

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Water Protection Bureau
P.O. Box 200901
Helena, MT 59620-0901

Fact Sheet **Montana Ground Water Pollution Control System** **General Permit for Advanced Domestic Wastewater Treatment Facilities**

Facilities:	Domestic Wastewater Treatment Facilities with Advanced Nitrogen Treatment Techniques
Permittees:	Owners and Operators of Domestic Wastewater Treatment Facilities
Permit Number:	MTXG03000
Location:	Statewide, Except Within the Boundaries of Federally Recognized Indian Lands
Receiving Water:	State Ground Water

I. Permit Status

This Montana Ground Water Pollution Control System (MGWPCS) General Permit (GP) is a new general permit which authorizes discharge of treated domestic wastewaters to state ground water. This permit is for wastewater treatment facilities (facilities) that have advanced treatment techniques capable of meeting restrictive water quality standards (Section V) prior to discharge. Additional permit eligibility and exclusion criteria are listed within Section III and Section IV of this fact sheet. A permit eligibility decision matrix is also enclosed (Appendix V).

The Montana Department of Environmental Quality (Department) is currently accepting applications from the following:

- Permittees with a valid individual MGWPCS permit seeking replacement with this GP; or,
- Applicants seeking new permit coverage under this GP with facilities that have (or will) undergone a Department nondegradation-significance determination (Appendix I.B.2.).

All potential applicants are encouraged to call the Water Protection Bureau at 406-444-3080 with any questions. Preapplication meetings with the Department are encouraged.

II. Description of Discharging Facilities

This Advanced Domestic Wastewater Treatment (ADWT) GP is available for facilities which discharge treated domestic wastewater to state ground water. In order to qualify for permit coverage, all facilities must:

- Demonstrate evidence of treatment capable of meeting the established effluent limitation (Section V) which was derived from the most restrictive ground water quality standard and nondegradation-nonsignificance criteria; and,
- Meet all basic criteria (Section III); and,
- Not have an activity listed under the exclusion criteria (Section IV).

A permit eligibility decision matrix is enclosed within Appendix V.

In creation of this GP, the Department recognizes the following:

- A trend in wastewater treatment facilities proposing advanced treatment techniques capable of meeting the most restrictive ground water quality standard and nondegradation-nonsignificance criteria prior to discharge;
- Wastewater treatment facilities capable of treatment at or below the effluent limitation (Section V) may remove up to thirteen times more nitrogen than conventional septic treatment systems (USEPA, 2002b);
- This GP may provide permit coverage for wastewater treatment facilities that currently do not have effective permit coverage (e.g. permit exclusion, unauthorized discharges); and,
- The Department's guiding principle of 'Working for a Clean and Healthful Environment', <http://deq.mt.gov/DEQAdmin/about/mission>

Currently, there are approximately 15 existing individual MGWPCS permits that may be eligible for coverage under this GP. In addition, there may be other unpermitted facilities that may also be eligible for coverage.

III. Facilities Eligible for Permit Coverage

Coverage under the ADWT GP will be considered only for facilities that meet all basic criteria as listed below:

- A. The facility has existing permit coverage under a valid MGWPCS permit; and/or, has undergone a Department significance determination (Section VIII).

AND

- B. The facility shows evidence of treatment capable of meeting the numeric effluent limitation (Section V) prior to discharge.

AND

C. The facility's plans and specifications have or will undergo Department review (Section X) as stipulated by one of the following statutes:

- Public Water Supply Act, Title 75, chapter 6, Montana Code Annotated (MCA);
- Subdivision and Platting Act, Title 76, chapter 3, MCA; or,
- Sanitations in Subdivisions Act, Title 76, chapter 4, MCA.

IV. Facilities Excluded from Permit Coverage

Facilities are prohibited from obtaining or retaining an ADWT GP if any one of the following is applicable:

- Discharge of industrial wastewater or other (non-domestic) wastes.
- Dilution from a ground water mixing zone is needed in order to meet long term numeric effluent limitations (Section VII).
- Beneficial uses of any downgradient receiving ground water cannot be maintained.
- The evaluation of the phosphorus adsorptive capacity of the soils (nondegradation significance determination, Section VIII) in the area of the activity indicates that phosphorus will not be removed for a period of at least 50 years.
- The wastewater treatment system or disposal system does not meet the design requirements under the following standards:
 - Circular DEQ-2, Design Standards for Public Sewage Systems; when applicable.
 - Circular DEQ-4, Montana Standards for Subsurface Wastewater Treatment Systems; when applicable.
- The wastewater treatment system is not designed to treat *Escherichia coli* bacteria; or, the disposal system is not designed to remove *E. coli* bacteria.
- A disposal structure is located within 600 feet of a downgradient water well or spring (set back).
- A disposal structure does not meet the minimum set back requirements (Appendix VI).
- Under an Administrative Order on Consent (AOC) or persistent non-compliance issues.

V. Proposed Discharge Limitations and Special Conditions

The Department has a statutory duty to develop effluent limits and issue permits consistent with the Montana Water Quality Act (Act) and rules adopted under that Act. This section presents the basis for discharge limitations and special conditions. The basis for deriving and establishing effluent limitations and special conditions are further discussed in Appendix I.

Based on the information and analyses presented in Appendix I, the Department proposes the following numerical effluent limitation listed in the table below.

Effluent Limitations			
Parameter	Units	Daily Maximum⁽¹⁾	Rationale
Nitrogen, Total (as N)	mg/L	7.5	Nondegradation-Nonsignificance Criteria ARM 17.30.715(1)(d)
Footnotes: ARM = Administrative Rules of Montana (1) Refer to reporting requirements listed in the Effluent Monitoring Table.			

VI. Self-Monitoring and Reporting Requirements

All issued MGWPCS permits must contain monitoring requirements that assure compliance with the developed numeric effluent limitations and therefore water quality standards. Effluent monitoring and reporting requirements will be required as a condition of this permit. Self-monitoring requirements and respective rationale is summarized in Appendix II.

VII. Mixing Zone

A mixing zone is an area of the receiving water, established in a permit, where the water quality standards may be exceeded. Water quality standards must be met prior to discharge therefore ground water dilution is not required or authorized under this ADWT GP. The Department will not authorize new mixing zones within this GP permit. The mixing zone rationale is further discussed in Appendix III.

VIII. Nondegradation

It is unlawful to cause degradation of state waters without an authorization issued pursuant to 75-5-605(1)(d), MCA. The Department must determine whether a proposed activity may cause degradation for activities authorized by the Department for new or increase sources.

The nondegradation-nonsignificance criteria have been incorporated into the development of effluent limitations and special conditions (Section V) within this GP. The Department has determined that discharges in compliance with the eligibility criteria, effluent limitations, special conditions, and other terms and conditions of this permit are not significant.

IX. Standard Conditions

The standard conditions included in the GP are based on the standard conditions in ARM 17.30.1030-1033, and ARM 17.30.1342; and include conditions required pursuant to 75-5-402(1), MCA.

X. Plan and Specification Review

Prior to discharge, the wastewater treatment system's plans and specifications must be reviewed and approved by the Department.

XI. Procedure for Obtaining Permit Coverage under the ADWT GP

A. Facilities Applying for New Permit Coverage (New, Replacement, or Modification)

To obtain permit coverage, the applicant must complete the following for each eligible facility:

1. Submit a complete General Information form (DEQ Form 1) that reflects the current nature and operation of the facility; completed to the satisfaction of the Department.
2. Submit a complete NOI ADWT form (DEQ Form NOI-MTXG03) that reflects the current nature and operation of the facility; completed to the satisfaction of the Department (note: the correct NOI form is the version in use by the Department upon the date that the Department received the application).
3. Submit (as part of the NOI package) evidence demonstrating the capability of the treatment system in meeting the numeric effluent limitations as established within this GP (Section V).
4. Cite (or submit) an existing nonsignificance determination - phosphorous breakthrough analysis (Section VIII). An analysis may not be needed if the facility has previously undergone a nonsignificance determination by the Department and no significant modifications have since taken place; or is not a new or increased source. Please contact the Water Protection Bureau at 406-444-3080 with any questions. Additional fees may apply.
5. Submit (as part of the NOI form) a plan to provide alternative water supplies or treatment in the event any water well is adversely affected by the operation of the source.

6. Submit (as part of the NOI form) the following:
 - Vicinity map,
 - Facility site plan,
 - Location of adjacent state surface waters,
 - List of surface owners within one mile of the proposed discharge structure(s),
 - Location of water wells and springs within one mile of the proposed discharge structure(s),
 - A summary of the status of plans and specifications for the wastewater treatment system and disposal structures, and,
 - Current wastewater treatment system line diagram.

7. If the proposed source currently does not have effective permit coverage under a valid individual MGWPCS permit, the Department may require the submission of additional data and information in order to analyze any potential impacts of the source. Information requested may be found within the MGWPCS GW-1 application forms.
<http://deq.mt.gov/Water/WPB/wpbforms>

8. Submit all requested information to allow the Department to complete all applicable reviews to comply with the Montana Environmental Policy Act (MEPA).

9. The applicant is required to notify the Department on whether the facility is located in Sage Grouse core habitat. The notification must be received at the time of application submittal (Form NOI-MTXG03).

If the facility is located in Sage Grouse core habitat, the applicant is required to contact the Department of Natural Resources and Conservation (DNRC) Sage Grouse program in regards to any restrictions placed upon the facility or project. Documentation from DNRC must be submitted to the Department at time of application submittal and must identify any restrictions.

Information regarding the Sage Grouse program and habitat boundary maps can be found at the follow websites: <https://sagegrouse.mt.gov/> and <http://svc.mt.gov/deq/wmadst/>.

The Department may deny permit authorization due to any restrictions placed upon the facility or project.

10. Submit all applicable fees.

These materials must be submitted on, or in supplement to, form NOI-MTXG03 to:

Department of Environmental Quality
Water Protection Bureau
P.O. Box 200901
Helena, MT 59620-0901

Please note that the applicant will not have effective permit coverage until the Department issues an authorization letter to the applicant to discharge under the ADWT GP. Concurrently, and if applicable, the Department will terminate any existing MGWPCS permits. An effective authorization letter along with a copy of the ADWT general permit must be retained at all times at the discharge facility.

B. Facilities Renewing Permit Coverage (with no significant modifications)

To renew permit coverage, the applicant must complete the following for each eligible facility:

1. Submit a complete General Information form (DEQ Form 1) that reflects the current nature and operation of the facility; completed to the satisfaction of the Department.
2. Submit a complete NOI ADWT form (DEQ Form NOI-MTXG03) that reflects the current nature and operation of the facility; completed to the satisfaction of the Department (note: the correct NOI form is the version in use by the Department upon the date that the Department received the application).
3. Submit (as part of the NOI form) the following:
 - Vicinity map,
 - Facility site plan,
 - Location of adjacent state surface waters,
 - List of surface owners within one mile of the discharge structure(s),
 - Location of water wells and springs within one mile of the discharge structure(s),
 - A summary of the status of plans and specifications for the wastewater treatment system and disposal structures, and,
 - Current wastewater treatment system line diagram.

4. Submit all requested information to allow the Department to complete all applicable reviews to comply with the Montana Environmental Policy Act (MEPA).
5. Submit all applicable fees.

These materials must be submitted on, or in supplement to, form NOI-MTXG03 to:

Department of Environmental Quality
Water Protection Bureau
P.O. Box 200901
Helena, MT 59620-0901

Please note that the applicant will not have effective permit coverage until the Department issues an authorization letter to the applicant to discharge under the ADWT GP. Concurrently, and if applicable, the Department will terminate any existing MGWPCS permits. An effective authorization letter along with a copy of the ADWT general permit must be retained at all times at the discharge facility.

XII. Procedures for Reaching a Final Decision on the Draft GP

Legal notice information for water quality discharge permits are listed at the following website: <http://deq.mt.gov/Public/notices/wqnotices>. Public comments on this proposal are invited any time prior to close of business on June 22, 2016. Comments may be directed to:

DEQWPBPublicComments@mt.gov

or,

Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620

All comments received or postmarked prior to the close of the public comment period will be considered in the formulation of the final permit. The Department will respond to all substantive comments pertinent to this permitting action and may issue a final decision within 30 days of the close of the public comment period.

All persons, including the applicant, who believe any condition of the draft permit is inappropriate, or that the Department's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, shall raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period (including any public hearing). All public comments received for this draft permit will be included in the administrative record and will be available for public viewing during normal business hours.

Copies of the public notice were mailed to the applicant, state and federal agencies and interested persons who have expressed interest in being notified of permit actions. A copy of the distribution list is available in the administrative record for this draft permit. Electronic copies of the public notice, draft permit, fact sheet, and draft environmental assessment are available at the following website:
<http://deq.mt.gov/Public/notices/wqnotices>.

Any person interested in being placed on the mailing list for information regarding this permit may contact the DEQ Water Protection Bureau at (406) 444-3080 or email DEQWPBPublicComments@mt.gov. All inquiries will need to reference the general permit (ADWT GP - MTXG03), and include the following information: name, address, and phone number.

During the public comment period provided by the notice, the Department will accept requests for a public hearing. A request for a public hearing must be in writing and must state the nature of the issue proposed to be raised in the hearing.

For additional information concerning the ADWT GP, or the information, documents, and procedures discussed in this Fact Sheet, please contact the Water Protection Bureau at (406) 444-3080. Note: comments pertaining to the public comment period may not be submitted over the phone.

XIII. Permit Coverage

A. Revocation

Permit coverage may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, any of the following:

- Failure to meet or sustain the GP eligibility criteria (Section III).
- Excluded from GP coverage (Section IV).
- The wastewater treatment system's plans and specifications were not reviewed or approved by the Department (Section X) prior to discharge.
- Failure to disclose or submit a Phosphorous Breakthrough Analysis (Significance Determination, Section VIII).
- Violation of any condition of the permit.
- Obtaining a permit by misrepresentation or failure to disclose fully all relevant facts.
- A discharge that requires either a temporary reduction, permanent reduction, or elimination of the authorized discharge due to any of the following:
 - change in any condition,
 - violation of ground water quality standards,
 - degradation of high quality ground waters, or,
 - impact to the beneficial uses.
- A failure or refusal by the permittee to comply with the monitoring or reporting requirements.

B. Termination

Permit authorizations remain in effect, unless the Department receives notification from the permittee that the activity has ceased and will not be continued, and the disposal system has been deconstructed. This notice must be signed and certified in accordance with the signatory requirements in **Part X** of the GP.

Permittees are authorized to operate for the term of the permit provided they pay all annual fees. The facility remains responsible for payment of all applicable fees.

Failure to submit a termination request shall result in accrual of annual fees until such notice is received by the Department.

C. Replacement

The owner or operator of a facility with active permit coverage under this GP may request replacement with another permit by applying for and obtaining another MGWPCS or Montana Pollutant Discharge Elimination System (MPDES) permit. If another MGWPCS permit is issued to the owner or operator of the facility, coverage under the GP is terminated on the effective date of the issued MGWPCS permit.

D. Transfer of Permittee

This permit may be transferred to a new permittee if:

- The current permittee notifies the Department at least 30 days in advance of the proposed transfer date by submitting a complete permit transfer notification form (Form PTN); and,
- All applicable fees have been paid; and,
- The Department does not notify the permittees (existing or new) of intent to modify, suspend, revoke, or reissue the permit.

E. Duration

Coverage under this MGWPCS general permit, must have a fixed term not to exceed five years. The permittee will be subject to the requirements contained in the issued GP upon the effective date until either they renew or terminate permit coverage; or apply and are issued permit coverage under another type of MGWPCS permit. All facilities authorized under the GP will have the same date of expiration, which will correspond with the GP issuance date.

XIV. Information Sources and References of Interest

Administrative Rules of Montana, Title 17, Chapter 30, Water Quality:

- Subchapter 2 – Water Quality Permit Fees, May, 2011.
- Subchapter 5 – Mixing Zones in Surface and Ground Water, October, 2012.
- Subchapter 7 – Nondegradation of Water Quality, November, 2013.
- Subchapter 10 – Montana Ground Water Pollution Control System, October 2012.
- Subchapter 13 – Montana Pollutant Discharge Elimination System, April, 2013.
<http://www.mtrules.org/gateway/ChapterHome.asp?Chapter=17%2E30>

Canter, Larry W., Nitrates in Groundwater, CRC Press, 1996.

Department of Environmental Quality, How to Perform a Nondegradation Analysis for Subsurface Wastewater Treatment Facilities, 2009,
<http://deq.mt.gov/Water/WQINFO/nondeg/howtonondereg>.

Department of Environmental Quality, MGWPCS program information:
<http://deq.mt.gov/Water/WQINFO/mgwpcs>.

Department of Environmental Quality, Nondegradation general information
<http://deq.mt.gov/Water/WQINFO/nondeg/howtonondereg>

Department of Environmental Quality, Water Quality Circulars:

- Circular DEQ-2 – Design Standards for Wastewater Facilities, 2012.
- Circular DEQ-4 – Montana Standards for On-Site Subsurface Sewage Treatment Systems, 2013.
- Circular DEQ-7 – Montana Numeric Water Quality Standards, 2012.
<http://deq.mt.gov/Water/TFA/srf/circulars>

Department of Environmental Quality, Water Discharge Permit Application forms:
<http://deq.mt.gov/Water/WPB/wpbforms>

Department of Environmental Quality, Water Quality Permit Application fees (click on WPB Fee Rule Summary link): <http://deq.mt.gov/Water/WQINFO/mgwpcs>

Montana Code Annotated, Title 75, Chapter 5, Montana Water Quality Act, 2011.

U.S. Environmental Protection Agency, Movement and Longevity of Viruses in the Subsurface, Ground Water Issue, EPA/540/S-03/500, National Risk Management Research Laboratory. April 2003.

U.S. Environmental Protection Agency, Nitrification, 625/R-00/008, Office of Ground Water and Office of Water. 2002a.

U.S. Environmental Protection Agency, Onsite Wastewater Treatment Systems Manual, 625/R-00/008, Office of Research and Development and Office of Water. 2002b.

U.S. Environmental Protection Agency, NPDES Permit Writers' Manual, 833-K-10-001, September 2010.

Prepared by: Chris Boe – May 2016

Appendix I – Rational for Proposed Discharge Limitations and Special Conditions

This MGWPCS GP authorizes discharge of treated domestic wastewater to state ground water. All classes of ground water (Class I-IV, ARM 17.30.1006) and types of sources (e.g. new or increased source, ARM 17.30.702) may qualify for this GP. In order to maintain the beneficial uses of all ground waters, the following conservative criteria will be used in development of effluent limitations for this GP:

- all receiving ground waters will be regarded as high quality waters (ARM 17.30.702);
- all activities will be regarded as new or increased sources;
- all receiving ground waters will be maintained for the beneficial uses of Class I ground water, as listed below; and,
- all wastewater treatment systems capable of meeting the numeric effluent limitation for nitrogen (7.5 mg/L, Section V) by definition also provide Level 2 treatment (24 mg/L).

The quality of ground water must be maintained so that these waters are suitable for the following beneficial uses with little or no treatment:

- public and private water supplies;
- culinary and food processing purposes;
- irrigation;
- drinking water for livestock and wildlife; and,
- commercial and industrial purposes.

Discharges in compliance with the effluent limitations and special conditions meet the most restrictive ground water quality standards and nondegradation-nonsignificance criteria.

A. Water Quality-Based Effluent Limitations (WQBELs)

A permit may only be issued if the Department finds that the issuance or continuance of the permit will not result in pollution of any state waters. Pollution is defined as an alteration of statewaters that exceed water quality standards. Persons therefore may not cause a violation of the following specific water quality standards:

- the human health standards for ground water listed in Circular DEQ-7;
- for concentrations of pollutants for which human health standards are not listed in Circular DEQ-7, no increase of a pollutant to a level that renders the waters harmful, detrimental, or injurious to the beneficial uses listed for Class I water. The Department may use any pertinent credible information to determine these levels; and,
- no increase of a pollutant that causes a violation of the nondegradation provisions of 75-5-303, MCA.

1. Nitrogen

The human health ground water standards and nondegradation-nonsignificance criteria are listed in the table below. These standards establish the maximum allowable changes in ground water quality and are the basis for limiting discharges to ground water.

Applicable Ground Water Quality Standards.				
Parameter⁽¹⁾	Units	17.30.1006(1)(b)(i) Human Health Standards - Ground Water	17.30.1006(1)(b)(ii) Beneficial Uses - Ground Water	17.30.715(1)(d) Nondegradation - Nonsignificance Criteria⁽²⁾
Nitrogen, Nitrate + Nitrite (as N)	mg/L	10.0	-	7.5
Nitrogen, Total (TN)	mg/L	-	10.0	7.5
Footnotes: These standards establish the maximum allowable changes in ground water quality and are the basis for limiting discharges to ground water, ARM 17.30.1005(1); Circular DEQ-7 (2012), Footnote 16; and ARM 17.30.715(1)(d). DEQ will establish the effluent limitations for nitrogen based on the projection that the entire nitrogen load in the wastewater stream may ultimately be converted to nitrate (USEPA, 2002a). (1) Includes known parameters of concern only. (2) Discharges in compliance with the nonsignificance criteria constitute nonsignificant degradation.				

In protection of beneficial uses, there shall be no increase of a pollutant to a level that renders the waters harmful, detrimental, or injurious to the beneficial uses. This includes placement of wastes such that the waste either alone or in combination with other wastes will violate or can reasonably be expected to violate any standard. Therefore, the Department will regulate all nitrogen species as the Total Nitrogen (TN) analytical parameter.

Based on the information and analyses presented in this fact sheet the Department proposes the numerical effluent limitation listed in Section V. The proposed final limitation is based on the most restrictive ground water quality standards and nondegradation-nonsignificance criteria (Section V) for nitrogen.

B. Special Conditions

All issued MGWPCS permits must contain special conditions which will assure compliance with ground water quality standards and compliance with the nondegradation-nonsignificance criteria.

1. Bacteria

The facility must be designed to treat or remove all bacteria. This may be achieved with disinfection treatment, or a properly sited drainfield. The wastewater treatment system and discharge structures must meet the design requirements under the following standards:

- Circular DEQ-2, Design Standards for Public Sewage Systems; when applicable.
- Circular DEQ-4, Montana Standards for Subsurface Wastewater Treatment Systems; when applicable.

The facility's plans and specifications must be reviewed and approved by the Department (Section X) prior to discharge.

2. Phosphorus

In order to qualify for this GP, the activity must meet the nondegradation-nonsignificance criteria (Section VIII). The applicant must show that significant changes in water quality will not occur. A phosphorus breakthrough analysis (Appendix IV) is therefore required for each source covered under this GP which discharges to high quality waters. In order to qualify for this GP, each activity must indicate that phosphorus will be removed for a period of at least 50 years. A phosphorus breakthrough that would occur within 50 years would be considered significant. As no activities authorized by this GP are significant, limits for phosphorus will not be established.

A significance determination is required for each new or increased source discharging to high quality waters. Most facilities which currently have effective permit coverage under an individual MGWPCS permit may have undergone a significance determination by the Department. A facility which has previously undergone a significance determination by the Department may not need to undergo another analysis unless significant modifications have since taken place.

If a significance determination needs to be completed, it can be requested in concurrence to the authorization request under this GP. The Department may require submission of additional data and information in order to complete the significance determination. Additional fees are required for significance determinations.

For additional information on phosphorus breakthrough, all interested parties are encouraged to contact the Water Protection Bureau at 406-444-3080. Additional references can be found at the following website:

<http://deq.mt.gov/Water/WQINFO/nondeg/howtonondereg>

Appendix II – Rationale for Self-Monitoring and Reporting Requirements

All issued MGWPCS permits contain monitoring requirements that assure compliance with the developed effluent limitations and the water quality standards. Monitoring requirements are summarized below:

- Effluent samples shall be representative of the nature of the monitored discharge. For each outfall, an effluent sample location (e.g. EFF-001 for Outfall 001) shall be established by the permittee that is representative of effluent quality at end-of-pipe (prior to discharge).
- Flow measurements shall be representative of the volume of the monitored discharge. For each outfall, an effluent flow meter (e.g. FM-001 for Outfall 001) shall be established by the permittee that is representative of effluent volume.

Parameter analytical methods must be in accordance with the Code of Federal Regulations, 40 CFR Part 136. Effluent monitoring and reporting requirements are summarized in the table below.

Effluent Monitoring and Reporting Requirements							
Parameter	Monitor Location	Units	Sample Type	Minimum Sample Frequency	Reporting Requirements⁽¹⁾	Report Freq.	Rationale
Flow Rate, Effluent ⁽²⁾	Location representative of effluent volume	gpd	Continuous	Continuous	Daily Maximum Quarterly Average	Quarterly	Effluent Characterization
Nitrogen, Nitrite+Nitrate (as N)	Location representative of effluent quality	mg/L	Grab	1/Quarter	Daily Maximum Quarterly Average	Quarterly	Permit Compliance
Nitrogen, Total Kjeldahl (TKN)(as N)	Location representative of effluent quality	mg/L	Grab	1/Quarter	Daily Maximum Quarterly Average	Quarterly	Permit Compliance
Nitrogen, Total (as N) ⁽³⁾	Location representative of effluent quality	mg/L	Calculate	1/Quarter	Daily Maximum Quarterly Average	Quarterly	Permit Compliance
Footnotes: If no discharge occurs during the entire reporting period, “no discharge” must be recorded on the effluent (outfall) discharge monitoring report. Parameter analytical methods shall be in accordance with the Code of Federal Regulations, 40 CFR Part 136, unless specified above. (1) Daily Maximum: Report highest measured daily value for the reporting period on discharge monitoring report. (2) Requires recording device or totalizing meter, must record daily effluent volume. (3) Total Nitrogen is the sum of Nitrate + Nitrite and Total Kjeldahl Nitrogen.							

Ground water quality monitoring has not been established.

Appendix III – Mixing Zone Rational

The established practices and prohibitions in this GP meet all general considerations, water quality assessments, and restrictions for mixing zones due to the following:

- Effluent limitations are based on the most restrictive ground water quality standards and nondegradation-nonsignificance criteria (Section V);
- Effluent limitations must be met at end of pipe, no dilution needed;
- Special conditions established within the GP;
- Standard conditions established within the GP; and,
- Other terms and conditions established within the GP.

Facilities that are not designed to abide by the effluent limitation (Section V) are prohibited from obtaining or retaining an ADWT GP (Section IV). Facilities that cannot meet the conditions of this GP, must apply for an alternative MGWPCS permit.

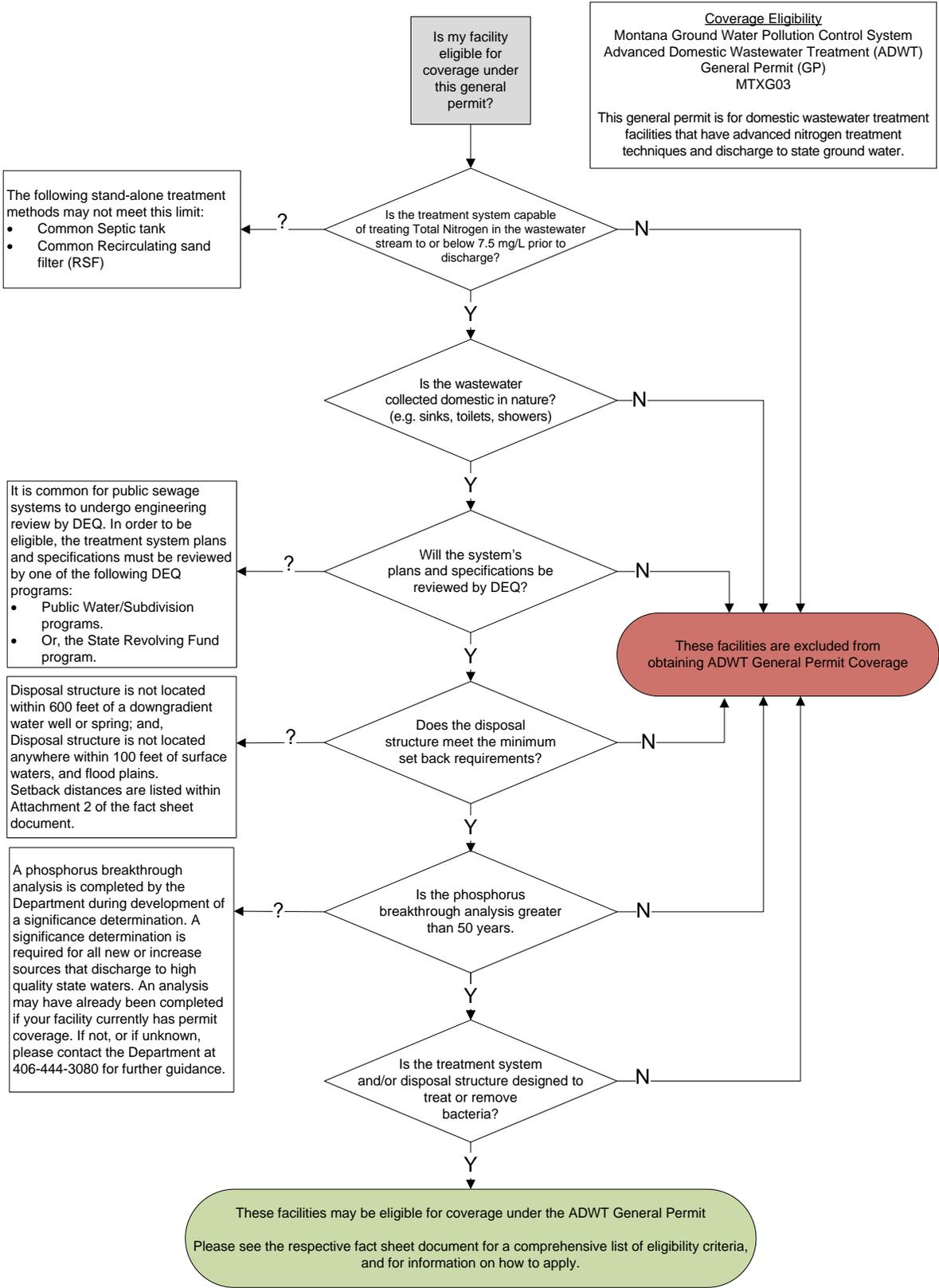
Facilities may retain existing mixing zones that were previously authorized by an earlier Department permitting action. This will assist the permittee in maintaining setbacks (Section IV) that are required to retain long-term permit coverage.

Appendix IV – Phosphorus Breakthrough Analysis Worksheet

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)		
<u>PHOSPHOROUS BREAKTHROUGH ANALYSIS</u>		
SITE NAME:	_____	
COUNTY:	_____	
Permit #:	_____	
NOTES:	Variables used are based on conservative measurements	
	Design Capacity = XXXX gpd	

<u>VARIABLES</u>	<u>DESCRIPTION</u>	<u>VALUE</u> <u>UNITS</u>
Lg	Length of Primary Drainfield as Measured Perpendicular to Ground Water Flow	ft
L	Length of Primary Drainfield's Long Axis	ft
W	Width of Primary Drainfield's Short Axis	ft
B	Depth to Limiting Layer from Bottom of Drainfield Laterals*	ft
D	Distance from Drainfield to Surface Water	ft
T	Phosphorous Mixing Depth in Ground Water (0.5 ft for coarse soils, 1.0 ft for fine soils)**	ft
Sw	Soil Weight (usually constant)	100 lb/ft3
Pa	Phosphorous Adsorption Capacity of Soil (usually constant)	200 ppm
#l	Number of proposed wastewater treatment systems	1
<u>CONSTANTS</u>		
PI	Phosphorous Load per proposed wastewater treatment system	lbs/yr
X	Conversion Factor for ppm to percentage (constant)	1.0E+06
<u>EQUATIONS</u>		
Pt	Total Phosphorous Load = (PI)(#l)	0 lbs/yr
W1	Soil Weight under Drainfield = (L)(W)(B)(Sw)	0 lbs
W2	Soil Weight from Drainfield to Surface Water = [(Lg)(D) + (0.0875)(D)(D)] (T)(Sw)	0 lbs
P1	Total Phosphorous Adsorption by Soils = (W1 + W2)[(Pa)/(X)]	0 lbs
<u>SOLUTION</u>		
BT	Breakthrough Time to Surface Water = P / Pt	#DIV/0! years
BY:	_____	
DATE:	_____	
<u>NOTES:</u>	* Depth to limiting layer is typically based on depth to water in a test pit or bottom of a dry test pit minus two feet to account for burial depth of standard drainfield laterals.	

Appendix V – Eligibility Criteria-Decision Matrix



Appendix VI – Setback Criteria

Setback Criteria for Disposal Structures (distance in feet)	
Water well - public	100
Water well - individual	100
Water well - other ⁽¹⁾	100
Surface water ⁽²⁾	100
Floodplains	100
Springs	100
Cisterns - Water	50
Storm water ponds and ditches	25
Property boundaries	10
Subsurface drains	10
Water mains	10
(1) Other wells may include, but are not limited to, irrigation and stock watering. Other wells do not include monitoring wells.	
(2) This general permit does not authorize discharge of pollutants to surface water. See Form 1 Section A.	

Appendix VII – Form-GW-ADWT GP