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MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER THE MONTANA GROUND WATER POLLUTION CONTROL SYSTEM

In compliance with Montana Code Annotated (MCA) Section 75-5-101 *et seq.*, MCA, and the Administrative Rules of Montana (ARM) 17.30.1001 *et seq.*,

River Rock County Water and Sewer District

is authorized to discharge from the **River Rock Subdivision** to its Infiltration/Percolation Beds, located in the **SW ¼ of Section 3, Township 1 South, Range 4 East in Gallatin County**, to receiving waters, **Class I groundwater**,

in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions set forth herein. Authorization for discharge is limited to the outfall specifically listed in the permit.

This permit shall become effective: **April 1, 2010**.

This permit and the authorization to discharge shall expire at midnight, **March 31, 2015**

FOR THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY



Jenny Chambers, Chief
Water Protection Bureau
Permitting & Compliance Division

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Issued: February 3, 2010

TABLE OF CONTENTS

Cover Sheet—Issuance and Expiration Dates

I.	EFFLUENT LIMITATION AND MONITORING REQUIREMENT	3
	A. Description of the Discharge Point.....	3
	B. Specific Effluent Limitations.....	3
	C. Specific Ground Water Compliance Limits.....	4
	D. Self-Monitoring Requirements	4
	E. Compliance Schedules.....	7
II.	MONITORING, RECORDING AND REPORTING REQUIREMENTS	9
	A. Representative Sampling	9
	B. Monitoring Procedures	9
	C. Penalties for Tampering	9
	D. Reporting of Monitoring Results	9
	E. Compliance Schedules.....	9
	F. Additional Monitoring by the Permittee.....	10
	G. Records Contents.....	10
	H. Retention of Records.....	10
	I. Twenty-four Hour Notice of Noncompliance Reporting.....	10
	J. Other Noncompliance Reporting.....	11
	K. Inspection and Entry.....	11
III.	COMPLIANCE RESPONSIBILITIES.....	13
	A. Duty to Comply	13
	B. Penalties for Violations of Permit Conditions	13
	C. Need to Halt or Reduce Activity not a Defense.....	13
	D. Duty to Mitigate	13
	E. Proper Operation and Maintenance	13
	F. Removed Substances	14
	G. Bypass of Treatment Facilities	14
	H. Upset Conditions	15
IV.	GENERAL REQUIREMENTS	16
	A. Planned Changes	16
	B. Anticipated Noncompliance	16
	C. Permit Actions.....	16
	D. Duty to Reapply.....	16
	E. Duty to Provide Information	16
	F. Other Information.....	16
	G. Signatory Requirements	17
	H. Penalties for Falsification of Reports	18
	I. Availability of Reports	18
	J. Oil and Hazardous Substance Liability	18
	K. Property or Water Rights.....	18
	L. Severability.....	18
	M. Transfers.....	18
	N. Fees	19
	O. Reopener Provisions.....	19
	P. Biosolids.....	20
V.	SPECIAL CONDITIONS.....	21
VI.	DEFINITIONS	22

I. EFFLUENT LIMITATION AND MONITORING REQUIREMENT**A. Description of the Discharge Point**

The authorization to discharge provided under this permit is limited to the outfalls that are specifically designated below as the discharge locations. Discharges at any location not authorized under an MGWPCS permit is a violation of the Montana Water Quality Act and could subject the person(s) responsible for such discharge to penalties under the Act. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge within a reasonable time from first learning of an unauthorized discharge could subject such person to criminal penalties as provided under Section 75-5-632 of the Montana Water Quality Act.

Outfall**Serial Number****Description of Discharge Point**

001

The discharge is from up to eight infiltration/percolation (IP) beds discharging domestic wastewater at a design rate of 374,000 gpd from the River Rock Subdivision. The wastewater will receive treatment in two aerated lagoons prior to discharge to ground water via the infiltration/percolation (IP) beds. Outfall 001 is located at 45° 46' 44" North latitude and 111° 13' 24" West longitude, situated near the northwest corner of the subdivision. The Department has granted a source-specific ground water mixing zone pursuant to [ARM 17.30.518] extending from the source for a distance of 400 feet downgradient in a N29°E direction.

B. Specific Effluent Limitations

Effective immediately and lasting through the term of the permit, the quality of effluent discharged by the facility shall, at a minimum, meet the limitations set forth in Table 1 except as described in Part I.E. (compliance schedule) of this permit.

Table 1. Numeric Effluent Limits for Outfall 001

Parameter ⁽¹⁾	Effluent Limit (units as noted)
CBOD ₅ ⁽²⁾	85% removal ⁽³⁾
pH	6.0 – 9.0 s.u.
Total Inorganic Nitrogen (as N) ⁽⁴⁾	91.1 lb/day ⁽⁵⁾⁽⁶⁾
Effluent Flow Rate	374,000 gallons per day (maximum flow)

- (1) See definitions in Part VI of this permit.
 (2) CBOD₅ – Five-day carbonaceous biological oxygen demand.
 (3) The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal).
 (4) Total Inorganic Nitrogen (TIN) is the sum of nitrate, nitrite, and ammonia (as N).
 (5) Calculations based on the 30-day average values of flow and concentration.
 (6) Calculations based on the average values of design flow and concentration for the specified time period. Equation is Load (lb/d) = flow (gpd) x concentration (mg/L) x 8.34x10⁻⁶.

C. Specific Ground Water Compliance Limits

Effective immediately and lasting through the term of the permit, the ground water shall not exceed the water quality compliance limits at MW-1 and MW-2 shown in Table 2 except as described in Part I.E. (compliance schedule) of this permit.

Table 2. Ground Water Compliance Limits for Monitoring Wells MW-1 and MW-2

Parameter	Instantaneous Maximum ¹
Escherichia Coliform (e-coli) Bacteria, organisms/100 ml	Less than 1
Nitrate (as N), mg/L	10.3

- (1) See definitions, Part VI of this permit.

D. Self-Monitoring Requirements

- As a minimum, upon the effective date of this permit, the constituents in Table 3 shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. Effluent monitoring shall be conducted in a location (location C2 as shown in Attachment 2B of the statement of basis) after all treatment in the lagoon cells is complete and prior to discharge in the IP beds.
- The reporting period for the constituents in Table 3 is monthly.

3. An effluent flow meter was installed in April 2008. The flow monitoring device is an ultrasonic echo ranging type open channel flow meter (weir-type).
4. The TN and total phosphorus (TP) loads shall be calculated monthly using the monthly averages for flow and concentration using the following equations:

$$\text{TN (lb/d)} = \text{TN(mg/L)} \times \text{flow (gpd)} \times 8.34 \times 10^{-6}$$

$$\text{TP (lb/d)} = \text{TP(mg/L)} \times \text{flow (gpd)} \times 8.34 \times 10^{-6}$$

**Table 3. Outfall 001 Effluent Parameters Monitored
(prior to discharge to lagoon cell #3 and/or IP beds)**

Parameter ⁽¹⁾	Frequency	Sample Type ⁽²⁾
Effluent Flow Rate, gpd ⁽³⁾	Continuous	Continuous
pH, s.u.	Monthly	Grab
Total Suspended Solids (TSS), mg/L	Monthly	Grab/Composite ⁽⁴⁾
Five-day Carbonaceous Biological Oxygen Demand (CBOD ₅), mg/L	Monthly	Grab/Composite ⁽⁴⁾
Chloride, mg/L	Monthly	Grab/Composite ⁽⁴⁾
Escherichia Coliform (e-coli) Bacteria, organisms/100 ml	Monthly	Grab
Total Phosphorus as P ⁽⁵⁾ , mg/L	Monthly	Grab/Composite ⁽⁴⁾
Nitrate (as N), mg/L	Monthly	Grab/Composite ⁽⁴⁾
Nitrite (as N), mg/L	Monthly	Grab/Composite ⁽⁴⁾
Ammonia (as N), mg/L	Monthly	Grab/Composite ⁽⁴⁾
Total Kjeldahl Nitrogen (as N), mg/L	Monthly	Grab/Composite ⁽⁴⁾
Total Nitrogen ⁽⁶⁾ , mg/L	Monthly	Calculated
Total Inorganic Nitrogen (as N) ^{(7),(8)} , mg/L	Monthly	Calculated
Total Phosphorus, lb/day ⁽⁸⁾	Monthly	Calculated
Total Nitrogen, lb/day ⁽⁸⁾	Monthly	Calculated
Total Inorganic Nitrogen (as N) ^{(7),(8)} , lb/day	Monthly	Calculated
Oil & Grease, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾
Total Phenols, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾
Arsenic, dissolved, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾
Cadmium, dissolved, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾
Chromium, dissolved, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾
Copper, dissolved, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾

Lead, dissolved, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾
Mercury, dissolved, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾
Selenium, dissolved, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾
Silver, dissolved, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾
Zinc, dissolved, mg/L	Semi-annually	Grab/Composite ⁽⁴⁾

- (1) Laboratory detection limits must be equal to or less than the required reporting value (RRV) in DEQ-7 (February, 2008) for those parameters where an RRV is specified in DEQ-7.
- (2) See definitions in Part VI of this permit.
- (3) To be measured by a recorder or totalizing flow meter.
- (4) Grab samples will be allowed until December 31, 2011. Thereafter, composite samples will be required.
- (5) EPA Method 365.1 or equivalent.
- (6) Total Nitrogen (TN) is the sum of nitrate, nitrite and total kjeldahl nitrogen (as N).
- (7) Total Inorganic Nitrogen (TIN) is the sum of nitrate, nitrite and ammonia (as N).
- (8) See text for calculations.

5. As a minimum, upon the effective date of this permit, the constituents in Table 4 shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored influent wastewater. The reporting period for the constituents in Table 4 is monthly.

Table 4. Outfall 001 Influent Parameters Monitored

Parameter	Frequency	Sample Type ⁽¹⁾
Five-day Carbonaceous Biological Oxygen Demand (CBOD ₅), mg/L	Monthly	Composite

- (1) See definitions in Part VI. of the permit

6. As a minimum, upon the effective date of this permit, the constituents in Table 5 shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the ground water from MW-1, MW-2, MW-3 and MW-4. The reporting period for the constituents in Table 5 is monthly for MW-1 and MW-2. The reporting period for the constituents in Table 5 is quarterly for MW-3 and MW-4.

Table 5. Ground Water Monitoring Parameters for Monitoring Wells MW-1, MW-2, MW-3 and MW-4

Parameter	Frequency	Sample Type ⁽¹⁾
Static Water Level (SWL) (feet below top of casing)	Monthly/Quarterly ⁽²⁾	Instantaneous
Escherichia Coliform (e-coli) Bacteria, organisms/100 ml	Monthly/Quarterly ⁽²⁾	Grab
Nitrate (as N), mg/L	Monthly/Quarterly ⁽²⁾	Grab
Ammonia (as N), mg/L	Monthly/Quarterly ⁽²⁾	Grab
Chloride, mg/L	Monthly/Quarterly ⁽²⁾	Grab

(1) See definitions, Part VI of this permit.

(2) Monthly for MW-1 and MW-2. Quarterly for MW-3 and MW-4

6. MW-1 and MW-2 were constructed in 1999 for monitoring the shallow ground water immediately downgradient of outfall 001. MW-3 and W-4 were constructed in 1999 and 2008, respectively, for monitoring the shallow ground water upgradient of outfall 001.
7. Within 60 days of the effective date of this permit the permittee shall submit a copy of the standard operating procedures proposed for monitoring MW-1, MW-2, MW-3 and MW-4. These procedures should address at a minimum, well purging equipment and procedures, sample collection equipment and procedures, equipment decontamination procedures, and sample storage and transportation procedures.

E. Compliance Schedule

The following compliance schedules in Table 6 apply to this facility. These compliance schedules are in place to protect the quality of the ground water beneath and downgradient of the wastewater discharge. The permittee must provide annual updates to the Department demonstrating that they are performing adequately to meet the compliance schedule deadlines. The annual updates to the DEQ will be due on December 31 of 2010, 2011, and 2012. Upon completion of the compliance schedule the specific parameter in question shall meet all the applicable effluent limits and/or ground water compliance limits set forth in this permit. As long as the permittee is working towards and meeting the compliance schedule requirements with reasonable due diligence and to the satisfaction of the Department, the Department will not issue violation notices for exceeding the CBOD₅ and the Total Inorganic Nitrogen effluent limits in Table 1 of this permit, nor for failing to meet the E-coli bacteria or nitrate ground water compliance limits in Table 2 of this permit.

Table 6. Compliance Schedule

Parameter	Start of Compliance Schedule	Date to secure funding and submit report to DEQ outlining funding sources	Date to submit complete plans and specifications to DEQ	Date to have plans and specifications approved by DEQ	Date to complete construction and full operation of modifications
CBOD ₅	Effective date of permit	August 15, 2011	July 15, 2012	December 1, 2012	October 1, 2013
Total Inorganic Nitrogen	Effective date of permit	August 15, 2011	July 15, 2012	December 1, 2012	October 1, 2013
E-Coli Bacteria	Effective date of permit	August 15, 2011	July 15, 2012	December 1, 2012	October 1, 2013

