

**DEPARTMENT OF ENVIRONMENTAL QUALITY
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM**

Fact Sheet

Applicant: Montana Artesian Water Company

Permit No.: MT0031861

Receiving Water: Unnamed Tributary of the Flathead River

Facility Information:

Name	Montana Artesian Water Company
Location	1085 Egan Slough Road Kalispell, MT 59901 Flathead County 48.171905 N, 114.166820 W
Facility Contact:	Lew Weaver, Vice President 405 Pederson Road Kalispell, MT 59901 406-755-3515

Fee Information:

Number of Outfalls	2
Outfall – Type	001 – Non-contact Heating Water 002 – Bottle Rinsate

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I. Permit Status

This fact sheet (FS) has been developed to provide the basis for issuance of a Montana Pollutant Discharge Elimination System (MPDES) permit for the new discharger Montana Artesian Water Company (MAWC/applicant/facility). The Montana Department of Environmental Quality (DEQ) received an application for an MPDES individual surface water permit from the applicant on October 26, 2015. On November 20, 2015, DEQ requested more information regarding facility processes. In response to that request, the applicant submitted supplemental information received by DEQ on December 4, 2015. DEQ determined the application was complete on December 9, 2015. The facility has the potential to be a new source per the Administrative Rules of Montana [ARM 17.30.702(17)] unless permit limitations are set to ensure changes in existing water caused by the facility are nonsignificant. The facility also meets the definition of a new source per ARM 17.30.1304(47) for the purposes of ARM 17.30 Subchapters 12 and 13.

II. Facility Information

A. Facility Description

The applicant has applied for an MPDES permit to discharge effluent from a drinking water bottling facility. The main plant building has been constructed as confirmed by a site visit by DEQ on April 11, 2016 (DEQ 2016a). Water will be drawn from an onsite, artesian, public water supply well and used for two primary purposes that result in a discharge of effluent:

1. non-contact heating water (outfall 001) and
2. drinking water bottle rinsate (outfall 002).

Heating requirements for the facility will be met through use of an open-loop geothermal system with two heat pumps. In this system, water is delivered to the heat pumps between 52°-53°F and is expected to be discharged to the receiving water at a temperature of 44.1°-45.1°F. Water flow through the heating system is expected to be variable depending upon the heating needs of the facility at a given time with a maximum discharge rate of 60 gallons per minute (gpm). The facility plans to have a 6-inch inside diameter outfall pipe installed 0.8 feet below the receiving water surface. The planned location for outfall 001 is 48.171598°N, 114.165485°W to an unnamed tributary of the Flathead River (see figure 1).

Prior to filling drinking water bottles, MAWC plans to rinse the bottles using automated equipment. The applicant intends to employ a Monobloc model RFC 18-18-6 rotary rinsing, filling, and capping machine requiring 185 to 264 gallons of water per hour. The rinse water will be discharged to trench floor drains which collect the rinsate and discharge it through outfall 002. Discharge flow from the rinsing process through outfall 002 is expected to be a maximum of 5 gpm. Outfall 002 is planned as a 3-inch inside diameter end-of-pipe discharge located approximately 0.8 feet below the surface of the receiving water. The planned location for outfall 002 is 48.171909°N, 114.165502°W to the unnamed tributary of the Flathead River (see figure 1).

Outfalls 001 and 002 will discharge to the unnamed tributary approximately 1,300 feet from its confluence with the Flathead River. From this point, the Flathead River flows approximately 10.5 river miles to Flathead Lake.

B. Effluent Characteristics

MAWC submitted the results of two sample analyses performed on public water supply well water, one in February 2014, and one in March 2015, with their MPDES application. A summary of the analytical detection results is provided in Table 1 below.

Table 1: Effluent Characteristics				
Parameter	Units	02/2014 Result	03/2015 Result	Reporting Limit
pH	s.u.	7.9	7.87	0.1
Conductivity @ 25°C	umhos/cm	317	331	5, 0.1
Total Dissolved Solids	mg/L	197	NA	1
Alkalinity, Total	mg/L	177	176	4, 1
Chloride	mg/L	1	1.3	1, 0.1
Fluoride	mg/L	NA	0.13	0.01
Nitrate	mg/L	NA	0.11	0.01
Nitrate + Nitrite, as N	mg/L	0.09	NA	0.01
Sulfate	mg/L	3	2.7	1, 0.1
Hardness as CaCO ₃	mg/L	172	NA	1
Sodium Adsorption Ratio	NA	0.37	NA	0.01
Turbidity	NTU	NA	0.15	0.05
Barium, Total	mg/L	0.37	0.37	0.05
Boron, Total	mg/L	NA	0.12	0.05
Calcium, Total	mg/L	40	36	1
Magnesium, Total	mg/L	17	15	1
Silica, Total	mg/L	NA	12	0.2
Sodium, Total	mg/L	11	11	1
Acetone	µg/L	NA	9.0 ⁽¹⁾	10
Methyl ethyl ketone	µg/L	NA	12	10
Footnote: 1. This result was flagged as an estimated concentration below the reporting limit.				

III. Technology-Based Effluent Limits

A. Scope and Authority

The U.S. Environmental Protection Agency (EPA) promulgates effluent guidelines under the authority of Sections 301, 304, 306, 307, 308, 402, and 501 of the federal Clean Water Act (CWA, 33 U.S.C. 1311, 1314, 1316, 1318, 1342, and 1361). The Montana Board of Environmental Review pursuant to 75-5-304(1), Montana Code Annotated

(MCA), has adopted effluent limitations and standards and new source performance standards in ARM 17.30 Subchapter 12 based on the applicable federal regulation. EPA has promulgated national technology-based standards of performance for both existing and new sources in Title 40 of the Code of Federal Regulations (CFR) Chapter 1, Subchapter N for dischargers other than publicly-owned treatment works (POTWs).

Effluent guidelines establish the following standards for direct discharges from facilities other than POTWs:

- Best practicable treatment control technology (BPT) represents the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants discharged by an existing discharge or new discharge that is not a new source.
- Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants discharged by an existing discharge or new discharge that is not a new source.
- Best conventional pollutant control technology (BCT) represents the control of conventional pollutants including BOD₅, TSS, fecal coliform, pH, and oil and grease in an existing discharge or new discharge that is not a new source. The BCT standard is established after considering the “cost reasonableness” of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.
- New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources. A source is a new source if it meets the definition of new source in ARM 17.30.1304 and 1340(1) and a new source performance standard is independently applicable to it. If there is no such independently applicable standard, the source is a new discharger [ARM 17.30.1340(2)]. A source is an existing source if it is not a new source or a new discharger. For purposes of applying effluent guidelines, the existing sources standards (BPT, BCT, and BAT) apply to existing sources and new dischargers. NSPS apply to new sources.

B. Applicable Technology Standards

As described in the MPDES permit application, for purposes of TBELs, MAWC meets the definitions of a “new source” found in ARM. Supplemental information submitted by the applicant indicates it plans to manufacture drinking water bottles made of polyethylene terephthalate (PET) onsite (AWC 2015, DAK 2015). The manufacturing process will use PET parisons (preforms) which will be formed into drinking water bottles using a blow molding process. DEQ has determined that federal effluent limitation guidelines promulgated by EPA at 40 CFR Part 463 “Plastics Molding and Forming Point Source Category” are applicable to this process and NSPS exist for the associated discharge proposed through outfall 002.

Information included with MAWC’s application states that the water bottling production machinery will rinse the bottles prior to filling and capping and the equipment will discharge the rinsate on the floor of the facility. Trench floor drains will collect the rinsate and convey it to outfall 002. Under the general definitions found at 40 CFR 463.2, “cleaning water” is defined as “*process water used to clean the surface of an intermediate or final plastic product or to clean the surfaces of equipment used in plastics molding and forming that contact an intermediate or final plastic product. It includes water used in both the detergent wash and rinse cycles of a cleaning process.*” The rinsate discharge proposed by the applicant for outfall 002 meets this definition; therefore, the appropriate technology-based effluent limitation guidelines are found in 40 CFR Part 463, Subpart B – Cleaning Water Subcategory. Subpart B contains the NSPS described in Table 2.

Table 2: Cleaning Water Subcategory – New Source Performance Standards		
Concentration used to Calculate NSPS		
Parameter	Maximum for any 1 day (mg/L)	Maximum for monthly average (mg/L)
Biochemical Oxygen Demand	49	22
Oil and Grease	71	17
Total Suspended Solids	117	36
pH	(1)	(1)

Footnote:
 1. Within the range of 6.0 to 9.0 at all times.

The NSPS state at 40 CFR 463.26, “*Any new source subject to this subpart must achieve performance standards (i.e., mass of pollutant discharged) calculated by multiplying the average process water usage flow rate for cleaning processes at a new source times [the values in Table 2 above].*” This part also requires the permitting authority to obtain the average flow rate of the new source cleaning water processes from the permittee. The “average process water usage flow rate” is defined as the volume of process water used per year divided by the number of days per year the process operates. Per information provided by the applicant this value is:

$$823,680 \text{ gallons per year} \div (6 \text{ days per week} \times 52 \text{ weeks per year}) = 2640 \text{ gallons per day (1.83 gpm)}$$

The “average process water usage flow rate” of 1.83 gpm can then be used to determine the appropriate mass-based performance standard in pounds per day using the following equation:

$$1.83 \text{ gpm} \times \text{NSPS pollutant concentration mg/L (Table 2)} \times 0.012 \text{ (conversion factor)}$$

Using the equation above the applicable mass-based NSPS for the effluent from outfall 002 are as follows in Table 3.

Table 3: Mass-based New Source Performance Standards		
Parameter	Maximum for any 1 day (lb/day)	Maximum for monthly average (lb/day)
Biochemical Oxygen Demand	1.1	0.5
Oil and Grease	1.6	0.4
Total Suspended Solids	2.6	0.8
pH	(1)	(1)
Footnote: 1. Within the range of 6.0 to 9.0 at all times.		

C. Technology-based Effluent Limits

The standards in Table 3 above are the appropriate technology-based effluent limitations (TBELs) that apply to effluent discharged from outfall 002. These limitations will be included in the permit unless more stringent water-quality based effluent limits are appropriate.

IV. Water Quality-Based Effluent Limits

Permits are required to include water quality-based effluent limits (WQBELs) when technology-based effluent limits are not adequate to protect state water quality standards (40 CFR 122.44 and ARM 17.30.1344). ARM 17.30.637(2) states that no wastes may be discharged that can reasonably be expected to violate any state water quality standards. Montana water quality standards (ARM 17.30.601 et seq.) define both water use classifications for all state waters and numeric and narrative standards that protect those designated uses. New sources, as defined in ARM 17.30.702(17), are subject to Montana Nondegradation Policy (75-5-303, MCA) and regulations (ARM 17.30.701 et seq.).

A. Receiving Water

Wastewater is discharged from the facility to an unnamed tributary approximately 1,300 feet from its confluence with the Flathead River. The receiving water is classified as B-1 according to Montana Water Use Classifications, ARM 17.30.608(1)(a), as is the Flathead River where the unnamed tributary enters it. Waters classified B-1 are to be maintained suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

The unnamed tributary to the Flathead River is located within the Flathead Lake watershed as identified by USGS Hydrological Unit Code (HUC) 17010208 and Montana stream segment 17010208000018. The unnamed tributary in the vicinity of the discharge is not listed on the 2014 nor the draft 2016 CWA 303(d) lists. Additionally, the reach of the Flathead River into which the unnamed tributary discharges has been given an assessment unit ID (MT76O001_010), but has not been assessed for impairment, so no use support determinations have been made. Therefore, the receiving water in the vicinity of the discharge is assumed to be high quality water for all uses and parameters pursuant

to Montana's Nondegradation Policy. Degradation of high quality water is not allowed unless authorized by DEQ under 75-5-303(3), MCA (see section B below).

Streamgage data is not available for the receiving water. Information gained by DEQ in a conversation with a neighboring landowner indicates the unnamed tributary is spring-fed and perennial (DEQ 2016b). DEQ confirmed this information regarding the nature of the receiving water appears to be accurate during a site visit on April 11, 2016 (DEQ 2016a). Information submitted by the applicant supports this characterization indicating that the receiving water is located in a large groundwater discharge area and that the receiving water acts to drain high groundwater and convey it to the Flathead River (AWC 2015). Geographic information system data available from the Montana Department of Fish, Wildlife and Parks indicates that the Flathead River contains Bull Trout, a threatened species, at the location where the unnamed tributary enters.

The applicant measured temperature, pH, specific conductivity, and dissolved oxygen at three locations (upstream, outfall, and downstream) in the unnamed tributary on September 30, 2015. The parameter results are presented in Table 4 below. Additionally, the applicant measured flow in the receiving water on October 2, 2015. In reporting the results of this field work, the applicant stated that the receiving water flow was 0.49 cubic feet per second (cfs) and is composed entirely of groundwater. The applicant further states that the Spring and Summer of 2015 were exceptionally warm and dry; therefore, this measured flow represents baseflow conditions which they used for mixing zone modeling purposes (see section D below)(AWC 2015).

Location	Temperature (°F)	pH	Specific Conductivity (ms/cm)	Dissolved Oxygen (mg/L)
Upstream	47.3	7.92	0.333	7.60
Outfall	46.04	7.90	0.320	8.09
Downstream	47.12	8.12	0.323	10.04

The applicant collected an additional ambient receiving water sample on March 18, 2016. The analytical results from that sample are shown in Table 5 below.

Table 5: Receiving Water Characteristics, unnamed tributary			
Parameter	Units	03/18/2016 Result	Reporting Limit
pH	s.u.	8.3	0.1
Conductivity @ 25°C	umhos/cm	338	5
Total Dissolved Solids	mg/L	186	1
Alkalinity, Total	mg/L	164	4, 1
Fluoride	mg/L	NA	0.01
Nitrate + Nitrite, as N	mg/L	0.52	0.01
Sulfate	mg/L	4	1
Hardness as CaCO ₃	mg/L	166	1
Sodium Adsorption Ratio	NA	0.26	0.01
Antimony, Total	mg/L	NA	0.001
Arsenic, Total	mg/L	NA	0.001
Barium, Total	mg/L	0.38	0.05
Beryllium, Total	mg/L	NA	0.05
Cadmium, Total	mg/L	NA	0.001
Calcium, Total	mg/L	39	1
Magnesium, Total	mg/L	17	1
Manganese, Total	mg/L	0.005	0.001
Mercury, Total	mg/L	NA	0.0001
Nickel, Total	mg/L	NA	0.005
Potassium, Total	mg/L	2	1
Selenium, Total	mg/L	NA	0.001
Sodium, Total	mg/L	8	1
Thallium	mg/L	NA	0.0005
Footnote: 2. This result was flagged as an estimated concentration below the reporting limit.			

B. Nondegradation

The Montana Water Quality Act (MWQA) includes a nondegradation policy at 75-5-303, MCA which protects existing water quality from undue degradation. This policy applies to any new or increased activity which results in a change in existing water quality. The MWQA states that it is unlawful to cause degradation of state waters unless authorized by DEQ pursuant to ARM 17.30.706-708. The regulations at ARM 17.30.701-718 implement the state's nondegradation policy. The level of protection provided to the receiving water(s) is specified in ARM 17.30.705(2) and conforms to three "tiers" of the federal antidegradation policy at 40 CFR 131.12.

Unless authorized by DEQ under ARM 17.30.706-708 (authorization to degrade) or exempted from review under 75-5-317, MCA, the quality of high quality waters must be

maintained [ARM 17.30.705(2)(b) and 75-5-303(2), MCA]. High quality waters, as defined in 75-5-103(13), MCA and ARM 17.30.702(8), include all state surface waters except those not capable of supporting any one of the designated uses for their classification or that have zero flow or surface expression for more than 270 days during most years.

For new sources discharging to high quality receiving waters, DEQ develops WQBELs based on criteria for determining nonsignificant changes in water quality found in ARM 17.30.715. For purposes of determining the significance of a proposed activity or discharge, the change is measured relative to the existing water quality. Existing water quality means the quality of the receiving water, including chemical, physical, and biological conditions immediately prior to commencement of the proposed activity or discharge, or that which can be adequately documented to have existed on or after July 1, 1971, whichever is the highest quality [ARM 17.30.702(4)].

WQBELs for pollutants or parameters discharged to high quality waters are derived from and comply with the criteria for determining nonsignificant changes in water quality under ARM 17.30.715(1); therefore, they protect the existing water quality of a high quality receiving water to the extent practicable. Sources that are able to meet WQBELs based on application of nonsignificance criteria are not required to submit an authorization to degrade state waters under ARM 17.30.706-708. WQBELs calculated from nonsignificance criteria are discussed in section D below. Analyses and incorporation of the nonsignificance criteria into this permit constitutes a finding by DEQ that the activities authorized in this permit are nonsignificant pursuant to 75-5-301(5)(c) MCA and will not cause degradation of state waters.

ARM 17.30.715(2) provides additional considerations DEQ may use to determine that a change in water quality is degradation notwithstanding compliance with ARM 17.30.715(1). DEQ applied ARM 17.30.715(2) and determined that, in addition to meeting the requirements of ARM 17.30.715(1), the discharge will not cause degradation based on the following:

- There are no known cumulative or synergistic effects resulting from the discharge because there are no other discharges to the unnamed tributary and the requirements in this permit will control the pollutants of concern in the MAWC's proposed discharges. The water quality standards that apply to the receiving water are the same as those that apply to the Flathead River. Protecting the water quality standards in the unnamed tributary will therefore protect downstream water quality standards in the Flathead River. Further, the total flow of the proposed discharge (approximately 65 gpm), is insignificant compared to the flow of the Flathead River at low flow. The nearest permitted discharges to the Flathead River are several miles distant and there are no known cumulative effects with these discharges.
- There are no known secondary byproducts of decomposition or chemical transformation associated with MAWC's proposed discharges.
- Changes in flow are insignificant and are further addressed in Section D below.

- Changes in the loading of parameters are insignificant because the permit conditions and WQBEL analyses in Section D are based on the significance criteria and the discharge is small.
- A public comment period will be held and should substantive information be provided, DEQ will further consider that information before making a final determination.

C. Mixing Zone

A mixing zone is a limited area of a surface water body established in a permit or final decision on nondegradation issued by DEQ where initial dilution of a discharge with the receiving water takes place and certain water quality standards may be exceeded [75-5-103(21), MCA; ARM 17.30.502(6)]. Rules governing the granting of mixing zones in surface water are found in ARM 17.30.501-518. DEQ must determine the appropriateness of a mixing zone (ARM 17.30.515). Unless specifically granted and identified in the MPDES permit and permit fact sheet, a mixing zone is not assumed for any parameter.

A discharger may request a mixing zone during the permit application process and provide the necessary information. The discharge must also comply with the general prohibitions of ARM 17.30.637(1), which require that state waters, including mixing zones, be free from certain substances. A mixing zone may not be granted for compliance with any technology-based effluent limitations. For new sources, changes in water quality at the boundary of the mixing zone must be nonsignificant pursuant to the nondegradation criteria of ARM 17.30.701-718.

Along with its application, the applicant submitted a mixing zone study focused on effluent temperature. The study modeled effluent mixing using information gathered during sampling and field events described in section IV.A above. This information was input to Visual Plumes modeling software to project the lateral and vertical dispersion of the thermal plumes from both proposed outfalls. In addition to ambient source and receiving water conditions, the analysis attempted to account for equipment water-use specifications and planned design of the outfall structures.

For outfall 001, the mixing zone modeling indicates that effluent discharged at 44°F has warmed to 46°F in ambient water temperature of 47°F once it has traveled a distance of 2.6 feet from the outfall. At that distance the thermal plume has a diameter of 1.72 feet. If the ambient temperature used is considered naturally occurring, this temperature decrease of less than 1°F would meet the temperature standard of a 2°F maximum decrease below naturally occurring water temperature within the range of 55-32°F [ARM 17.30.623(2)(e)].

For outfall 002, the mixing zone modeling indicates that effluent discharged at 53°F has cooled to 47°F in ambient water temperature of 46°F at a distance of slightly less than

one foot from the outfall. At that distance the thermal plume has a diameter of 1.32 feet. If the ambient temperature used is considered naturally occurring, this temperature increase of 1°F would meet the temperature standard of a 1°F maximum increase above naturally occurring water temperature within a range of 32-66°F [ARM 17.30.623(2)(e)].

As described in section IV.A above, the applicant submitted the results of flow measurements conducted in the unnamed tributary during the Fall of 2015. Based on this information the applicant determined 0.489 cfs represents the baseflow conditions for the receiving water. No other flow data is available for the receiving water. In accordance with ARM 17.30.516(3)(a) and 635(2), DEQ has used this value as an estimate of the critical low flow value in calculating a dilution allowance for the reasonable potential analysis and water quality-based effluent limit development described in section IV.D below.

D. Proposed Water Quality-based Effluent Limits

Section 301(b) of the CWA and 40 CFR Part 122.44(d), incorporated into ARM 17.30.1344(2)(b) by reference, require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. ARM 17.30.635 requires that the degree of waste treatment required to restore and maintain the quality of state water shall be based on the surface water quality standards, and: 1) the state's policy of nondegradation of existing water quality in 75-5-303, MCA; 2) present and anticipated (designated) uses of the receiving water; 3) the quality and nature of flow of the receiving water; 4) the quantity and quality of sewage, industrial or other wastes to be treated; and, 5) the presence or absence of other sources of pollution in the watershed.

The MWQA at Section 75-5-401(2), MCA states that a permit may only be issued if DEQ finds that the issuance or continuance of the permit will not result in pollution of any state waters. ARM 17.30.1344 adopts by reference 40 CFR 122.44 which states that MPDES permits shall include limits on all pollutants which will cause, or have a reasonable potential to cause an excursion of any water quality standard, including narrative standards. The Montana Surface Water Quality Standards and Procedures are found in ARM 17.30.601-670, which also includes, by reference, Circular DEQ-7—Montana Numeric Water Quality Standards.

The general provisions of ARM 17.30.637(1) apply to all categories of state surface water. These provisions require that state waters must be free from substances which will: (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines; (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials; (c) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible; (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and (e) create conditions which produce undesirable aquatic life.

In addition to the general requirements above, DEQ has investigated the following parameters of concern based on the nature of the proposed operations at the facility and the information submitted by the applicant and made determinations regarding the applicability of WQBELs and other permit requirements.

Barium

As shown in Table 1, barium was detected in the effluent source water at a concentration of 0.37 mg/L. The applicable water quality criterion for barium is found in water quality circular DEQ-7 and is a surface water human health criterion of 1 mg/L with a trigger value of 0.002 mg/L. Barium is a toxic parameter meaning the appropriate nonsignificance criteria for nondegradation purposes are found in ARM 17.30.715(1)(c) and are: *discharges containing toxic parameters, which will not cause changes that equal or exceed the trigger values in Department Circular DEQ-7. Whenever the change exceeds the trigger value, the change is not significant if the resulting concentration outside of a mixing zone designated by the department does not exceed 15 percent of the lowest applicable standard.*

The receiving water barium concentration, shown in Table 5 above, is similar to the projected effluent concentration (Table 1). The receiving water and effluent characteristics are also similar for the other parameters shown in Tables 1 and 5. A review of well data in the GWIC database shows that barium concentrations in other nearby wells are also similar to that of the receiving water. Based on this information it is apparent that there is little variability in the barium concentrations throughout the area. It is likely that the receiving water and the MAWC supply well originate from the same ground water source. Since barium is not used as part of the bottling process or the treatment process, and the source water and receiving water are of similar quality, it is not expected that the discharge will cause a change in the receiving water barium concentration that exceeds the DEQ-7 trigger value and the discharge is non-significant for barium. The barium concentrations in the discharge and the receiving water are well below both the DEQ-7 water quality criteria and the drinking water MCL. DEQ finds that the discharge does not have reasonable potential to exceed the barium water quality standard.

Biochemical Oxygen Demand (BOD₅)

As described in section III above, NSPS apply to the discharge proposed from outfall 002. DEQ anticipates BOD₅ of the source water to be very low and no water quality-based criteria are available for BOD₅; therefore, the NSPS will be included as effluent limits for outfall 002 in the proposed permit along with monitoring requirements to ensure compliance.

Dissolved Oxygen (DO)

Water quality criteria for DO are found in footnote 15 of water quality circular DEQ-7. Given the bottle rinsing process and the expected aeration that will be associated with it, DEQ does not anticipate DO to be a parameter of concern (POC) for outfall 002. The water used in the geothermal heating process (outfall 001), however, will not have any atmospheric exposure prior to discharge. DO levels in the discharge from outfall 001 are expected to mimic ambient groundwater levels. Given that the stream is ground water

fed, DEQ does not anticipate a drastic contrast in DO levels between the discharge and the receiving stream. To verify, DEQ will require monitoring at outfall 001 and the receiving water in the proposed permit.

Flow

Information provided by the applicant indicates that outfalls 001 and 002 are intended to be installed within a short distance from each other into the receiving water; therefore, for flow purposes DEQ will consider them together. Combined, the outfalls are predicted to discharge at a maximum rate of 0.14 cfs assuming that outfall 001 discharges at a maximum rate of 60 gpm for 24 hours per day and outfall 002 discharges at a maximum rate of 5 gpm for 10 hours per day. The critical low flow value as stated in section IV.C above is 0.489 cfs. Based on this analysis, if discharging at maximum capacity, the facility's entire discharge could increase flow in the receiving water up to approximately 30% of the critical low flow value.

DEQ has determined that total effluent flow for the facility, even at maximum discharge, will result in only a nonsignificant change in water quality per ARM 17.30.715(3) and 75-5-301(5), MCA for the following reasons:

- DEQ finds no rationale indicating even a 30% increase over the critical low flow value for the receiving water has the potential to harm human health, a beneficial use, or the environment, and this represents the facility's maximum discharge potential as indicated with their permit application. The facility is likely to discharge at a lesser rate to a greater ambient flow rate some percentage of the time.
- No human health uses that would be negatively affected by an increase in flow are known.
- No aquatic life uses that would be negatively impacted by an increase in flow are known.
- From the points of discharge, the channel flows with minimal directional change to the Flathead River, and given the observed nature of the bed and banks, little erosion and/or scour would be expected even at maximum ambient and maximum effluent flow levels.
- Lesser significance is appropriate in consideration of flow increase as opposed to other POCs due to a lack of associated carcinogenicity, toxicity, and bioaccumulative/biomagnification potential.

No flow limitations will be included in the proposed permit. Effluent flow monitoring requirements will be included as measurement is necessary to calculate mass-based discharge levels of parameters such as BOD₅ and TSS.

Oil and Grease

The water quality criteria for oil and grease is derived from a general prohibition found at ARM 17.30.637(1)(b) (see section V below) requiring that state surface waters be free from concentrations in excess of 10 mg/L. This prohibition is implemented in MPDES permits as a maximum daily limit and will be included in the proposed permit for both outfalls along with compliance monitoring requirements.

pH

The applicable pH water quality criteria are found at ARM 17.30.623(2)(c) and are: *Induced variation of hydrogen ion concentration (pH) within the range of 6.5 to 8.5 must be less than 0.5 pH unit. Natural pH outside this range must be maintained without change. Natural pH above 7.0 must be maintained above 7.0.* The three ambient and two effluent pH concentrations (see tables 4 and 1, respectively) reported by the applicant were all quite close to 8 s.u. DEQ does not have information demonstrating that the effluent as characterized by the applicant would induce a variation in pH of the receiving water of more than 0.5 s.u., nor drop natural pH of the receiving water above 7.0 s.u. to a level below 7.0 s.u. Therefore, DEQ believes the TBEL of 6.0 – 9.0 s.u. is adequate to achieve water quality standards and this limit will be included in the proposed permit for outfalls 001 and 002 along with compliance monitoring requirements.

Temperature

The applicable temperature water quality criteria are found at ARM 17.30.623(2)(e) and are: *a 1°F maximum increase above naturally occurring water temperature is allowed within the range of 32°F to 66°F; within the naturally occurring range of 66°F to 66.5°F, no discharge is allowed which will cause the water temperature to exceed 67°F; and where the naturally occurring water temperature is 66.5°F or greater, the maximum allowable increase in water temperature is 0.5°F. A 2°F per-hour maximum decrease below naturally occurring water temperature is allowed when the water temperature is above 55°F. A 2°F maximum decrease below naturally occurring water temperature is allowed within the range of 55°F to 32°F.* As discussed in section IV.C above, the applicant has submitted a mixing zone analysis indicating that the anticipated effluent for outfalls 001 and 002 does not have reasonable potential to cause changes in the receiving water temperature outside the criteria above. Effluent temperature monitoring requirements will be included in the proposed permit to allow confirmation of the applicant's projected temperature discharge and to ensure compliance with the water quality standards.

Total Suspended Solids

The applicable total suspended solids (TSS) water quality criteria are found at ARM 17.30.623(2)(f) and are: *no increases are allowed above naturally occurring concentrations of sediment or suspended sediment (except as permitted in 75-5-318, MCA), settleable solids, oils, or floating solids, which will or are likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife.*

The applicant did not sample the source water for TSS, nor did it provide an estimate of this parameter for its effluent. A turbidity sample result, which is related to TSS, was provided and the analysis indicated a very low level of 0.15 nephelometric turbidity units. DEQ has also considered facility processes related to TSS. The applicant has indicated that the source water for outfall 002 will be filtered before use which would remove TSS. The receiving water is likely to have periods of high TSS particularly during times of seasonal or irrigation runoff from adjacent fields. Based on these considerations, DEQ does not believe discharge limitations for TSS in addition to the TBELS described in

section III.B above for outfall 002 are necessary to be protective of existing and designated uses of the receiving water and prevent degradation. No additional limitations will be included in the proposed permit; monitoring for compliance with the TBELs will be included.

V. Effluent Limits

Table 6: Proposed Effluent Limitations					
Parameter	Outfall	Units	Effluent Limitations ⁽¹⁾		
			Monthly Average Limit	Maximum Daily Limit	Instantaneous Maximum Limit
Biochemical Oxygen Demand	002	lb/day	0.5	1.1	--
Total Suspended Solids	002	lb/day	0.8	2.6	--
pH ⁽²⁾	001, 002	s.u.	--	--	6.0 – 9.0
Oil and Grease	001, 002	mg/L	--	--	10

Footnotes:
 1. See the Definition section at end of permit for explanation of terms.
 2. Effluent pH shall remain between 6.0 and 9.0 (instantaneous minima and maxima). For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

The discharge must be free from substances that will:

- settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines;
- create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter), or globules of grease or other floating materials;
- produce odors, colors, or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible;
- create concentrations or combinations of materials which are toxic or harmful to human, animal, plant, or aquatic life; and
- create conditions which produce undesirable aquatic life [ARM 17.30.637(1)].

VI. Monitoring and Reporting Requirements

A. Effluent

Samples of the effluent discharged from the facility will be proposed in the permit to be taken of the type and at the frequency for the outfalls specified in Table 7 below.

Table 7: Effluent Monitoring and Reporting Requirements						
Parameter	Outfall	Units	Sample Type ⁽¹⁾	Minimum Sample Frequency	Reporting Metric	Required Reporting Value ⁽²⁾
Flow	001, 002	mgd or gpm	Instantaneous	Weekly	Monthly Average	--
Dissolved Oxygen	001	mg/L	Grab	Monthly	Monthly Average	0.3
5-Day Biochemical Oxygen Demand	002	lb/day	Grab	Monthly	Maximum Daily Monthly Average	--
Total Suspended Solids	002	lb/day	Grab	Monthly	Maximum Daily Monthly Average	--
pH	001, 002	s.u.	Instantaneous	Weekly	Monthly Average	--
Temperature	001, 002	°F	Instantaneous	Weekly	Monthly Average	--
Oil and Grease	001, 002	mg/L	Grab	Monthly	Monthly Maximum	--

Footnotes:
 1. See the Definition section at end of permit for explanation of terms.
 2. See DEQ-7 for more information on Required Reporting Values. Analysis must achieve these, or lower, reporting limits.

B. Instream

The following sampling must be performed at a location in the receiving water upstream from and outside the influence of both outfalls 001 and 002. The same location must be used for each sampling event.

Table 8: Instream Monitoring and Reporting Requirements					
Parameter	Units	Sample Type ⁽¹⁾	Minimum Sample Frequency	Reporting Metric	Required Reporting Value ⁽³⁾
Dissolved Oxygen	mg/L	Grab	Quarterly ⁽²⁾	Quarterly Average	0.3

Footnotes:
 1. See the Definition section at end of permit for explanation of terms.
 2. Sample collection must begin with the first full quarter following the effective date of the permit.
 3. See DEQ-7 for more information on Required Reporting Values. Analysis must achieve these, or lower, reporting limits.

VII. Nonsignificance Determination

A nondegradation analysis was conducted in section IV.B of this fact sheet for the proposed discharges and activities regulated by this permit. Based on this analysis DEQ has made the following determination:

The effluent limits and conditions to be included in the proposed permit have been developed to comply with the criteria of ARM 17.30.715 (Criteria for Determination of Nonsignificant Changes in Water Quality), thus the proposed discharge is nonsignificant based on Montana's Nondegradation rules and Policy [75-5-301(5) and 303, MCA]. Any change in water quality resulting from these discharges is considered nonsignificant provide that the permittee is in compliance with the effluent limits and conditions of the permit.

VIII. Special Conditions/Compliance Schedules

None

IX. Public Participation

A. Public Notice

In accordance with ARM 17.30.1372, DEQ issued Public Notice No. MT-16-16 dated June 24, 2016. The public notice states that a tentative decision has been made to issue an MPDES permit to the Permittee and that a draft permit, fact sheet and environmental assessment (EA) have been prepared. Public comments are invited any time prior to the close of the business on August 5, 2016. Comments may be directed to:

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

or

DEQWPBPublicComments@mt.gov

In addition to the public comment period, a public hearing will be held on August 1, 2016. The hearing is scheduled to begin at 6:00 p.m. at the Creston School gymnasium located at 4495 Montana Highway 35, Kalispell, Montana. During the hearing DEQ will record all oral comments. All comments received or postmarked prior to the close of the public comment period will be considered in the formulation of the final permit. DEQ will respond to all substantive comments and issue a final decision within sixty days of the close of the public comment period or as soon as possible thereafter.

All persons, including the applicant, who believe any condition of a draft permit is inappropriate or that DEQ'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) under ARM 17.30.1372.

B. Notification of Interested Parties

Copies of the public notice were mailed to the discharger, state and federal agencies and interested persons who have expressed an interest in being notified of permit actions. A copy of the distribution list is available in the administrative record for this permit. In addition to mailing the public notice, a copy of the notice and applicable draft permit, fact sheet and EA were posted on DEQ's website for 30 days.

Any person interested in being placed on the mailing list for information regarding this MPDES permit should contact DEQ, reference this facility, and provide a name, address, and email address.

C. Public Hearing

A public hearing will be held on August 1, 2016. The hearing is scheduled to begin at 6:00 p.m. at the Creston School gymnasium located at 4495 Montana Highway 35, Kalispell, Montana.

D. Permit Appeal

After the close of the public comment period DEQ will issue a final permit decision. A final permit decision means a final decision to issue, deny, modify, revoke and reissue, or, terminate a permit. A permit decision is effective 30 days after the date of issuance unless a later date is specified in the decision, a stay is granted pursuant to ARM 17.30.1379, or the applicant files an appeal pursuant to 75-5-403, MCA.

The Applicant may file an appeal within 30 days of DEQ's action to the following address:

Secretary, Board of Environmental Review
Department of Environmental Quality
1520 East Sixth Avenue
PO Box 200901
Helena, Montana 59620-0901

E. Additional Information

Requests for additional information or questions regarding this permit should be directed to the Water Protection Bureau at 406-444-3080.

IX. Information Sources

AWC 2015: Technical Memorandum from Brad Bennett, Project Hydrogeologist/Applied Water Consulting to Montana Department of Environmental Quality – Water Protection Bureau (October 13, 2015)

*Code of Federal Regulations, 40 CFR Part 463 *Plastics Molding and Forming Point Source Category* (July 1, 2015)*

CWAIC: Clean Water Act Information Center, Department of Environmental Quality, (<http://deq.mt.gov/Water/WQPB/cwaic>) (accessed 2016)

DAK 2015: *Laser+® W 4000 (K42A) Product Information*, DAK Americas LLC (March 2015)

DEQ 2016a: *Montana Department of Environmental Quality, Water Protection Bureau, Individual Activity Report* (April 12-13, 2016)

DEQ 2016b: *Montana Department of Environmental Quality, Water Protection Bureau, Individual Activity Report* (March 3, 2016)

DEQ 2014: *Final Water Quality Integrated Report* (May 2014)

DEQ 2012: Department of Environmental Quality, Circular DEQ-7, Montana Numeric Water Quality Standards (October 2012)

EPA 1991: *Technical Support Document for Water Quality-based Toxics Control*, US Environmental Protection Agency (March 1991)

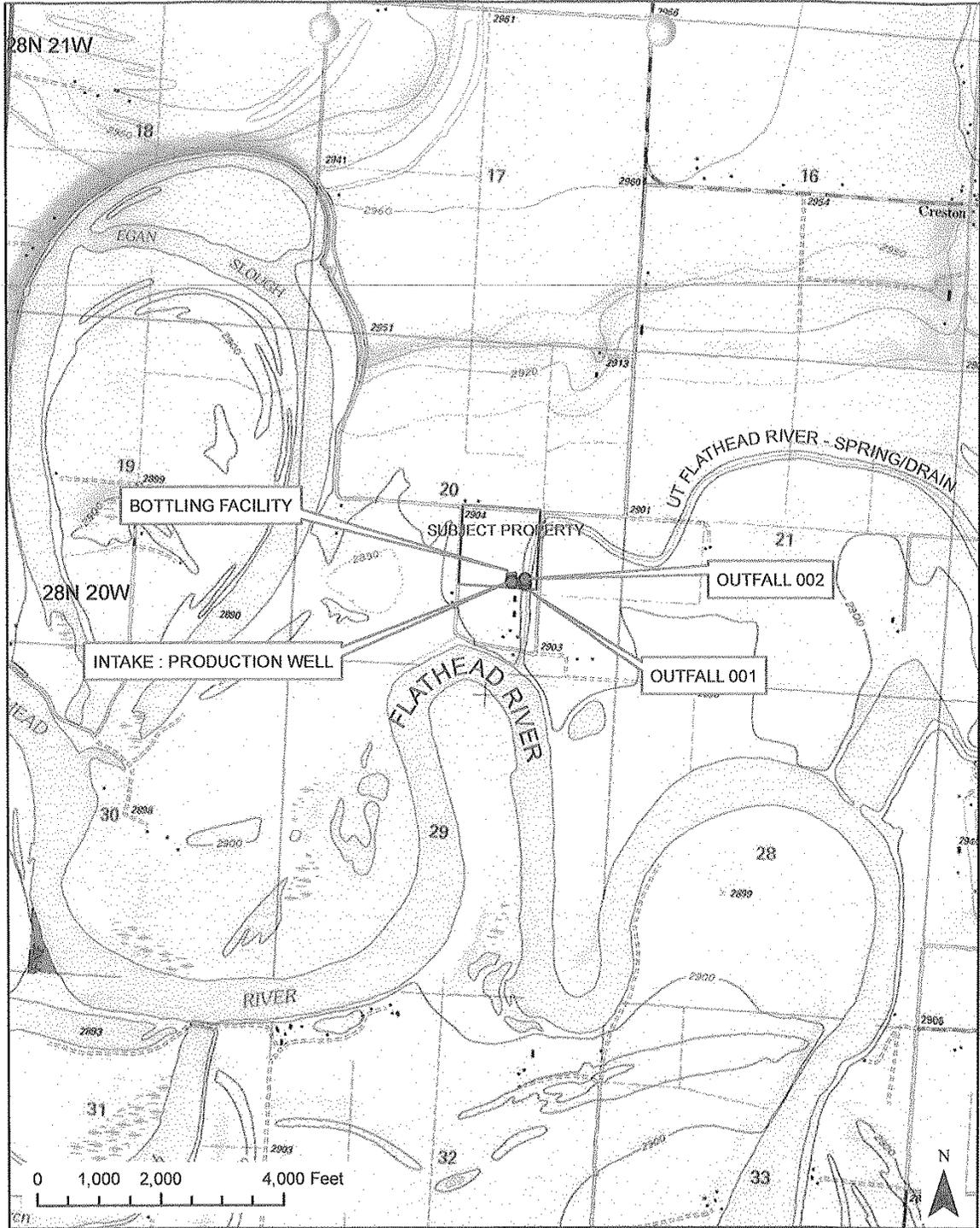
EPA 1984: *Development Document for Effluent Limitation Guidelines and Standards for the Plastics Molding and Forming Point Source Category (Final)*, EPA-440/1-84/069 (December 1984)

OSHA 2016: U.S. Department of Labor, Occupational Safety and Health Administration Website, *Standard Industrial Code Manual, Description for 3085: Plastics Bottles and Description for 5149: Groceries and Related Products, Not Elsewhere Classified* (accessed 2016)

USGS 2015: *Statistical Summaries of Streamflow in Montana and Adjacent Areas, Water Years 1900 through 2009*, US Geological Survey Scientific Investigations Report 2015-XXXX Draft Manuscript (2015)

USGS 2005: *Statistical Summaries of Streamflow in Montana and Adjacent Areas, Water Years 1900 through 2002*, US Geological Survey Scientific Investigations Report 2004-5266 (2005)

Fact Sheet prepared: April 2016



	Proj. No: 693-14	Drawn: BJB	MONTANA ARTESIAN WATER CO BASELINE WATER QUALITY	FIGURE 1
	Location: CRESTON, MT	Proj. Mgr: B. Bennett		
	Scale: 1 inch = 2,000 feet	Checked:		
	File Name: MAWC-DP	Date: OCT/2/2015		