NONCOMMUNITY PUBLIC WATER SUPPLY
WATER TREATMENT SYSTEM CONSTRUCTION PERMIT APPLICATION
REQUIRED UNDER AUTHORITY OF ACT 1976 PA 399, AS AMENDED

IRON REMOVAL: GREENSAND FILTER WITH CONTINUOUS REGENERATION (CHLORINE OR POTASSIUM PERMANGANATE)

Facility
Facility Name _____

Street Address _____

City _____ State _____ Zip _____

Public Water Supply System Number (WSSN) _____

Facility Owner
Name _____ Phone _____

Address _____

City _____ State _____ Zip _____

Email _____

Treatment System Designer
Name _____ Company _____

Address _____

City _____ State _____ Zip _____

Phone _____

Email _____

Please submit the following information in addition to plans, specifications, and an operation and maintenance manual:

Peak demand of water system (gpm)
Well pump capacity (gpm)
Number and size of treatment vessel(s)
Type of greensand and any other media used

Media layers (if applicable)
Depth of media layers
Loading rate (gpm/ft^2)
Make and model of control valve
Backwash flow rate and duration
Backwash frequency (days or gallons treated)
Backwash volume (gallons)
Method of greensand regeneration (continuous or intermittent, note, intermittent regeneration may not need a construction permit if not used to meet arsenic MCL)
Oxidant Used (e.g. sodium hypochlorite or potassium permanganate, brand and concentration, NSF 60 certified)
Method of controlling regeneration (e.g. continuous regeneration with injection pump electrically interconnected with well pump or pace set with a flow meter)
Total population served
List any areas that will not receive treated water such as irrigation, toilet, or process water

Other Treatment

Description and basis of design for other treatment applied such as softening, disinfection, iron removal, etc.

_____

_____

_____

Water Quality (Untreated)

Total Hardness _____ (mg/l)	Iron _____ (mg/l)	pH _____ (mg/l)
Nitrates _____ (mg/l)	Chlorides _____ (mg/l)	Other _____ (mg/l)
Total Arsenic _____ (mg/l)		

Plans & Specifications

1) Include plans and specifications identifying:

a. Service line, storage tank, treatment vessels, piping, valves, pressure gauges, flow meters, sampling locations
b. Chemical injection location (if applicable)
c. Waste water receiving system
d. Mechanical warning alarm
e. Labeled “Raw Water” and “Treated Water” taps
f. Make and model of equipment including chemical injection pumps
g. Method of controlling chemical injection or regeneration process (if applicable)
h. Number and size of treatment vessels

Operation & Maintenance

1) Include an operation and maintenance manual including:
   a. Routine operation and maintenance activities
   b. Troubleshooting guide
   c. Monitoring plan
   d. Permanent tags/labels for piping, valves, gauges, sample taps, key components

Certified Operator

Identify an operator certified at or above the D5 level (limited treatment)

Operator Name _____ Cert. No. _____ Level _____

Free Chlorine Residual Field Test Kit Information (If using chlorine): Manufacturer’s literature, operation and maintenance manual, and test kit information are to be provided to the certified operator.

Test Kit Manufacturer_____Model Number_____

Range of Detection_____Degree of Accuracy_____

Operation Report

Monthly operation report (attached) is to be submitted by the certified operator.

Other Relevant Information

Alternate Source

If another approved water source is available (by connection or drilling a new well) that source shall be used in lieu of treating a source that exceeds drinking water standards

Distance to and name of nearest community water system_____

_____

Is connection to community water possible? Yes _____ No _____

Comments_____

_____

_____

Third Party Standards

Equipment, materials, and additives in contact with potable water must meet American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standards.

1) Provide ANSI/NSF listing if any “Drinking Water Treatment Chemicals” are involved in treatment system (Standard 60).
2) Provide ANSI/NSF product listing for “Drinking Water System Components”. (Standard 61, 58, 51…)

Backwash Discharge
Approval may be required for disposal of backwash waste water. Requirements are dependent on the characteristics of the waste water and where the waste water is to be discharged. It is the water supply owner’s responsibility to obtain any required wastewater discharge permits.

Backwash water will be discharged to: Community Sewer_____

Septic tank/drainfield_____ Other _____, if other describe location: _____

Provide a copy of the permit application and plans and specifications to the local health department and another copy to:

Drinking Water and Environmental Health Division
Environmental Health Section
Noncommunity Water Supplies Unit
525 West Allegan Street
P.O. Box 30817
Lansing, Michigan 48909-8311

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION
ENVIRONMENTAL HEALTH SECTION

IRON REMOVAL MONTHLY OPERATION REPORT – GREENSAND FILTER (POTASSIUM PERMANGANATE)

Facility Name_____ WSSN_____

Certified Operator_____ #_____ Month/Year: _____/_____

Permanganate Manufacturer/Trade Name_____ Concentration_____%

Day	Flow Meter Reading (Gallons)	Iron Treated (mg/L)	Check Permanganate Injection System (Y/N)	Visual Inspection (Y/N)	Comments	Inspected By
1						
2						
3						
4						
5						
6						
7						
8						
9						
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11						
12						
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14						
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28						
29						
30						
31						

Operator Signature_____ Date_____

See next page for instructions on completing form

Completion of this form is required by Rule 325.11502, 1976 PA 399
Submit a copy of this MOR to the Local Health Department within 30 days after the end of the month.

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Instructions for Completion of Monthly Operation Report: *Greensand with Permanganate*

Flow Meter Reading: Record treated water meter reading at beginning and end of month. Flow data may be read from the face of a shut off valve or other metering device.

Iron Treated: Sample iron levels in the treated water is not required, however, the certified operator may want to periodically sample treated water iron levels to document historical treatment effectiveness. A field test kit or certified lab could be used to analyze iron level in the sample. This column is provided to record iron results if they are obtained.

Check Potassium Permanganate Injection System: Visually inspect the potassium permanganate injection system weekly. Add potassium permanganate to the storage tank if needed and inspect for leaks. Mark a "Y" in this column every day the injection system is inspected and sign your name in the Analyzed by column for that day. Note: potassium permanganate injected into this water supply must have the NSF 60 certification.

Visual Inspection: Visually inspect the treatment system weekly to verify the treatment unit is operating properly. Mark a "Y" in this column every day the treatment system is inspected and sign your name in the "Inspected By" column for that day.

Comments: Record maintenance or any unusual events. See below for additional space.

Inspected By: Person obtaining arsenic sample, changing cartridge filter, or inspecting system signs for that day. Signatures are not needed on days a sample, cartridge filter change, or inspection has not occurred.

Operator Signature: Certified operator signs and dates bottom of MOR attesting to the submitted information in the report and then submits the MOR to their local health department within 30 days after the end of the month. **Submittal of an MOR is required for every month the treatment system is in operation.**

Local Health Department (LHD) Name _____

LHD Address _____

_____

LHD Contact Person _____ Phone _____

Additional Comments _____

_____

_____

_____

Submit a copy of the MOR to the Local Health Department within 30 days after the end of the month

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION
ENVIRONMENTAL HEALTH SECTION

IRON REMOVAL MONTHLY OPERATION REPORT – GREENSAND FILTER (CHLORINE)

Facility Name_____ WSSN_____

Certified Operator_____ #_____ Month/Year: _____/_____

Permanganate Manufacturer/Trade Name_____ Concentration_____%

Day	Flow Meter Reading (Gallons)	Iron Treated (mg/L)	Free Chlorine Residual (mg/L)	Visual Inspection (Y/N)	Comments	Inspected By
1						
2						
3						
4						
5						
6						
7						
8						
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Operator Signature_____ Date_____

See next page for instructions on completing form

Completion of this form is required by Rule 325.11502, 1976 PA 399

Submit a copy of this MOR to the Local Health Department within 30 days after the end of the month.

Instructions for completion of MOR: *Media Adsorption (With Chlorination)*

Flow Meter Reading: Record flow meter reading at beginning and end of month. If reading flow from multiple flow meters or valve units, add the readings together and record the total. If the flow meter is automatically reset after backwash, record readings daily.

Iron Treated: Sample iron levels in the treated water is not required, however, the certified operator may want to periodically sample treated water iron levels to document historical treatment effectiveness. A field test kit or certified lab could be used to analyze iron level in the sample. This column is provided to record iron results if they are obtained.

Free Chlorine Residual: Analyze the free chlorine residual in treated water at the treatment system with a DPD reagent field test kit at least weekly and record the results. Two field test kits that are approved for use are Hach's Free and Total Chlorine Test Strips, 0-10 mg/L, which is product # 2745050 at hach.com or Hach's Chlorine (Free) Test Kit, Model CN-66F, Color Disc, 0.1-3.5 mg/L which is product # 223102 at Hach.com. Other test kits can also be approved for use. Free chlorine residual should be maintain at about 0.5 – 1.0 mg/L and is required to stay below 4.0 mg/L.

Visual Inspection: Visually inspect the treatment system weekly to verify the treatment unit is operating properly. Mark a "Y" in this column every day the treatment system is inspected and sign your name in the Analyzed/Inspected By column for that day.

Comments: Record maintenance or any unusual events. See below for additional space.

Analyzed/Inspected By: Person obtaining iron sample, analyzing free chlorine residual in treated water or inspecting system signs on that day. Signatures are not needed on days an inspection or sample has not occurred.

Operator signature: Certified operator signs and dates bottom of MOR attesting to the submitted information in the report and then submits the MOR to their local health department within 30 days after the end of the month. Submittal of an MOR is required for every month the treatment system is in operation.

Local Health Department Address: _____
_____
_____
_____

Local Health Department Contact Person: _____
Local Health Department Phone Number: _____

Note: Disinfection byproduct sampling is required at nontransient noncommunity public water supplies that inject chlorine. Follow directions from your local health department. This disinfection byproduct sampling is typically done once a year in August and may be reduced to once every 3 years based on initial sample results. Also, every time a public water supply that injects chlorine takes a total coliform bacteria sample in the distribution system, they must also sample and record the free chlorine residual at the same location and time and also sample and analyze a raw water total coliform sample at the same time.

Additional Comments: _____
_____
_____
_____

Submit a copy of the MOR to the Local Health Department within 30 days after the end of the month