestos
d. Benzo(a)pyrene
    1. Use waiver
    2. Susceptibility waiver
e. Industrial; Cyanide; Dioxin
    1. Use waiver
    2. Susceptibility waiver
f. Ethylene dibromide (EDB)
    1. Use waiver
    2. Susceptibility waiver
g. Inorganic Contaminants (IOC)

VII. Monitoring Assessment Reductions
DNR staff review VOC and radionuclide analytical data during the monitoring assessment process to determine if a water source is eligible for reduced monitoring.

VIII. DNR program staff review the preliminary waiver approvals and apply all eligible waivers in a final waiver approval.

IX. Public water supply system owners are notified of monitoring waiver approvals in the preliminary monitoring schedules and final monitoring schedules.

Appendix B
Contaminant Monitoring Assessments and Standardized Monitoring Framework

CONTAMINANT MONITORING ASSESSMENTS and STANDARDIZED MONITORING FRAMEWORK

		9 Year Cycle									9 Year Cycle								
		1st Period			2nd Period			3rd Period			1st Period			2nd Period			3rd Period		
		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Volatile Organic Contaminants (VOCs)	**Public Water System Type - Monitoring Assessment Year:**	MC	OC	NN	MC	OC	NN	MC	OC	NN	MC	OC	NN	MC	OC	NN	MC	OC	NN
	Groundwater (Below Trigger Level)																		
	< Detect, Vulnerability Assessment, and Waiver[1]		*			*			*			*			*				
	REDUCED Monitoring - No Waiver [2]		*			*			*			*			*			*	
	Surface Water (Below Trigger Level) –REDUCED only – No Waivers																		
	< Detect, REDUCED Monitoring		*			*			*			*			*			*	
	No REDUCED Monitoring	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Above Trigger Level																		
	Reliably and Consistently < MCL[3]	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	≥ Detect or Not Reliably and Consistently ≤ MCL	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
Synthetic Organic Contaminants (SOCs)	**Year:**	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	Public Water System Type:	MC	OC	NN	MC	OC	NN	MC	OC	NN	MC	OC	NN	MC	OC	NN	MC	OC	NN
	Population > 3,300 (Below Trigger Level)																		
	Susceptibility Waiver		X			X			X			X			X			X	
	Use Waiver		*			*			*			*			*				
	< Detect and No Waiver		**			**			**			**			**			**	
	Population < 3,300 (Below Trigger Level)																		
	Susceptibility Waiver		X			X			X			X			X			X	
	Use Waiver		*			*			*			*			*				
	< Detect and No Waiver		*			*			*			*			*			*	
	Above Trigger Level																		
	Reliably and Consistently ≤ MCL[3]	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	≥ Detect or Not Reliably and Consistently ≤ MCL	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
Inorganic Contaminants (IOCs)	**Year:**	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	Public Water System Type - Monitoring Assessment Year:	MC	OC	NN	MC	OC	NN	MC	OC	NN	MC	OC	NN	MC	OC	NN	MC	OC	NN
	Groundwater (Below Trigger Level)																		
	Waiver [4]					*						*							
	No Waiver		*			*			*			*			*			*	
	Surface Water (Below Trigger Level)																		
	Waiver [4]		*			*			*			*			*			*	
	No Waiver	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Groundwater and Surface Water (Above Trigger																		
	Reliably and Consistently ≤ MCL- Groundwater Systems		*			*			*			*			*			*	
	Reliably and Consistently ≤ MCL - Surface Water Systems	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	> MCL or Not Reliably and Consistently ≤ MCL	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****

CONTAMINANT MONITORING ASSESSMENTS and STANDARD MONITORING FRAMEWORK

		9 Year Cycle									9 Year Cycle								
		1st Period			2nd Period			3rd Period			1st Period			2nd Period			3rd Period		
		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Asbestos	**Public Water System Type - Monitoring Assessment Year:**	**MC**	**OC**	**NN**	**MC**	**OC**	**NN**	**MC**	**OC**	**NN**	**MC**	**OC**	**NN**	**MC**	**OC**	**NN**	**MC**	**OC**	**NN**
	Waiver		X			X			X			X			X			X	
	No Waiver, Reliably and Consistently ≤ MCL, or vulnerable to asbestos contamination [6]					*						*							
	> MCL	****	****	****	****	****	****	*****	****	****	****	****	****	****	****	****	****	****	****
Radionuclides [7]	**Year:**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**
	< Detection Level (Reduced one sample every 9 years)		*						*			*						*	
	≥ Detection Level but ≤ 1/2 MCL (Reduced one sample every 6 years)		*			*						*						*	
	> 1/2 MCL but ≤ MCL (Reduced one sample every 3 years)		*			*			*			*			*			*	
	> MCL	****	****	****	****	****	****	****	*****	****	****	****	****	****	****	****	~~****~~	~~****~~	~~***~~

Legend

* = 1 sample at each entry point to distribution system.

** = 2 quarterly samples at each entry point. Samples must be taken during 1 calendar year during each 3-year compliance period.

**** = 4 quarterly samples at each entry point within time frame designated by the primacy agency.

X = No sampling required.

MC = Municipal Community System

OC = Other Community System

NN = Non-transient Non-community System

[1] Groundwater systems must update their monitoring assessments during the time the waiver is effective. The DNR must determine that a well is not vulnerable to contamination every 3 years or the system must return to annual sampling.

[2] If all monitoring results during initial quarterly monitoring are less than the detection limit, the system can take annual samples. If after a minimum of 3 years of annual sampling with all analytical results less than the detection limit, the DNR can allow a system to take 1 sample during each compliance period. Systems are also eligible for a waiver if monitoring assessment criteria are met.

[3] Samples must be taken during the quarter which previously resulted in the highest analytical result. Systems can apply for a waiver after 3 consecutive annual sampling results are below the detection limit.

[4] Based on 3 rounds of monitoring at each entry point with all analytical results below the MCL, in addition to other waiver criteria.

[5] A system with a result above the MCL must collect quarterly samples at that sampling point until the system is determined to be reliably and consistently below the MCL.

[6] If a system believes it is not vulnerable to either asbestos contamination in its source water or due to corrosion of asbestos-cement pipe, or both, the system may apply to the DNR for a waiver. If granted the water supplier is not required to monitor. If vulnerable, systems are required to monitor for asbestos during the first 3-year compliance period of each 9-year compliance cycle. A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe must take 1 sample at a tap served by that pipe. A system vulnerable to asbestos contamination at the source must sample at each entry point.

[7] No Waivers – Reduced monitoring only - potential after initial monitoring complete.

Reference: Modified after USEPA guidance document: *The Standardized Monitoring Framework: A Quick Reference Guide,* March 2004

Appendix C
Regulated Contaminants

Regulated Contaminants – VOCs, SOCs & IOCs

Volatile Organic Contaminants(VOCs)

Contaminant	MCL (mg/L)	Detection Limit (mg/L)	Contaminant	MCL (mg/L)	Detection Limit (mg/L)	Contaminant	MCL (mg/L)	Detection Limit (mg/L)
Benzene	0.005	0.0005	trans-1,2-Dichoroethylene	0.1	0.0005	1,2,4-Trichlorobenzene	0.07	0.0005
Vinyl Chloride	0.0002	0.0002	Dichloromethane	0.005	0.0005	1,1,2-Trichloroethane	0.005	0.0005
Carbon tetrachloride	0.005	0.0005	1,2-Dichoropropane	0.005	0.0005	Xylenes (total)	10	0.0005
1,2-Dichoroethane	0.005	0.0005	Ethylbenzene	0.7	0.0005			
Trichloroethylene	0.005	0.0005	Monochlorobenzene	0.1	0.0005			
1,1,-Dichoroethylene	0.007	0.0005	ortho-Dichlorobenzene	0.6	0.0005			
1,1,1-Trichoroethane	0.20	0.0005	Styrene	0.1	0.0005			
para-Dichlorobenzene	0.075	0.0005	Tetrachloroethylene	0.005	0.0005			
cis-1,2-Dichloroethylene	0.07	0.0005	Toluene	1	0.0005			

Synthetic Organic Contaminants (SOCs)

Contaminant	MCL (mg/L)	Detection Limit (mg/L)	Contaminant	MCL (mg/L)	Detection Limit (mg/L)	Contaminant	MCL (mg/L)	Detection Limit (mg/L)
Alachlor	0.002	0.0002	Diquat	0.02	0.0004	Oxamyl	0.2	0.002
Atrazine	0.003	0.0001	Endothall	0.1	0.009	Pentachlorophenol	0.001	0.0001
Benzo[a]pyrene	0.0002	0.00002	Endrin	0.002	0.00001	Picloram	0.5	0.0001
Carbofuran	0.04	0.0009	Ethylene Dibromide	0.00005	0.00001	Polychlorinated biphenyls	0.0005	0.00004
Chlordane	0.002	0.0002	Glyphosate	0.7	0.006	Simazine	0.004	0.0007
2,4−D	0.07	0.0001	Heptachlor	0.0004	0.00004	2,3,7,8−TCDD (Dioxin)	3x10−8	0.000000005
Dalapon	0.2	0.001	Heptachlor epoxide	0.0002	0.00002	Toxaphene	0.003	0.001
Dibromochloropropane	0.0002	0.00002	Hexachlorobenzene	0.001	0.0001	2,4,5−TP	0.05	0.0002
Di(2−ethylhexyl)adipate #	0.4	0.006	Hexachlorocyclopentadiene	0.05	0.0001			
Di(2−ethylhexyl)phthalate #	0.006	0.006	Lindane	0.0002	0.00002			
Dinoseb	0.007	0.0002	Methoxychlor	0.04	0.0001			

Inorganic Contaminants (IOCs)

Contaminant	MCL (mg/L)	Contaminant	MCL (mg/L)	Contaminant	MCL (mg/L)
Antimony	0.006	Cyanide	0.2	Fluoride	4.0
Arsenic	0.010	Mercury	0.002		
Asbestos	7 MFL	Nickel	0.1		
Barium	2	Selenium	0.05		
Beryllium	0.004	Thallium	0.002		
Cadmium	0.005	Nitrate*	10		
Chromium (total)	0.1	Nitrite*	1		

*Not eligible for waivers

Also Industrial Contaminant Compound

Appendix D
Susceptibility & Vulnerability Criteria and Monitoring Waiver Flow Chart

Well Vulnerability Criteria *for* **Synthetic organic contaminants (*SOC), Industrial, Cyanide, Dioxin, and EDB Waivers***

Unconsolidated Formation – Well Vulnerability – If a well terminates in an unconsolidated surficial deposit the well is considered *vulnerable*. The only exception is the presence of a thick confining layer of clay (≥ 60 feet) deposited over a large aerial extent that exists within limited areas of the Great Lakes Basins. The confining layer of clay or shale must be of consistent thickness and possess a composition of strong structural integrity. A composition of strong structural integrity contains minimal fractures, and minimal chemical and physical weathering that would increase the hydraulic conductivity of the deposits.

Consolidated (Bedrock) Rock Formation – Well Vulnerability – If a well terminates in a consolidated rock formation (competent bedrock) and the rock formation is overlain by ≥ 60 feet of another deposit or a confining layer (clay or shale), the well is *not* considered *vulnerable*. The well casing must extend through the ≥ 60 feet of overlying material and be seated in the bedrock of the aquifer.

Well Vulnerability Criteria *for* **Volatile organic contaminants (*VOC)* Waivers**

Rock Formation type does not affect the susceptibility well evaluation for a VOC waiver. The evaluation depends on well construction. A well is considered *vulnerable* if the well is constructed with < 100 feet of grouted casing.

Definition of Competent bedrock

Competent Bedrock is defined for monitoring assessment purposes as consolidated rock that exhibits strong structural integrity, composed of lithified or cemented sediments that include sandstone and shale, or igneous and metamorphic rock. Competent bedrock contains minimal fractures, joints, and minimal chemical and physical weathering that would increase the hydraulic conductivity of the bedrock. Bedrock is exposed at the surface or overlain by soil or other unconsolidated surficial deposits (e.g. sand, gravel, clay, glacial till).

WELL VUNERABILITY CRITERIA

Well Vulnerability: *Geology and Well Construction Criteria*	
Well Vulnerability Criteria for: SOCs, Industrial, Cyanide, Dioxin, EDB Waivers	Well Vulnerability Criteria for: VOC Waiver
Well is vulnerable if:	*Well is vulnerable if:*
Well is constructed in unprotected aquifer (No competent bedrock[1] or confining layer present[2])	< 100 feet of grouted casing
≤ 60 feet of overburden	
≤ 60 feet of grouted casing	
Under the direct influence of surface water	

CONTAMINANT SUSCEPTIBILITY CRITERIA

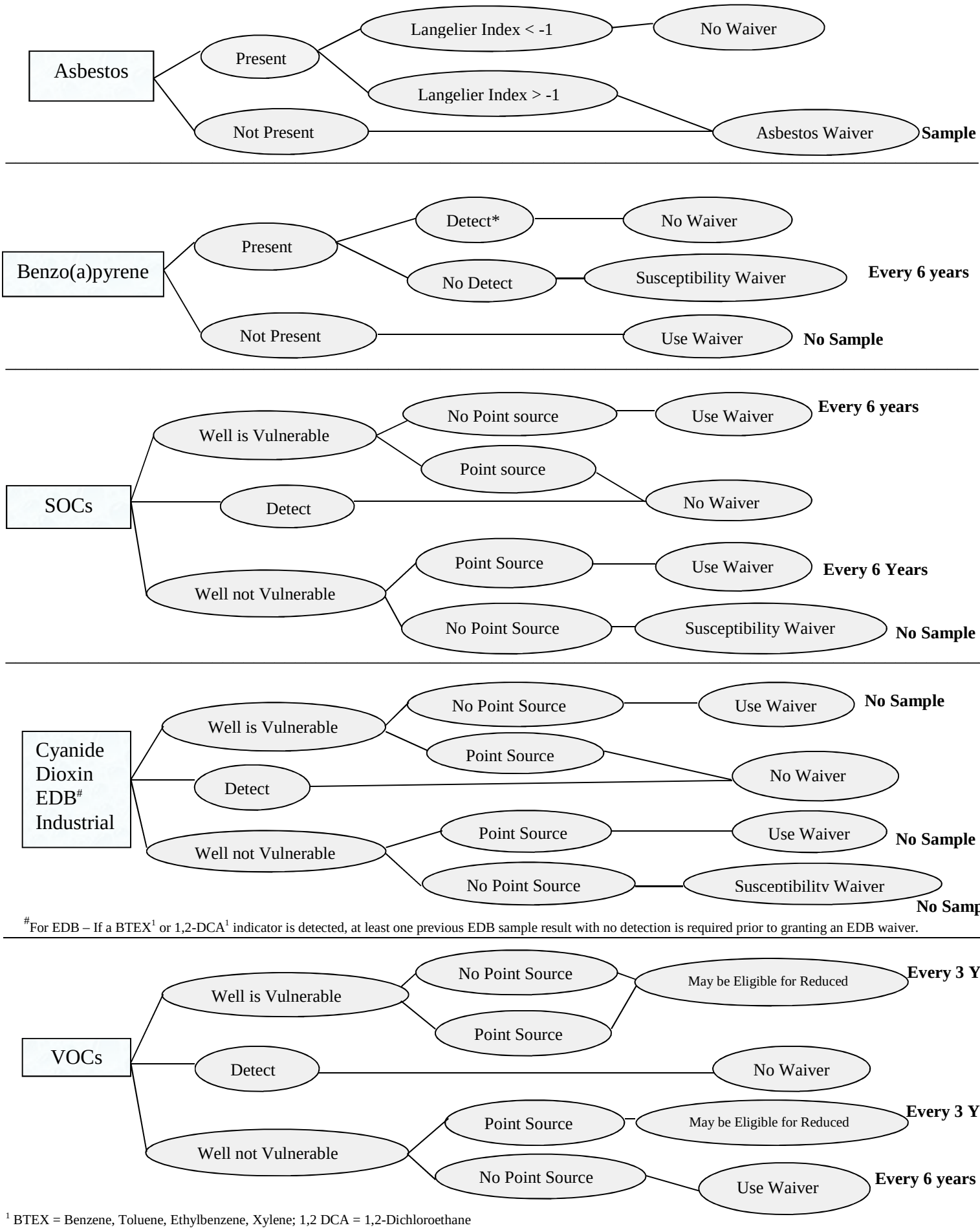
Contaminant Susceptibility: *Contaminant Detection Criteria*	
Contaminant Susceptibility Criteria for: SOC,EDB Waivers	Contaminant Susceptibility Criteria for: VOC Waiver
Well is Susceptible if:	*Well is Susceptible if:*
Triazine or any SOC detection (≥ detection limit)	≥ 0.5 ug/L VOC detection except vinyl chloride ≥ 0.2 ug/L
Nitrate detection > 10.5 mg/L	Potential contaminant source present within assessment area
A benzene, toluene, ethylbenzene, xylene, 1,2-dichloroethane detection (applies to EDB waiver only) [3]	
Potential contaminant source present within assessment area.	

[1] *Competent bedrock* is defined for well vulnerability assessment purposes as consolidated rock that exhibits strong structural integrity, composed of lithified or cemented sediments that include sandstone and shale, or igneous and metamorphic rock. Competent bedrock contains minimal fractures, joints, and minimal chemical and physical weathering that would increase the hydraulic conductivity of the bedrock. Bedrock is exposed at the surface or overlain by soil or other unconsolidated surficial deposits (e.g. sand, gravel, clay, glacial till).

[2] *Confining Layer* is defined for well vulnerability assessment purposes as thick layer of clay or shale (≥ 60 feet) that exists within limited areas of the Great Lakes Basins. The confining layer of clay or shale must be of consistent thickness deposited over a large aerial extent and possess a composition of strong structural integrity. A composition of strong structural integrity contains minimal fractures, and minimal chemical and physical weathering that would increase the hydraulic conductivity of the deposits.

[3] If benzene, toluene, ethylbenzene, xylene, (BTEX) or 1,2–dichloroethane (1,2-DCA) is detected, ethylene dibromide (EDB) monitoring may be waived if at least one EDB analytical result exists with no detection. Past use of EDB includes use as an additive to leaded gasoline. BTEX and 1,2-DCA are indicators of a gasoline release to the environment. In 1973 USEPA announced a phase out of leaded gasoline by 1986; a total leaded gasoline ban was implemented as part of the Clean Air Act in 1996. EDB use has been banned since 1984 for soil and post-harvest application as a fumigant. A statewide ban exists for EDB use. The above referenced monitoring protocol is used to assess any pre-existing EDB releases that may remain in the environment.

MONITORING WAIVER \ REDUCED MONITORING FLOW CHART



#For EDB – If a BTEX[1] or 1,2-DCA[1] indicator is detected, at least one previous EDB sample result with no detection is required prior to granting an EDB waiver.

[1] BTEX = Benzene, Toluene, Ethylbenzene, Xylene; 1,2 DCA = 1,2-Dichloroethane

Appendix E
Monitoring Assessment Application & Potential Contaminant Source Documents

1) Monitoring Assessment Cover Letter and Application Form
2) Waiver Related Potential Contaminant Source Code Document
3) Additional Information for Wellhead Protection Document
4) Monitoring Assessment Maps (*Example*)

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

January 01, 20xx

Subject: Public Water System *Monitoring Waiver Application* – Application Materials Enclosed

Dear Water Supply System Owner:

The Wisconsin Department of Natural Resources (DNR) may grant monitoring waivers from the sampling requirements for your water supply system. Monitoring waivers reduce the frequency or eliminate monitoring requirements. The average monitoring waiver cost savings per well is estimated to be $2,500 per monitoring cycle. Public water systems are responsible for submitting waiver requests to the DNR. Your response to this letter serves as the waiver request. In order to keep waivers in effect, or to obtain new or additional waivers, DNR must evaluate a well's proximity to sources of contamination every three years. This information is part of a waiver evaluation and is completed in part through self-reporting by water supply system owners.

Please follow the directions on the back page of this letter to complete your waiver request and return within **30** days:

- this letter with the requested information;
- your signature and completed worksheet;
- the attached map with updates.

Failure to complete and return the monitoring assessment documents to DNR will invalidate any existing monitoring waivers and result in increased monitoring requirements and sampling costs to you in 20xx. The documents must be returned to the DNR office listed at the bottom of the back page of this letter.

The objective of DNR's monitoring assessment program is to reduce the amount of monitoring while assuring the safety of the drinking water supply. As a result, monitoring waivers can provide significant cost savings to public water system owners.

Monitoring waivers may be granted based on an evaluation of a complete monitoring assessment for each well in the system. A complete assessment includes identifying proximity to potential contaminant sources, analyzing local geology, and evaluating well construction criteria.

Please recognize that there is a regular monitoring schedule for your system that requires periodic monitoring of a wide-range of contaminants. Certain monitoring waivers, if granted, *reduce* the monitoring frequency and sampling requirements of some of these contaminants, but do not eliminate them from your monitoring schedule. If you have any questions with regards to completing the required monitoring assessment documents in order to receive your 20xx monitoring waivers, please contact _____ at (xxx) xxx-xxxx. Thank you for your participation in the monitoring assessment program.

Sincerely,

Water Supply Specialist
Bureau of Drinking Water and Groundwater

Facility Name:	System Type :
Facility ID Number:	Total Number of Wells:

INSTRUCTIONS

***Parts I, II**, and the **Certification** must be completed and returned to the DNR for you **to be considered for monitoring waivers**.*

PART I Maps

Note: For security reasons, do not distribute the map to anyone other than persons directly involved with your water system operation.

To apply for or update monitoring waivers please complete the following steps:

1. Review the map (aerial photo) and note the source water assessment area (circle or other shape around the well number).

2. Review the enclosed *"Waiver Related Potential Contaminant Source Code"* and "*Additional Information for Wellhead Protection"* sheets to identify any existing potential contaminate sources on the map. New well sources or new public water systems will not have any potential contaminant sources identified on the map.

3. *Map Updates for New Wells, New Public Water Systems* and Identification of New Potential Contaminant Sources – To add potential contaminant sources *affecting monitoring waivers* within the map source water assessment area: 1) legibly mark the potential contaminant source location on the map with an "X" and; 2) use the *"Waiver Related Potential Contaminant Source Code"* sheet to identify the code for the new source and write the three letter code on the map near the "X" of the new source location. For example, if a new gas service station has opened up in the well's assessment area, mark the location on the map with an "X", then identify the contaminant source code for a gas service station using the contaminant source code sheet and write the code (e.g. CSS) on the map near the "X" of the gas service station location.

   For wells *with Wellhead Protection Plans or interest in developing well head protection plan*, please refer to the "*Additional Information for Wellhead Protection"* sheet for more information on the addition of other potential contaminant sources to the map.

4. *Map Updates for Existing Wells with Existing Potential Contaminant Sources* – Existing potential contaminant source *features* (i.e. point source) that affect *monitoring waivers* are shown on the map with a black "X" and black typeface labels. Contaminant source *areas* that affect *monitoring waivers* are shown on the map with a red grid pattern and black typeface labels. Contaminant sources that do *not* affect monitoring waivers are all shown in pink with pink typeface labels; for further explanation of these contaminant sources please see the attached document "*Additional Information for Wellhead Protection"*.

   - To add new potential contaminant sources, please follow the directions provided in step (3) above.
   - If there are potential contaminant sources in the assessment area that are *no longer* present, legibly cross out the contaminant source code on the map. Note, certain contaminant sources, such as active or historical contaminated properties (i.e. WLS, WRP, WLA, WUC) may not be removed.
   - If the existing potential contaminant sources identified on the map are accurate and there are no changes, write "No Change" on the map.

PART II Asbestos and Coal Tar [Benzo(a)pyrene]

1. Is any part of your water distribution system constructed of materials containing asbestos fibers? (Example: Asbestos-cement pipe). ____ YES ____ NO

2. Is any part of your water distribution system sealed with a product containing coal tar or Benzo(a)pyrene? (Example: Pipe or reservoir lining). ____ YES ____ NO

CERTIFICATION

I certify that the answers provided in this waiver assessment update are, to best of my knowledge, truthful and accurate.

Printed Name of Owner or Representative of Owner	Telephone Number	Date of Completion
Signature	Title	

Return this Form and Map within 30 days to:
Water Supply Specialist
WI DNR
1111 Natural Resources Drive
Badger City, WI 55555

WAIVER RELATED POTENTIAL CONTAMINANT SOURCE CODES

POTENTIAL CONTAMINANT SOURCES **WELL ID No._____**

CONT. CODE	✓ if present (New wells only)	CONTAMINANT SOURCE	DESCRIPTION	AFFECTS WAIVER TYPE	POTENTIAL CONTAMINANTS
BULK STORAGE / MATERIAL STOCKPILING					
BGS		Bulk Grain storage site		SOC	Fungicides
BPS		Pesticide storage/ mixing/ loading	Feed mill, agricultural co-op	SOC	Herbicides, insecticides, rodenticides, fungicides, avicides
BFT		Bulk Petroleum storage	Tanks ≥ 500 gallons	VOC	Diesel, gasoline, fuel oil
BCT		Bulk Chemical storage	Tanks ≥ 500 gallons	VOC	Specific to chemical product stored at site
COMMERCIAL					
CBS		Auto body shop		VOC	Paints, solvents
CDC		Dry cleaning		VOC	Solvents (tetrachloroethylene, petroleum solvents, trichloroethane)
CSS		Gas service station		VOC	Gasoline, oils, solvents, miscellaneous wastes
CMW		Machine / metal working shop		VOC	Solvents, metals, organics, sludges, cutting oils, degreasers
CVR		Motor vehicle repair shop		VOC	Waste oils, solvents, acids, paints, automotive wastes
CPS		Paint shop		VOC	Paint, paint thinner, solvents
CPH		Photo processing	Only include processing facilities	Cyanide	Cyanides
CPR		Printing		VOC	Solvents, inks, dyes, oils
CRY		Rail yard		VOC	Spills
CSP		Seed production plant		SOC	Fumigants
GENERAL					
GFA		Fuel storage tank - above ground	Non-service station tanks	VOC	Gasoline, diesel fuel, other petro products
GFB		Fuel storage tank - underground	Non-service station tanks	VOC	Gasoline, diesel fuel, other petro products
INDUSTRIAL					
ICM		Chemical manufacturer	Industrial chemical production facilities	VOC Industrial	Chemicals
IEE		Electrical and electronic products manufacturing		VOC	Solvents, oils, acids, paints, methylene chloride, tetrachloroethylene, toluene, trichloroethane, acetone, metal sludges,
IES		Plating/ Electroplating / metal finishing facility		VOC Cyanide	Acids, alkaline solutions, cyanide, metallic salts, solvents, cyanide, heavy metal contaminated wastewater
IFM		Furniture or wood manufacturing / refinishing / stripping		VOC	Paints, solvents, (toluene, methylene chloride)
IFW		Metal manufacturing - foundry / smelting plant		Cyanide	Cyanides, sulfides
IMQ		Mining (Metallic only)		Cyanide	Cyanide, sulfides, metals, acids drainage
IPM		Paper mill		Dioxin	Metals, acids, minerals, sulfides, sludges, chlorine, hypochlorite, chlorine dioxide, hydrogen peroxide
IPP		Pipeline (petroleum or chemical)		VOC	Petroleum, chemicals
IPC		Plastics manufacturer / molder		VOC Cyanide	Solvents, oils, paint wastes, cyanides, acids, alkalis, esters, surfactants, glycols, phenols, formaldehyde, peroxides
ITP		Textile / polyester manufacturer		Industrial	Industrial Chemicals
IWT		Wood preserving facility (treated wood manufacturer)		VOC SOC	Treated wood residue, preservatives (pentachlorophenol, chromate, copper arsenate), paint sludges, solvents, creosote, coating wastes

CONT CODE	✓ if present (New wells only)	CONTAMINANT SOURCE	DESCRIPTION	AFFECTS WAIVER TYPE	POTENTIAL CONTAMINANTS
MISCELLANEOUS SOURCES AND CONDUITS					
MFT		Fire training facility		VOC	Chemicals
MMI		Military installation		VOC SOC	Chemicals
GWI		Water well (unused or improperly abandoned)		VOC SOC	Potential conduits for pollutants to enter groundwater
WASTE MANAGEMENT					
WRP		Chemical release site (other than petroleum) ERP site	Sites listed in the DNR Bureau of Remediation and Redevelopment Tracking system (BRRTS)	VOC	Chemical releases and cleanups
WHS		Hazardous waste generator (hazardous chemicals used on site)	Any facility that is a hazardous waste generator that may be a threat to a well / RCRA clean-ups	VOC SOC	Hazardous waste (waste that requires a hazardous waste transporter for pickup and disposal)
WDR		Injection well – Class V	Any well, drilled or dug hole, used to inject fluids into the subsoil	VOC SOC	Petroleum products, pesticides
WLA		Landfill	Solid and hazardous waste sites listed in the DNR "Registry of Waste Disposal Sites in Wisconsin"	VOC SOC	Leachate
WLS		Petroleum release site (leaking underground storage tank)	LUST Sites included in the DNR Bureau of Remediation and Redevelopment Tracking system (BRRTS)	VOC	Gasoline, diesel fuel, other petroleum products
WUC		Superfund site (contaminated sites in federal cleanup program)	Sites listed in the DNR Bureau of Remediation and Redevelopment Tracking system (BRRTS)	VOC SOC	Miscellaneous contaminants

ADDITIONAL INFORMATION FOR WELLHEAD PROTECTION

Protecting your source of drinking water from contamination is a key part to a multi-barrier approach to safe drinking water. Wisconsin's Wellhead Protection (WHP) Program helps to protect residents' health and to avoid the need for costly new well construction or treatment systems. A critical part of WHP is an updated inventory of possible sources of contamination. Listed below are potential sources of contamination that do not have associated monitoring requirements for which waivers are available. You are not required to mark these potential contaminant sources on the map. If you choose to mark potential contaminant sources from this list on your vulnerability assessment map, the locations will be added to the Wisconsin Department of Natural Resources (DNR) vulnerability assessment map data for your future use in developing WHP plans or in diagnosing well water problems.

PART I Update Maps

Note: For security reasons, do not distribute the map to anyone other than persons directly involved with your water system operation.

To update the enclosed map, review the potential contaminant source list below and use the codes to identify potential contaminant sources on the map:

1. Review the map (aerial photo) and note the source water protection area (same area you used for monitoring assessment).
2. Review the identified potential contaminant sources in the source water protection area. Contaminant source features that affect monitoring waivers are shown on the map with a black "X" and black typeface labels. Contaminant source *areas* that affect monitoring waivers are shown on the map with a red grid pattern and black typeface labels. Contaminant sources that do not affect monitoring waivers are all shown in pink with pink typeface labels.
3. If there are new potential contaminant sources from the list below in the source water protection area: 1) legibly mark the new potential contaminant source location on the map with an "X" and; 2) use the enclosed potential contaminant source code sheet to identify the code for the new source and write the three letter code on the map near the "X" of the new source location. For larger areas such as agricultural crop farming or a golf course you may outline the area and label it with the applicable potential contaminant source code.
4. If there are potential contaminant sources from the list below in the source water protection area that are no longer present, legibly cross out the potential contaminant source code on the map.

PART II Interest in Wellhead Protection (WHP)

If you would like information or assistance with wellhead protection please fill out the following section and return this form along with your map(s) and vulnerability assessment certification.

1. Do ordinances implement wellhead protection for your wells? ____ YES, all wells ____ YES, some wells ____ NO

2. Would you like information or assistance with wellhead protection? ____ YES ____ NO

If YES, please provide: Facility Name _____ Facility ID _____

Email address for your WHP contact: _____

POTENTIAL CONTAMINANT SOURCES

WELL ID No. _____

CODE	✓ if present (New wells only)	CONTAMINANT SOURCE	DESCRIPTION	SPECIFIC CONTAMINANTS
AGRICULTURE				
AAH		Livestock	Housing, feeding, grazing, manure storage	Livestock sewage wastes, nitrates, phosphates, chloride, chemical sprays and dips for controlling insect, bacterial, viral, and fungal pests, coliform bacteria, viruses
AFP		Agricultural crop farming	Active farming operations	Pesticides, fertilizers
BULK STORAGE / MATERIAL STOCKPILING				
BFS		Fertilizer storage/mixing	Feed mill, agricultural co-op	Nitrates
BSS		Road salt storage	Bulk storage sites	Sodium chloride, calcium chloride, waste oil
COMMERCIAL				
CAI		Airport		Jet fuels, deicers, batteries, diesel fuel, chlorinated solvents, auto wastes, heating oil, building wastes
CBY		Boat yard		Diesel fuels, batteries, oils, septage from boat waste disposal areas, wood preservatives, paints, waxes, varnishes, automotive wastes

CODE	✓ if present (New wells only)	CONTAMINANT SOURCE	DESCRIPTION	SPECIFIC CONTAMINANTS
COMMERCIAL (continued)				
CCW		Car wash	Car washes in unsewered areas	Soaps, detergents, waxes, miscellaneous chemicals
CCE		Cemetery		Leachate (formaldehyde), lawn and maintenance chemicals
CLD		Laundromat	Laundromats in unsewered areas	Detergents, bleaches, fabric dyes
CRT		Railroad track		Spills
CSY		Scrap/junkyard		Oil, gasoline, antifreeze, PCB contaminated soils, lead acids batteries
GENERAL				
GST		Sewage tank	Holding tanks, septic tanks, sumps	Septage, coliform bacteria, viruses, nitrates, heavy metals, synthetic detergents, cooking and motor oil, bleach, pesticides, paints, paint thinner, photographic chemicals, septic tank cleaner chemicals, chlorides, sulfate, calcium, magnesium, potassium, phosphate
GSA		Sewage absorption area	Drainfields, mounds, dry wells	Septage, coliform bacteria, viruses, nitrates, heavy metals, synthetic detergents, cooking and motor oil, bleach, pesticides, paints, paint thinner, photographic chemicals, septic tank cleaner chemicals, chlorides, sulfate, calcium, magnesium, potassium, phosphate
INDUSTRIAL				
IAS		Asphalt plant		Petroleum derivatives
IGS		Gravel and sand pits		Spills, miscellaneous chemicals, bacteria
ISQ		Stone quarries		Spills, miscellaneous chemicals, potential conduit, bacteria
MISCELLANEOUS SOURCES AND CONDUITS				
MGC		Golf course		Fertilizers, herbicides, pesticides for controlling mosquitoes, ticks, ants, gypsy moths, and other pests., automotive wastes
MGP		Manufactured gas plant / gasification plant		Petroleum VOCs, Benzo(a)pyrene, PAHs, cyanide
MLA		Laboratory (college, medical, school, private, etc.		Biological wastes, disinfectants, acids, formaldehyde, miscellaneous chemicals
MMP		Medical installation (e.g. Hospital)		X-ray developers and fixers, infectious wastes, radiological wastes, biological wastes, disinfectants, asbestos, beryllium, acids, formaldehyde, miscellaneous chemicals
GWA		Water well (active production)		Potential conduits for pollutants to enter groundwater
MKF		Karst feature / fractured bedrock	Deep bedrock fractures, caves, disappearing streams, springs, or sinkholes	Direct conduits for pollutants to enter groundwater
DOT		Other (specify) _____	Other potential contaminant source not listed	
WASTE MANAGEMENT				
WIN		Incinerator (municipal)		Metals, combustion by-products
WRF		Recycling facility		Petroleum products, chemicals
WSS		Sludge spreading	Municipal wastewater sludge, paper mill sludge	Viruses, coliform bacteria, heavy metals, dioxins
WTS		Solid waste transfer station		Miscellaneous chemicals
WSW		Storm water retention pond		Metals, petroleum products
WWP		Wastewater treatment plant		Coliform bacteria, viruses
WWO		Wastewater discharge to surface water	Surface water outfall	Coliform bacteria, viruses
WWS		Wastewater discharge to groundwater	Absorption and seepage cells, subsurface systems, etc.	Coliform bacteria, viruses
WSI		Wastewater spray irrigation	Spray irrigation	Coliform bacteria, nitrate, chloride, pathogens, viruses
WWL		Wastewater lagoon	Treatment or storage lagoons	Coliform bacteria, viruses

Figure 1


EXAMPLE MAP:
PUBLIC WATERWORKS
Public Water System
Well 2
Well 1
N
Selected Public Water Supply Well
Other Public Water Supply Wells
Source Water Assessment Area
Potential Contaminant Source (point)
Potential Contaminant Source (line)
Potential Contaminant Source (area)
Potential Contaminant Sources shown in PINK do not affect monitoring waivers.

Example Map: PUBLIC WATERWORKS

EXAMPLE MAP PUBLIC WATERWORKS