DEQ Montana Department of Environmental Quality

BOARD OF ENVIRONMENTAL REVIEW
DECEMBER 9, 2022

AGENDA TABLE OF CONTENTS

BOARD OF ENVIRONMENTAL REVIEW
MEETING MINUTES

OCTOBER 14, 2022

Call to Order

Vice Chair Aguirre led the meeting as Chairman Ruffatto was not feeling well. The meeting was called to order at 9:00 a.m.

Attendance

Board Members Present
In Person: Vice Chair Stacy Aguirre; Board Members David Simpson and Joe Smith.

Remotely: Chairman Steven Ruffatto; Board members Julia Altemus, Jon Reiten and David Lehnherr.

Roll was called and a quorum was present.

Board Attorney Present
Michael Russell

DEQ Personnel Present
Board Liaison: James Fehr
Board Secretary: Sandy Moisey Scherer
Director: Chris Dorrington
DEQ Legal: Catherine Armstrong, Kirsten Bowers, Loryn Johnson, Sam King, Kurt Moser, Nicholas Whitaker, Jessica Wilkerson
Public Policy: Moira Davin, Rebecca Harbage
Water Quality: Lauren Sweeney, Lindsey Krywaruchka
Air, Energy & Mining: Emily Lode, Bob Smith, Katie Garcin-Forba
Enforcement: Chad Anderson, Heidi Barnes

Other Parties Present
Laurie Crutcher, Crutcher Court Reporting
Elena Hagen - Montana DOJ Agency Legal Services Bureau
John Martin (Holland and Hart) – Signal Peak Energy
Vicki Marquis (Crowley Fleck) – Teck Coal
Murry Warhank (Jackson Murdo & Grant) – Board of County Commissioners of Lincoln County, MT
Jon Metropoulos (Metropoulos Law Firm, PLLC)
Kayla, Yellowstone Public Radio
Andy Janes
Tonya Fish, EPA
Russell Batie, Westmoreland Rosebud Mining
Dicki Peterson, Westmoreland Rosebud Mining
Wade Steere, Westmoreland Rosebud Mining
Anne
Commissioners of Lincoln County, MT

I. ADMINISTRATIVE MATERIALS

A. Review and Approve Minutes

A.1. **The Board will vote on adopting the August 12, 2022, Meeting Minutes**

Board member Simpson moved to APPROVE the August 12, 2022, meeting minutes. Vice Chair Aguirre SECONDED. The motion PASSED unanimously.

There was no board discussion or public comment.

B.1. Adoption of Rules for the Form of Exceptions to proposed FOFCOLS

This was an item that was carried forward from the last meeting, but the Board decided not to discuss the matter.

C. Review and discuss 2023 Board meeting schedule

This item will be presented and discussed at the December Board meeting.

II. BRIEFING ITEMS

Vice Chair Aguirre reviewed the briefing items and asked the Board for comments.

Board Attorney Russell brought the Board's attention to II.A.2.c. (MEIC v. DEQ, BER and Signal Peak Energy (DV-56-2022-0000722-JR). The Board will file a Motion to Dismiss.

Board Attorney Russell brought the Board's attention to II.A.3.e. (Western Sugar, BER 2020-05 WQ). The parties have filed for an extension of time. The parties were to submit an updated scheduling order, and there was a subsequent filing where the parties indicated that they were exploring settlement options.

Board member Simpson asked for an update on III.A.3.h (Request for Hearing by Harry Richards, Lincoln County, MT, Case No. BER 2022-02 HW). Board member Simpson asked if anyone had an idea what the appeal is about. He saw that Mr. Richards was ordered to file a more definite statement by October 14th. Board Attorney Russell said he did not have any information.

III. ACTION ITEMS

III.a. **In the Matter of: Petitions of Teck Coal Limited and the Board of County Commissioners of Lincoln County, Montana, for Review of ARM 17.30.632(7)(A) Pursuant to Mont. Code Ann. Section 75-5-203 – Stringency Review of Rule Pertaining to Selenium Standard for Lake Koocanusa, BER 2021-04 and 08 WQ**

The Board reviewed the discussion and vote from the last meeting regarding DEQ's Motion to Alter or Amend the Board's Final Agency Decision. In the August Board meeting, the Board voted 3-2 to DENY DEQ's Motion but Chairman Ruffatto concluded that the vote at issue was insufficient because it was not supported by a majority of all Board members.

Board member Simpson motioned to DENY DEQ's Motion to Alter or Amend the Board's Final Agency Decision. Discussion ensued and the Board allowed counsel to briefly give their positions.

Chairman Ruffatto moved to TERMINATE the oral arguments and only hear specific questions from Board members. Board member Altemus SECONDED. The motion PASSED unanimously.

Vice Chair Aguirre asked if there were specific questions for the motion on the table. The Board engaged in discussion and Board member Simpson WITHDREW his motion as it was a repeat of a motion from the last meeting.

The Board held a vote and the motion PASSED 5-2 to deny DEQ's Motion to Alter or Amend the Board's Final Agency Decision, with Board members Lehnherr and Reiten dissenting.

The Board then discussed the Joint Notice and Motion to Submit Final Agency Action to EPA. Oral argument was held, and discussion ensued.

Board member Altemus moved to GRANT the Joint Notice and Motion to Submit Final Agency Action to EPA. Board member Simpson SECONDED. Discussion ensued. The motion PASSED 5-2 to grant the Joint Notice and Motion to Submit Final Agency Action to EPA, with Board members Lehnherr and Reiten dissenting.

Chairman Ruffatto motioned to DIRECT Board Counsel, working with the Chairman, to draft a reasoned decision to deny DEQ's Request to Amend, for consideration at the December Board meeting. Vice Chair Aguirre SECONDED. The motion PASSED 5-2, with Board members Lehnherr and Reiten dissenting.

Chairman Ruffatto motioned that the Board REQUEST that Lincoln County and Teck Coal jointly file a proposed letter to EPA transmitting the Board's order, and to submit that to the Board by November 4, 2022. Vice Chair Aguirre SECONDED. The motion PASSED 5-2, with Board members Lehnherr and Reiten dissenting.

IV. NEW CONTESTED CASE

IV.a. **In the Matter of: Appeal and Request for Hearing by Westmoreland Rosebud Mining LLC Regarding Issuance of MPDES Permit No. MT0032042, Colstrip, MT, BER 2022-06 WQ**

Vice Chair Aguirre MOVED to assign the case in entirety to Board Attorney Michael Russell as the Hearing Examiner. Board member Simpson SECONDED. The motion PASSED unanimously.

V. BOARD COUNSEL UPDATE

Board Attorney Russell briefed the Board regarding a Water Policy Interim Committee meeting that he recently attended.

VI. GENERAL PUBLIC COMMENT

No public comment was given.

VII. ADJOURNMENT

Board member Smith MOVED to adjourn the meeting; Board member Simpson SECONDED. The motion PASSED unanimously. The meeting adjourned at 10:58 AM.

Board of Environmental Review October 14, 2022, minutes approved:

_/s/_____
STEVEN RUFFATTO
CHAIRMAN
BOARD OF ENVIRONMENTAL REVIEW

_____
DATE

DEQ Montana Department of Environmental Quality

Board of Environmental Review 1520 East 6 Avenue P.O. Box 200901 Helena, MT 59601 (406) 444-5225

2023 MEETING SCHEDULE

Dates subject to change.

January						
Su	Mo	Tu	We	Th	Fr	Sa
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LEGEND

00	DOCUMENT SUBMITTAL DEADLINE DATES – ALL DOCUMENTS DUE TO BOARD SECRETARY BY NOON
00	BOARD PACKET POSTED TO WEB
00	BOARD MEETING DATES

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Attorneys for the Board of County Commissioners of Lincoln County

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

IN THE MATTER OF: THE PETITIONS OF TECK COAL LIMITED and the BOARD OF COUNTY COMMISSIONERS OF LINCOLN COUNTY, MONTANA for REVIEW OF ARM 17.30.632(7)(a) PURSUANT TO §75-5-203, MCA - STRINGENCY REVIEW OF SELENIUM STANDARDS FOR LAKE KOOCANUSA	Case Nos.: BER 2021-04-WQ and BER 2021-08-WQ **JOINT SUBMITTAL OF DRAFT PROPOSED LETTER TO EPA**

Pursuant to the Board of Environmental Review's (the "Board") motion on October 14, 2022, the Board of Commissioners of Lincoln County and Teck Coal Limited (collectively, the "Petitioners") jointly submit the attached draft proposed letter to EPA for the Board's consideration. Counsel for Petitioners do not represent the Board and therefore have not considered potential claims and/or future actions by the Board on this issue; therefore, additional and/or different correspondence with EPA may be required to preserve any legal claims the Board may have, such as claims pursuant to the Clean Water Act and/or the Administrative Procedure Act, including 33 U.S.C. § 1365, 5 USC § 553(e), and 5 U.S.C. § 701 et seq.

Dated this 4th day of November 2022.

/s/ Victoria A. Marquis
CROWLEY FLECK PLLP
P. O. Box 2529
Billings, MT 59103-2529

Attorneys for Teck Coal Limited

/s/ Murry Warhank
Jackson, Murdo & Grant, P.C.
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mwarhank@jmgm.com
kheimbach@jmgattorneys.com

Attorneys for Board of Commissioners of Lincoln County

CERTIFICATE OF SERVICE

I hereby certify that the foregoing document was served upon the following counsel of record, by the means designated below, this 4th day of November 2022:

[ ] U.S. Mail	Sandy Moisey Scherer, Board Secretary
[ ] FedEx	Board of Environmental Review
[ ] Hand-Delivery	1520 E. Sixth Avenue
[**X**] Email	P.O. Box 200901
[ ] Sharefile	Helena, MT 59620-0901
	deqbersecretary@mt.gov

[ ] U.S. Mail	Michael Russell, Board Attorney
[ ] FedEx	Board of Environmental Review
[ ] Hand-Delivery	1712 Ninth Avenue
[**X**] Email	P.O. Box 201440
[ ] Sharefile	Helena, MT 59620-1440
	Michael.Russell@mt.gov
	Ehagen2@mt.gov

[ ] U.S. Mail	Kirsten H. Bowers
[ ] FedEx	Montana Department of Environmental Quality
[ ] Hand-Delivery	1520 East Sixth Avenue
[**X**] Email	P.O. Box 200901
[ ] Sharefile	Helena, MT 59620-0901
	kbowers@mt.gov
	Angela.Colamaria@mt.gov
	Catherine.Armstrong2@mt.gov

/s/ VICTORIA A. MARQUIS

November xx, 2022

KC Becker
Administrator
U.S. Environmental Protection Agency
Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

RE: Montana's December 2020 Submittal, and EPA's 2021 Approval of Lake Koocanusa and Kootenai River Selenium Water Quality Standards.

Dear Administrator Becker:

The Board of Environmental Review (the "Board") writes to inform EPA of a legal error in our previous rulemaking that established a site-specific water column standard for Lake Koocanusa, making the standard invalid for both state and federal purposes. The legal error is limited to Montana Administrative Rule 17.30.632(7)(a) which established a water column standard for "Lake Koocanusa from the US-Canada international boundary to the Libby Dam" at 0.8 µg/L selenium (the "Lake Water Column Standard"). The remaining seven criteria established, including the three fish tissue standards for Lake Koocanusa, are not impacted by the legal error and therefore remain valid.

The Board's Authority

The Board is an "agency," an "entity or instrumentality of the executive branch of state government. 2-15-102(2), MCA. The Board serves a "quasi-judicial function," which is defined as "an adjudicatory function exercised by an agency, involving the exercise of judgment and discretion in making determinations in controversies." 2-15-102(10), MCA. This includes "interpreting, applying, and enforcing existing rules and laws" and "evaluating and passing on facts." *Id*. Absent a successful appeal through the state courts, a Final Agency Action from the Board is binding.

One controversy that the law places within the Board's authority involves petitions seeking the Board's review and determination of compliance with Montana's law that prohibits standards from being set more stringent "than the comparable federal regulations or guidelines that address the same circumstances" absent a specific rulemaking process and completion of specific findings. 75-5-203, MCA (the "Stringency Statute"). For the Lake Water Column Standard, the Board was presented with petitions submitted pursuant to the Stringency Statute in 2021. After nearly a year of deliberations, the Board reached a Final Agency Action on April 19, 2022, attached. The Board denied a motion to amend its Final Agency Action during its meeting on October 14, 2022 and by formal written decision adopted by the Board on December 9, 2022. Thus, the Board's Final Agency Action finding legal error in the promulgation of the Lake Water Column Standard is final and binding.

EPA's Authority

Pursuant to Section 303(c) of the Clean Water Act and the implementing federal regulations at 40 C.F.R. Part 131, the EPA "is to review and to approve or disapprove State-adopted water quality standards." 40 C.F.R. 131.5(a). The review involves a determination of "[w]hether the State has followed applicable legal procedures for revising or adopting standards." 40 C.F.R. 131.5(a)(6).

Background on the Lake Water Column Standard

Prior to July 1, 2021, the Board had authority to set water quality standards for Montana's waters. § 75-5-301(2), MCA (2019). Pursuant to that authority, on October 9, 2020, the Board formally initiated rulemaking for the Lake Water Column Standard by publication in the Montana Administrative Register. A public comment period and public hearing followed. Public comments pointed out that the Lake Water Column Standard was set more stringent than the comparable federal guideline but without complying with the Stringency Statute. The Board, in its responses to the comments, erroneously informed the public that the Lake Water Column Standard was not set more stringent than the federal guideline and that the Stringency Statute, therefore, did not apply. No changes were made to the Lake Water Column Standard, no findings were issued pursuant to the Stringency

Statute, and the Lake Water Column Standard was promulgated and took effect on December 25, 2020.

On December 28, 2020, the Montana Department of Environmental Quality ("DEQ") forwarded the newly promulgated rule to EPA for review. In the submission, former DEQ Director Shaun McGrath noted that DEQ certified that "the rules were adopted pursuant to state law" and included a letter from DEQ's chief legal counsel certifying the same.

By letter to the Board dated February 25, 2021, EPA approved ARM 17.30.632, including the Lake Water Column Standard. EPA noted that the Lake Water Column Standard "is more stringent than the recommended water column criterion element for lentic aquatic systems in EPA 2016 (1.5 µg/L)." EPA Letter, p. 12.

The Petition Process

In 2021, two petitions were filed with the Board seeking its review of the Lake Water Column Standard pursuant to the Stringency Statute. Rather than proceed with a contested-case type process that requires formal legal submissions, the Board opted to open the process to all interested parties. The process included wide public participation at each Board meeting and at a public hearing held by the Board. The petitions were decided through an open, public process, which generated active participation from citizens from within and outside Montana, as well as non-governmental environmental organizations, state agencies, and EPA. All of the Board's records, including public comments and filings received, as well as meeting and public hearing transcripts, are available on our website at https://deq.mt.gov/about/ber for your review.

After nearly a year of considerations and deliberations, the Board issued its Final Agency Action and Order concluding that the "Board erred, as a matter of law, when it concluded the Lake Numeric Standard was not more stringent than the comparable federal guideline and that it did not need to make the written findings required by [the Stringency Statute]." Order, pp. 19-20. The Board also concluded that the Lake Water Column Standard "and the rulemaking upon which it is based fail to comply with the Stringency Statute." Order, p. 20. Finally, the Board concluded, and recently affirmed, that "Because the Board's rulemaking failed to

comply with [the Stringency Statute], in order to have a valid and enforceable lake water column standard, new rulemaking must be initiated." Order, p. 20.

Impact of the Board's Final Agency Action and Order

Pursuant to federal and state law, the legal error and failure to comply with the Stringency Statute mean that the Lake Water Column Standard has been invalid since its inception. *Paulsen v. Daniels*, 413 F.3d 999, 1008 (9th Cir. 2005); *Action on Smoking & Health v. Civil Aeronautics Bd.*, 230 U.S. App. D.C. 1, 713 F.2d 795, 797 (D.C. Cir. 1983); *Clark Fork Coalition v. Tubbs*, 2016 MT 229, 384 Mont. 503, 380 P.3d 771; *Northwest Airlines v. State Tax Appeal Bd.*, 221 Mont. 441, 720 P.2d 676 (1986); *State v. Vainio*, 2001 MT 220, 306 Mont. 439, 35 P.3d 948; *Rosebud County v. Dept. of Rev.*, 257 Mont. 306, 849 P.2d 441, 720 P.2d 676 (1986). The legal error also carries over to the EPA's approval of the standard, issued February 25, 2021, which relied, in part, on an erroneous legal certification by DEQ that the standard was "duly adopted" under the Montana Water Quality Act and the Montana Administrative Procedures Act.

After an adjudicatory proceeding that lasted more than a year, the Board concluded and affirmed its conclusions that the Lake Water Column Standard was not duly adopted pursuant to the Montana Water Quality Act because both the Lake Water Column Standard and the rulemaking violated the Stringency Statute. The Board's decision invalidates the Lake Water Column Standard for state purposes. The Board now seeks recognition that the legal error also invalidates the Lake Water Column Standard for federal purposes.

Conclusion

Based upon the Cooperative Federalism principles of the Clean Water Act and the error committed by the Board in 2020, we ask that, in accordance with the federal Clean Water Act, including 40 C.F.R. 131.5(a)(6), and 131.21, EPA vacate its prior approval of the Lake Water Column Standard. EPA may wish to consider again the December 2020 submission from Montana, this submission, the Board's Final Agency Action and Order, as well as the online record supporting it, to support vacatur of that portion of EPA's prior approval that applies to the Lake Water Column Standard found at ARM 17.30.632(7)(a).

As noted above, this action does not impact the remainder of ARM 17.30.632 that was approved by EPA. We kindly ask for confirmation that EPA has vacated its prior approval of the Lake Water Column Standard within at least 90 days.

Sincerely,

Steven Ruffatto
Chair, Montana Board of Environmental Review

Enclosure: *Final Agency Action and Order of the Board of Environmental Review*, Cause Nos. BER 2021-04 and 08 WQ (April 19, 2022)

cc: Tonya Fish, EPA Montana Operations Office
Darcy O'Connor, Director, Water Division, Region 8
Chris Dorrington, Director, Montana Department of Environmental Quality

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

IN THE MATTER OF: THE PETITIONS OF TECK COAL LIMITED and the BOARD OF COUNTY COMMISSIONERS OF LINCOLN COUNTY, MONTANA for REVIEW OF ARM 17.30.632(7)(a) PURSUANT TO §75-5-203, MCA – STRINGENCY REVIEW OF SELENIUM STANDARDS FOR LAKE KOOCANUSA	**CASE NO. BER 2021-04 WQ and BER 2021-08 WQ** **ORDER DENYING DEQ'S MOTION TO ALTER OR AMEND**

This matter comes before the Board of Environmental Review ("Board") on the Montana Department of Environmental Quality's ("DEQ") Motion to Alter or Amend ("Motion") the Board of Environmental Review's Final Agency Action and Order dated April 19, 2022 ("Order"). DEQ's Motion requests that the Order be amended by striking Paragraph IV.6, which reads: "Because the Board's rulemaking failed to comply with § 75-5-203, MCA, in order to have a valid and enforceable lake water column standard, new rulemaking must be initiated."

DEQ accepts the Board's determination that the "Lake Water Column Standard" for Lake Koocanusa (ARM 17.30.632(7)(a)) is more stringent than the comparable Federal guideline, thus acknowledging that the Lake Water Column Standard violates Subsection (1) of Section 75-5-203, Montana Code Annotated.

("Stringency Statute"). Although the Lake Water Column Standard violates the Stringency Statute, DEQ argues that the standard is nevertheless valid.

For the reasons stated below, DEQ's Motion is denied.

The principles at stake here are the rule of law and the imperative that administrative agencies carry out the Legislature's intent. Whether any particular site-specific lake water column selenium standard for Lake Koocanusa is justified presents a separate question to be resolved through a valid rulemaking process.

DEQ fails to acknowledge or address a fundamental principle of administrative law – a rule promulgated in violation of its enabling statute is invalid from its inception. *See Paulsen v. Daniels*, 413 F.3d 999, 1008 (9th Cir. 2005); *Action on Smoking & Health v. Civil Aeronautics Bd.*, 230 U.S. App. D.C. 1, 713 F.2d 795, 797 (D.C. Cir. 1983); *Clark Fork Coalition v. Tubbs*, 2016 MT 229, ¶ 25, 384 Mont. 503, 380 P.3d 771; *Northwest Airlines v. State Tax Appeal Bd.*, 221 Mont. 441, 445, 720 P.2d 676 (1986); *State v. Vainio*, 2001 MT 220, ¶ 27, 306 Mont. 439, 35 P.3d 948; *Rosebud County v. Dept. of Rev.*, 257 Mont. 306, 310-11, 849 P.2d 441, 720 P.2d 676 (1993). This principle is codified in the Montana Administrative Procedure Act ("MAPA") at Section 2-4-305(6), MCA ("adoption…. of a rule is not valid or effective unless it is…. consistent and not in conflict with the statute"). Moreover, the legislature did not intend the Stringency Statute to be read in isolation. To the contrary, the Montana Legislature's

statement of intent for the Stringency Statute expressly states that its provisions are "in addition to all requirements imposed by existing law and rules." 1995 Bill Text MT H.B. 521.

As the Board fully explained in its Order, the Lake Water Column Standard was promulgated in clear and direct violation of Subsection (1) of the Stringency Statute. DEQ does not challenge this conclusion. Thus, based on the fundamental principle of administrative law described above, the standard was invalid and unenforceable by operation of law from its inception. In order to promulgate a valid site-specific water column selenium standard for Lake Koocanusa, rulemaking in compliance with MAPA and the Montana Water Quality Act, including the Stringency Statue, is required. Section 2-4-305, MCA; Section 75-5-203, MCA.

In its effort to avoid new rulemaking in compliance with MAPA and the Stringency Statute, DEQ relies on the Stringency Statute's language stating that "[a] petition under this section does not relieve the petitioner of the duty to comply with the challenged rule." Section 75-5-203(4), MCA. This reliance is misplaced. The clear and plain meaning of this language is that the "petition" does not relieve

the petitioner of the duty to comply. It does not address the effect of a determination that a rule was promulgated in violation of the Stringency Statute.[1]

DEQ's argument that the Stringency Statute allows it to make the required finding after the rule has been adopted in violation of Subsection (1) of the statute fails based on the very language relied on by DEQ. Subsection (4)(a) provides that one remedy is to make the required finding "as provided under subsection (2)." Subsection (2) states that a rule more stringent than the comparable federal guideline may be "adopted" "only if" the department makes the required finding. This clearly places a **precondition on the adoption** of such a rule and thus precludes DEQ's position that the finding can be made **after adoption.**

A primary purpose of the rulemaking provisions of MAPA and the Stringency Statute is to ensure that the public generally and interested parties in particular are fully and accurately informed so that they can meaningfully and effectively participate in the rulemaking process. Section 2-4-101(2); 1995 Bill Text MT H.B. 521. In the present case, the publication initiating rulemaking misinformed the public that the Lake Water Column Standard was not more stringent than the comparable federal guideline. See Order, p. 5. Also, in response to comments in the rulemaking process concerning the Stringency Statute, the

[1] This matter does not present, and the Board need not address, the effect of a determination that a validly adopted rule is more stringent than a subsequently established comparable federal regulation or guideline under Subsection (4) (b) of the Stringency Statute.

Board again misinformed the public that the Lake Water Column Standard was not more stringent than the comparable federal guidelines and thus that the finding called for by the Stringency Statute was not required. See Order, p. 6. Although the public was seriously misinformed during the rulemaking process, DEQ has attempted to rectify the deficiencies by making the required Stringency Statute finding without undertaking a new rulemaking process. These facts are similar to the facts in *Rosebud County v. Dep't of Revenue*, 257 Mont. 306, 849 P.2d 177 (1993).

In the *Rosebud County* case, the Montana Department of Revenue ("DOR") adopted an amended "rule" without compliance with MAPA and an attempt by DOR to cure the deficiency after the fact by then conducting a rulemaking proceeding was held to be "in essence, a sham" in which interested parties "were denied their right to participate effectively in the governmental process." *Id.*, at 311. The course of action undertaken by DEQ in this case is subject to the same criticisms. DEQ's attempt to justify the Lake Water Column Standard after the fact amounts to "*post hoc* rationalization" which has been repeatedly condemned by the courts in rulemaking proceedings. *Action on Smoking & Health v. Civil Aeronautics Bd.*, 713 F.2d at 799.

Because the Board has considered and ruled on the merits of DEQ's Motion, it need not address the arguments regarding the alleged procedural deficiencies of

the Motion. However, the Board's consideration of DEQ's Motion on its merits may not be construed as precedent for considering such motions in other cases.

For the reasons stated above, DEQ's Motion is hereby DENIED.

DATED this 9th day of December, 2022.

STEVEN RUFFATTO
Board Chair
Board of Environmental Review

December 9, 2022

KC Becker
Administrator
U.S. Environmental Protection Agency
Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

RE: Montana's December 2020 Submittal, and EPA's 2021 Approval of Lake Koocanusa and Kootenai River Selenium Water Quality Standards.

Dear Administrator Becker:

The Board of Environmental Review (the "Board") writes to inform EPA of a legal error in the Board's previous rulemaking that purported to establish a site-specific water column standard for Lake Koocanusa. The legal error renders the standard invalid by operation of law for both state and federal purposes. The legal error is limited to Montana Administrative Rule 17.30.632(7)(a) which purported to establish a water column standard for "Lake Koocanusa from the US-Canada international boundary to the Libby Dam" at 0.8 µg/L selenium (the "Lake Water Column Standard"). The remaining seven criteria established, including the three fish tissue standards for Lake Koocanusa, are not impacted by the legal error and therefore are valid.

The Board's Authority

Montana law requires the Board to adjudicate petitions seeking the Board's review and determination of compliance with Montana's statute that prohibits standards from being set more stringent "than the comparable federal regulations or guidelines that address the same circumstances" absent a specific rulemaking process and completion of specific findings. Section 75-5-203, MCA (the "Stringency Statute"). For the Lake Water Column Standard, the Board was presented with petitions submitted pursuant to the Stringency Statute in 2021. After nearly a year of deliberations, the Board reached a Final Agency Action on April 19, 2022 ("Order"), attached. The Board denied a motion to amend its Order by written decision dated December 9, 2022, attached.

EPA's Authority

Pursuant to Section 303(c) of the Clean Water Act and the implementing federal regulations at 40 C.F.R. Part 131, EPA "is to review and to approve or disapprove State-adopted water quality standards." 40 C.F.R. 131.5(a). The review involves a determination of "[w]hether the State has followed applicable legal procedures for revising or adopting standards." 40 C.F.R. 131.5(a)(6).

Background on the Lake Water Column Standard

Prior to July 1, 2021, the Board had authority to set water quality standards for Montana's waters. Section 75-5-301(2), MCA (2019). Pursuant to that authority, on October 9, 2020, the Board formally initiated rulemaking for the Lake Water Column Standard by publication in the Montana Administrative Register. In both the initial publication and in response to comments the Board misinformed the public that the Lake Water Column Standard was not set more stringent than the federal guideline and that the Stringency Statute, therefore, did not apply. The Lake Water Column Standard was made effective as a purported rule on December 25, 2020.

On December 28, 2020, the Montana Department of Environmental Quality ("DEQ") forwarded the newly promulgated rule to EPA for review. In the submission, former DEQ Director Shaun McGrath noted that DEQ certified that "the rules were adopted pursuant to state law" and included a letter from DEQ's chief legal counsel certifying the same.

By letter to the Board dated February 25, 2021, EPA approved ARM 17.30.632, including the Lake Water Column Standard. EPA noted that the Lake Water Column Standard "is more stringent than the recommended water column criterion element for lentic aquatic systems in EPA 2016 (1.5 µg/L)." EPA Letter, p. 12.

The Petition Process

In 2021, two petitions were filed with the Board seeking its review of the Lake Water Column Standard pursuant to the Stringency Statute. The review process included wide public participation at each Board meeting and at a public hearing held by the Board. The petitions were decided through an open, public

process, which generated active participation from citizens from within and outside Montana, as well as non-governmental environmental organizations, state agencies, and EPA. The Board's records, including public comments and filings received, as well as meeting and public hearing transcripts, are available on the Boards website at https://deq.mt.gov/about/ber for your review.

After nearly a year of considerations and deliberations, the Board issued its Order concluding that the "Board erred, as a matter of law, when it concluded the [Lake Water Column Standard] was not more stringent than the comparable federal guideline and that it did not need to make the written findings required by [the Stringency Statute]." Order, pp. 19-20. The Board also concluded that the Lake Water Column Standard "and the rulemaking upon which it is based fail to comply with the Stringency Statute." Order, p. 20. Finally, the Board concluded that "Because the Board's rulemaking failed to comply with [the Stringency Statute], in order to have a valid and enforceable lake water column standard, new rulemaking must be initiated." Order, p. 20.

Impact of the Board's Legal Error

Pursuant to federal and state law, the legal error and failure to comply with the Stringency Statute mean that by operation of law the Lake Water Column Standard has been invalid since its inception. *See Paulsen v. Daniels*, 413 F.3d 999, 1008 (9th Cir. 2005); *Action on Smoking & Health v. Civil Aeronautics Bd.*, 230 U.S. App. D.C. 1, 713 F.2d 795, 797 (D.C. Cir. 1983); *Clark Fork Coalition v. Tubbs*, 2016 MT 229, ¶ 25, 384 Mont. 503, 380 P.3d 771; *Northwest Airlines v. State Tax Appeal Bd.*, 221 Mont. 441, 445, 720 P.2d 676 (1986); *State v. Vainio*, 2001 MT 220, ¶ 27, 306 Mont. 439, 35 P.3d 948; *Rosebud County v. Dept. of Rev.*, 257 Mont. 306, 310-11, 849 P.2d 441, 720 P.2d 676 (1993). This result is clear under the Montana Administrative Procedure Act. § 2-4-305(6), MCA ("adoption…. of a rule is not valid or effective unless it is…. consistent and not in conflict with the statute").

The legal error also carries over to EPA's approval of the standard, issued February 25, 2021, which relied, in part, on an erroneous legal certification by DEQ that the standard was "duly adopted" under the Montana Water Quality Act and the Montana Administrative Procedures Act.

After an adjudicatory proceeding that lasted more than a year, the Board

concluded and affirmed its conclusions that the Lake Water Column Standard was not duly adopted pursuant to the Montana Water Quality Act because both the Lake Water Column Standard and the rulemaking violated the Stringency Statute, making the standard invalid from its inception as a matter of law. The Board now seeks recognition that the legal error also rendered the Lake Water Column Standard invalid for federal purposes.

Conclusion

Based upon the Cooperative Federalism principles of the Clean Water Act and the error committed by the Board in 2020, the Board asks that, in accordance with the federal Clean Water Act, including 40 C.F.R. 131.5(a)(6), and 131.21, EPA vacate its prior approval of the Lake Water Column Standard. EPA may wish to consider again the December 2020 submission from Montana, this submission, the Board's Final Agency Action and Order, as well as the online record supporting it, to support vacatur of that portion of EPA's prior approval that applies to the Lake Water Column Standard found at ARM 17.30.632(7)(a).

As noted above, this action does not impact the remainder of ARM 17.30.632 that was approved by EPA. The Board respectfully requests confirmation that EPA has vacated its prior approval of the Lake Water Column Standard within at least 90 days.

Sincerely,

_____
Steven Ruffatto
Chair, Montana Board of Environmental Review

Enclosures: *Final Agency Action and Order of the Board of Environmental Review*, Cause Nos. BER 2021-04 and 08 WQ (April 19, 2022); *Order Denying DEQ's Motion to Alter or Amend* (December 9, 2022)

cc: Tonya Fish, EPA Montana Operations Office
Darcy O'Connor, Director, Water Division, Region 8
Chris Dorrington, Director, Montana Department of Environmental Quality

Montana Department of Environmental Quality

Board of Environmental Review

Memo

TO: Michael Russell, Board Attorney
Board of Environmental Review

FROM: Sandy Moisey Scherer, Board Secretary
P.O. Box 200901
Helena, MT 59620-0901

DATE: October 31, 2022

SUBJECT: Board of Environmental Review Case No. BER 2022-07 WQ

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

IN THE MATTER OF: RENEWAL OF MPDES PERMIT NO. MT0000264, ISSUED SEPTEMBER 30, 2022, TO CHS, INC. FOR DISCHARGES FROM THE LAUREL REFINERY	Case No. BER 2022-02 HW

On October 31, 2022 the BER received the attached request for hearing.

Please serve copies of pleadings and correspondence on me and on the following DEQ representatives in this case.

Kurt Moser Legal Counsel Department of Environmental Quality P.O. Box 200901 Helena, MT 59620-0901	Angela Colamaria Chief Legal Counsel Department of Environmental Quality P.O. Box 200901 Helena, MT 59620-0901

Attachment

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Attorneys for CHS, Inc.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

IN THE MATTER OF: RENEWAL OF MPDES PERMIT NO. MT0000264, ISSUED SEPTEMBER 30, 2022, TO CHS, INC. FOR DISCHARGES FROM THE LAUREL REFINERY	Case No.: BER 2022-07 WQ **NOTICE OF APPEAL AND REQUEST FOR HEARING**

Pursuant to Montana Code Annotated § 75-5-403(2) and Administrative Rules of Montana 17.30.1370(4), CHS, Inc. ("CHS"), as the permit renewal applicant, appeals the Department of Environmental Quality's ("DEQ" or the "Department") renewal of Montana Pollutant Discharge Elimination System ("MPDES") Permit No. MT0000264 (the "2022 Renewal") and requests a hearing before the Board of Environmental Review ("Board").

In August 2022, DEQ issued a draft of the 2022 Renewal, accompanied by a Fact Sheet and draft Environmental Assessment. **Exhibits A, B, and C**. CHS timely provided comments to the draft of the 2022 Renewal. **Exhibit D**. On October 3, 2022, CHS received DEQ's

Responses to Comments and final decision on the 2022 Renewal. **Exhibits E and F**. CHS now appeals to the Board for a hearing and to modify portions of DEQ's final decision on the 2022 Renewal.

CHS commented on and now appeals DEQ's final decision on the 2022 Renewal, including the following issues:

Issue 1: DEQ's improper disregard of newly calculated Technology Based Effluent Limitations ("TBELs"). *See* Exhibit D, Comment 2.

Issue 2: DEQ's improper inclusion of effluent limitations for Hydrogen Sulfide, as well as application of an improper standard and improper Required Reporting Value ("RRV") for Hydrogen Sulfide. *See* Exhibit D, Comments 4, 5, 6, and 7.a.

Issue 3: DEQ's improper inclusion of effluent and upstream monitoring requirements for radioactive parameters, including Alpha Emitters, Beta Emitters and Radium. *See* Exhibit D, Comments 7.b. and 8.

Dated this 31st day of October 2022.

/s/ Victoria A. Marquis
CROWLEY FLECK PLLP
P. O. Box 2529
Billings, MT 59103-2529

Attorneys for CHS, Inc.

CERTIFICATE OF SERVICE

I hereby certify that the foregoing document was served upon the following counsel of record, by the means designated below, this 31st day of October 2022:

[ ] U.S. Mail [ ] FedEx [ ] Hand-Delivery [**X**] Email [ ] Sharefile	Sandy Moisey Scherer, Board Secretary Board of Environmental Review 1520 E. Sixth Avenue P.O. Box 200901 Helena, MT 59620-0901 deqbersecretary@mt.gov
[ ] U.S. Mail [ ] FedEx [ ] Hand-Delivery [**X**] Email [ ] Sharefile	Michael Russell, Board Attorney Board of Environmental Review 1712 Ninth Avenue P.O. Box 201440 Helena, MT 59620-1440 Michael.Russell@mt.gov Ehagen2@mt.gov
[ ] U.S. Mail [ ] FedEx [ ] Hand-Delivery [**X**] Email [ ] Sharefile	Kurt Moser Montana Department of Environmental Quality 1520 East Sixth Avenue P.O. Box 200901 Helena, MT 59620-0901 Kmoser2@mt.gov Angela.Colamaria@mt.gov Catherine.Armstrong2@mt.gov

/s/ VICTORIA A. MARQUIS

Major Industrial
Permit No.: MT0000264

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER THE
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Montana Water Quality Act, Title 75, Chapter 5, Montana Code Annotated (MCA) and the Federal Water Pollution Control Act (the "Clean Water Act"), 33 U.S.C. § 1251 *et seq.,*

CHS, Inc.

is authorized to discharge from its **Laurel Refinery**

located at **802 Highway 212 South, Laurel, MT,**

to receiving waters named **Yellowstone River**

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

This permit shall become effective: **DATE**

This permit and the authorization to discharge shall expire at midnight, **{5 years after effective date}**

FOR THE MONTANA DEPARTMENT OF
ENVIRONMENTAL QUALITY

DRAFT

Jon Kenning, Chief
Water Protection Bureau
Water Quality Division

Issuance Date: **DRAFT**

EXHIBIT
A - Appeal
028

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I. EFFLUENT LIMITATIONS, MONITORING REQUIREMENTS & OTHER CONDITIONS

A. Description of Discharge Points and Mixing Zone

The authorization to discharge provided under this permit is limited to those outfalls specially designated below as discharge locations. Discharges at any location not authorized under an MPDES 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	Description
002	**Location:** Lower port primary diffuser, discharging into the Yellowstone River, located at 45°39'22.32" N latitude, 108°45'10.86" W longitude. **Mixing Zone:** None. There are no effluent limits that require a mixing zone. **Treatment Works**: Refinery wastewater treatment plant.
003	**Location:** Upper port secondary diffuser, discharging into the Yellowstone River, located at 45°39'22.32" N latitude, 108°45'10.86" W longitude. **Mixing Zone:** Acute mixing for 100 feet to provide 6.9% dilution, and chronic mixing for 1,000 feet to provide 27% dilution, for Total Residual Chlorine. **Treatment Works**: Refinery wastewater treatment plant.

B. Effluent Limitations

Outfall 002 – Lower Port Primary Diffuser to Yellowstone River

Beginning **{DATE}**, until the end of the permit, CHS Laurel Refinery will be required to meet the following effluent limits at Outfall 002:

Table 1. Outfall 002 - Final Effluent Limits

Parameter *TR = Total Recoverable*	Units	Effluent Limits	
		Maximum Daily	**Average Monthly**
BOD_5	lb/day	620	331
COD	lb/day	4,425	2,288
Net TSS	lb/day	532	339
Oil and Grease	mg/L	10	--
	lb/day	242	128
Phenol	lb/day	4.5	2.2
Ammonia, Total as N	lb/day	418	191
Chromium, TR	lb/day	9.1	5.2
Chromium, Hexavalent	lb/day	0.99	0.36
Sulfide	lb/day	3.9	1.8
Hydrogen Sulfide (H_2S) (1)	µg/L	3.5	1.5
Arsenic, TR (2)	µg/L	19	13
pH	s.u.	Between 6.0 and 9.0, all times	
Whole Effluent Toxicity, Acute, LC_{50}	% effluent	No acute toxicity	

Footnote:
(1) The H_2S limits become effective **November 1, 2025**. Any calculated results that show "non-detect" for H_2S at the RRV of 20 µg/L is considered compliance with the effluent limit.
(2) The arsenic limits become effective **November 1, 2025**.

There shall be no discharge of floating solids or visible foam other than trace amounts.

There shall be no discharge that causes visible oil sheen in the receiving stream.

There shall be no discharge of wastewater which reacts or settles to form an objectionable sludge deposit or emulsion beneath the surface of the receiving stream or upon adjoining shorelines.

There shall be no discharge from Outfall 002 at any time there is discharge from Outfall 003.

Outfalls 003 – Upper port secondary diffuser to Yellowstone River

Beginning **{Date}**, until the end of the permit, CHS Laurel Refinery will be required to meet the following effluent limits at Outfall 003:

Table 2. Outfall 003 - Final Effluent Limits

Parameter *TR = Total Recoverable*	Units	Effluent Limits	
		Maximum Daily	Average Monthly
BOD_5	lb/day	620	331
COD	lb/day	4,425	2,288
Net TSS	lb/day	532	339
Oil and Grease	mg/L	10	--
	lb/day	242	128
Phenol	lb/day	4.5	2.2
Ammonia, Total as N	lb/day	418	191
Sulfide	lb/day	3.9	1.8
Hydrogen Sulfide (H_2S) (1)	µg/L	3.3	1.6
Chromium, TR	lb/day	9.1	5.2
Hexavalent Chromium	lb/day	0.99	0.36
Total Residual Chlorine (net) (2)	µg/L	19	8.5
Arsenic, TR (3)	µg/L	19	13
pH	s.u.	Between 6.0 and 9.0, all times	
Whole Effluent Toxicity, Acute, LC_{50}	% effluent	No acute toxicity	

Footnote:
(1) The H_2S limits become effective **November 1, 2025**. Any calculated results that show "non-detect" for H_2S at the RRV of 20 µg/L is considered compliance with the effluent limit.
(2) CHS may demonstrate compliance with the TRC limit by discounting the manganese oxide interference and reporting the net TRC concentration. Any results less than the RL of 50 µg/L are considered compliance with the effluent limit.
(3) The arsenic limits become effective **November 1, 2025**.

There shall be no discharge of floating solids or visible foam other than trace amounts.

There shall be no discharge that causes visible oil sheen in the receiving stream.

There shall be no discharge of wastewater which reacts or settles to form an objectionable sludge deposit or emulsion beneath the surface of the receiving stream or upon adjoining shorelines.

There shall be no discharge from Outfall 003 at any time there is discharge from Outfall 002.

C. Monitoring Requirements

Samples shall be collected, preserved, and analyzed in accordance with approved procedures listed in 40 CFR 136. Data supplied by CHS must meet either provide a detect or non-detect at the required Reporting Level (RL) which is

either the Required Reporting Value (RRV) listed in Circular DEQ-7 or another detection level that is DEQ's best determination of a level that can be achieved using EPA-approved methods or methods approved by DEQ.

Results shall be submitted electronically on NetDMRs by the 28th of the of the month following the end of the monitoring period.

1. Outfalls 002 and 003

Samples will reflect the nature of the discharge. As a minimum, the constituents shall be monitored at the frequencies and with the types of measurements indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge.

Self-monitoring of effluent shall be conducted following final treatment, at the outlet of the discharge pumps prior to the forced main unless another location is requested and approved by DEQ in writing. If there is no discharge from an outfall for the month, "No Discharge" shall be indicated for that outfall.

Table 3. Summary of Effluent Monitoring Requirements (1) – Outfalls 002 and 003

Parameter	Units	Monitoring Frequency	Type	Reporting Requirement	RL
Flow	MGD	Continuous	Instantaneous (2)	Daily Max & Mo Avg	--
pH	s.u.	1/Day	Instantaneous (2)	Daily Min & Daily Max	0.1
BOD_5	mg/L	1/Week	Composite	Daily Max & Mo Avg	--
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
COD	mg/L	1/Week	Composite	Daily Max & Mo Avg	--
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
TSS – Intake Water	mg/L	1/Week	Composite	None	--
TSS – Effluent Gross	mg/L	1/Week	Composite	None	--
TSS – Net (3)	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Oil and Grease	mg/L	1/Week	Grab	Daily Max & Mo Avg	1
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Phenol	µg/L	1/Month	Grab	Daily Max & Mo Avg	10
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Ammonia (as N)	mg/L	1/Week	Composite	Daily Max & Mo Avg	0.07
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Sulfide, Total	µg/L	1/Week	Composite	Daily Max & Mo Avg	--
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Sulfide, Dissolved	µg/L	1/Week	Composite	Daily Max & Mo Avg	--
Hydrogen Sulfide (H_2S) (4)	µg/L	1/Week	Calculated	Daily Max & Mo Avg	20
Chromium, TR	µg/L	1/Month	Composite	Daily Max & Mo Avg	10
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--

Parameter	Units	Monitoring Frequency	Type	Reporting Requirement	RL
Chromium, Hexavalent	µg/L	1/Month	Composite	Daily Max & Mo Avg	2
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Arsenic, TR	µg/L	1/Week	Composite	Daily Max & Mo Avg	1
Total Residual Chlorine, Net	µg/L	1/Week	Grab	Daily Max & Mo Avg	50
Fluoride	mg/L	1/Quarter	Composite	Report	200
Aluminum, Dissolved	µg/L	1/Quarter	Composite	Report	9
Cyanide	µg/L	1/Quarter	Grab	Report	3
Iron, TR	µg/L	1/Quarter	Composite	Report	20
Lead, TR	µg/L	1/Quarter	Composite	Report	0.3
Mercury, TR	µg/L	1/Quarter	Composite	Report	0.005
Selenium, TR	µg/L	1/Quarter	Composite	Report	1
Alpha Emitters	pCi/L	2/Year	Composite	Report	--
Beta Emitters	mrem/yr	2/Year	Composite	Report	--
Radium 228 + total	pCi/L	2/Year	Composite	Report	--
Nitrate + Nitrite (Nov 1 – July 31)	mg/L	1/Quarter	Composite	Daily Max & Mo Avg	0.02
Nitrate + Nitrite (Aug 1 – Oct 31)	mg/L	1/Week (5)	Composite	Daily Max & Mo Avg	0.02
Total Kjeldahl Nitrogen (TKN)	mg/L	1/Week (5)	Composite	Mo Avg	0.225
TN (6)	mg/L	1/Month (5)	Calculated	Mo Avg	0.245
	lb/day	1/Month (5)	Calculated	Mo Avg	--
TP	mg/L	1/Week (5)	Composite	Mo Avg	0.003
	lb/day	1/Month (5)	Calculated	Mo Avg	--
Temperature	° C	1/Month	Instantaneous	Daily Max & Mo Avg	0.1
Whole Effluent Toxicity, Acute	% Effluent	1/Quarter (7)	Grab	Pass/Fail	--

Footnotes: RL = Reporting Level

(1) The effluent monitoring location must be after all treatment has been completed (*i.e.*, downstream from all treatment units, and prior to entry to the receiving waters).
(2) Requires recording device or totalizer.
(3) Mass-based net TSS calculated by first determining mass-based net TSS discharge on a daily basis, then determining daily maximum and monthly average for the month.
(4) H2S concentrations are calculated based on the dissolved sulfide concentration and the sample pH and other parameters at time of sampling, in accordance with Standard Methods 4500-S2- H, unless another method is proposed by CHS and accepted by DEQ. Field data (pH, conductivity (µmhos/cm) and temperature), taken of an unpreserved water sample shall be recorded at the time the dissolved sulfide sample is collected. This field data must be used in the H2S calculations.
(5) Monitoring required only during the summer season of August 1 – October 31st.
(6) TN is the sum of Nitrate+Nitrite and TKN.
(7) Per the 2021/2022 TIE/TRE, two species conducted at least monthly unless CHS is approved to revert to quarterly. At minimum, failure of any acute Whole Effluent Toxicity (WET) test requires that the permittee comply with the Permit's Special Conditions.

Composite samples shall, as a minimum, be composed of four or more discrete aliquots (samples) of equal volume. The aliquots shall be combined in a single container for analysis (simple composite). The time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours.

2. Yellowstone River – Ambient Conditions

As a minimum, the following constituents shall be monitored for the Yellowstone River at the frequency and with the type of measurement indicated. Results must be provided on NetDMRs by the 28th of the month following the end of the monitoring period. CHS must use a sufficiently sensitive method to detect the parameters at or above the RRV as specified in Circular DEQ-7 or other Reporting Level specified by DEQ; if this is not possible for any of the samples an explanation must be provided.

Upstream Monitoring Requirements as specified in this section shall be conducted beginning in **2022** through **2025**. CHS shall submit a topo map or aerial photo indicating the ambient monitoring location. If the sample location is changed, CHS shall submit a revised monitoring location prior to taking the next sample.

Table 4. Upstream Monitoring Requirements for Yellowstone River

Parameter	Units	Monitoring Frequency	Type	RL
Sulfide, Dissolved	µg/L	1/Quarter	Grab	--
Hydrogen Sulfide (H_2S)	µg/L	1/Quarter (1)	Calculated	20
pH	s.u.	1/Quarter (1)	Instantaneous	0.1
Conductivity	µmhos/cm	Optional for H_2S (1)	Instantaneous/Grab	--
Total Dissolved Solids	mg/L	Optional for H_2S (1)	Grab	--
Temperature	°C	1/Quarter (1)	Instantaneous	0.1
Hardness, as CaCO3	mg/L	1/Quarter	Grab	--
Total Nitrogen (2)	µg/L	1/Month (3)	Grab or Calculated	0.245
Total Phosphorus	µg/L	1/Month (3)	Grab	0.003
Aluminum, Dissolved	µg/L	1/Quarter	Grab	9
Cyanide	µg/L	1/Quarter	Grab	3
Iron, TR	µg/L	1/Quarter	Grab	20
Lead, TR	µg/L	1/Quarter	Grab	0.3
Mercury	µg/L	1/Quarter	Grab	0.005
Selenium	µg/L	1/Quarter	Grab	1
Alpha emitters	pCi/L	1/Quarter	Instantaneous	--
Beta emitters	mrem/yr	1/Quarter	Instantaneous	--
Radium, 228 and total	pCi/L	1/Quarter	Instantaneous	--

Footnotes: RL = Reporting Level

(1) H_2S concentrations are calculated based on the dissolved sulfide concentration and pH (using look-up table), and potentially TDS and other field parameters (for equation method) in accordance with Standard Methods 4500-S^{2-} H, unless another method is proposed by CHS and accepted by DEQ. Field data taken of an unpreserved water sample shall be recorded *at the time the dissolved sulfide sample is collected*. This field data must be used to calculate the H_2S concentration from the laboratory-provided dissolved sulfide data.

(2) TN can be determined by either the persulfate method or the sum of Nitrate + Nitrite and TKN, as long as the method is capable of having a detect or meeting the RRV.

(3) Monitoring required only during the Yellowstone summer season of August 1 – October 31st.

3. *Whole Effluent Toxicity (WET) Monitoring – Acute Toxicity*

CHS is required to continue monthly two-species WET testing and the Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) investigations until they have identified and reduced the source of toxicity and can demonstrate treatment improvements that are sufficient to pass two-species WET tests for at least six months. At this point CHS can request to revert to two-species on a quarterly basis and DEQ will review and approve or disapprove, in writing.

For each WET test, CHS shall conduct an acute static renewal toxicity test on a grab sample of the effluent. Testing will employ two species and will consist of five effluent concentrations (100, 50, 25, 12.5, 6.25 percent effluent) and a control. Dilution water and the control shall consist of the receiving water.

The toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, EPA-821-R-02-012 and the *Region VIII EPA NPDES Acute Test Conditions - Static Renewal Whole Effluent Toxicity Test* testing protocols. The permittee shall conduct an acute 48-hour static renewal toxicity test using *Ceriodaphnia* sp. and an acute 96-hour static renewal toxicity test using fathead minnows (*Pimephales promelas*). The control of pH in the toxicity test utilizing CO2 enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration. If more than 10 percent control mortality occurs, the test is considered invalid and shall be repeated until satisfactory control survival is achieved unless a specific individual exception is granted by DEQ. This exception may be granted if less than 10 percent mortality was observed at the dilutions containing high effluent concentrations.

If acute toxicity occurs in a routine test (not as part of the accelerated testing for a TIE/TRE), an additional test is required to be conducted within 14 days of the date of the initial sample. Should acute toxicity occur in the second test, testing shall occur once a month until further notified by DEQ. In all cases, the results of all toxicity tests must be submitted to the Department in accordance with Part II of this permit. All WET tests including retests must be two species.

Failure to initiate or conduct an adequate TIE/TRE, or delays in the conduct of such tests, shall not be considered a justification for noncompliance with the whole effluent toxicity limits contained in Part I.B of this permit. A TRE plan needs to be submitted to DEQ within 45 days after confirmation of the continuance of the effluent toxicity.

The quarterly WET test results from the laboratory shall be reported along with the NetDMR report no later than the 28th day of the month following the

completed reporting period. The format for the laboratory report shall be consistent with the latest revision of the EPA form Region VIII Guidance for Acute Whole Effluent Reporting and shall include all chemical and physical data as specified.

CHS is not eligible to further reduce the frequency to semi-annual during this permit cycle. CHS must continue the accelerated testing until they are able to prove the TIE/TRE was successful (by passing six months of two-species tests); at that time DEQ will review and, if appropriate, approve the reduction to quarterly two-species tests.

D. Special Conditions

1. *Toxicity Identification Evaluation / Toxicity Reduction Evaluation (TIE/TRE)*

Should the effluent exceed the acute toxicity limitation in a routine test and is confirmed as persistent by the additional test, a TIE/TRE shall be undertaken by the permittee to establish the cause of the toxicity, locate the source(s) of the toxicity, and develop control of, or treatment for the toxicity. Failure to conduct an adequate TIE/TRE, or delays in the conduct of such tests, shall not be considered a justification for noncompliance with the whole effluent toxicity limits. A TRE plan needs to be submitted to DEQ within 45 days after confirmation of the continuance of the effluent toxicity.

2. *Arsenic and Hydrogen Sulfide*

Beginning in January 2023, CHS shall submit an annual report to DEQ no later than January 28th for each year, with the final report due November 14, 2025. The report shall summarize the progress made in achieving compliance with the arsenic and hydrogen sulfide effluent limits over the previous year and the actions planned for the upcoming year.

The first year's annual report will include a Standard Operating Procedure for collecting data and computing the Hydrogen Sulfide concentrations for both the effluent and the ambient conditions. The raw data, computations, and results for the monthly NetDMR hydrogen sulfide values will be attached as a report in FACTS or NetDMR.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling

Samples taken in compliance with the monitoring requirements established under Part I of the permit shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

B. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under Part 136, Title 40 of the Code of Federal Regulations, unless other test procedures have been specified in this permit. All flow-measuring and flow-recording devices used in obtaining data submitted in self-monitoring reports must indicate values within 10 percent of the actual flow being measured.

C. Penalties for Tampering

The Montana Water Quality Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six months, or by both.

D. Reporting of Monitoring Results

Monitoring results must be reported within a Discharge Monitoring Report (DMR). Monitoring results must be submitted electronically (NetDMR web-based application) no later than the 28th day of the month following the end of the monitoring period. Whole effluent toxicity (biomonitoring) results must be reported with copies of the laboratory analysis report on forms from the most recent version of EPA Region VIII's "Guidance for Whole Effluent Reporting." If no discharge occurs during the entire reporting period, "No Discharge" must be reported within the respective DMR.

All other reports must be signed and certified in accordance with Part IV.G 'Signatory Requirements' of this permit and submitted to DEQ at the following address:

Montana Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, Montana 59620-0901

E. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit must be submitted to the Department in either electronic or paper format and be postmarked no later than 14 days following each schedule date unless otherwise specified in the permit.

F. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using approved analytical methods as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

G. Records Contents

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The initials or name(s) of the individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The time analyses were initiated;
5. The initials or name(s) of individual(s) who performed the analyses;
6. References and written procedures, when available, for the analytical techniques or methods used; and
7. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

H. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time. Data collected on site, Discharge Monitoring Reports, and a copy of this MPDES permit must be maintained on site during the duration of activity at the permitted location.

I. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee shall report any serious incidents of noncompliance as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The report shall be made to the Water Protection Bureau at (406) 444-5546 or the Office of Disaster and Emergency Services at (406) 324-4777. The following examples are considered serious incidents:
    a. Any noncompliance which may seriously endanger health or the environment;
    b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G of this permit, "Bypass of Treatment Facilities"); or
    c. Any upset which exceeds any effluent limitation in the permit (see Part III.H of this permit, "Upset Conditions").

2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. a description of the noncompliance and its cause;

   b. the period of noncompliance, including exact dates and times;

   c. the estimated time noncompliance is expected to continue if it has not been corrected; and

   d. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Protection Bureau, by phone, (406) 444-5546.

4. Reports shall be submitted to the addresses in Part II.D of this permit, "Reporting of Monitoring Results".

J. Other Noncompliance Reporting

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.D of this permit are submitted. The reports shall contain the information listed in Part II.I.2 of this permit.

K. Inspection and Entry

The permittee shall allow the head of the Department or the Director, or an authorized representative thereof, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give the Department or the Regional Administrator advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance.

B. Penalties for Violations of Permit Conditions

The Montana Water Quality Act provides that any person who violates a permit condition of the Act is subject to civil or criminal penalties not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions of the Act is subject to a fine of not more than $50,000 per day of violation, or by imprisonment for not more than 2 years, or both, for subsequent convictions. MCA 75-5-611(a) also provides for administrative penalties not to exceed $10,000 for each day of violation and up to a maximum not to exceed $100,000 for any related series of violations. Except as provided in permit conditions on Part III.G of this permit, "Bypass of Treatment Facilities" and Part III.H of this permit, "Upset Conditions", nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. However, the permittee shall operate, as a minimum, one complete set of each main line unit treatment process whether or not this process is needed to achieve permit effluent compliance.

F. Removed Substances

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard.

G. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts III.G.2 and III.G.3 of this permit.

2. Notice:

   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.

   b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.I of this permit, "Twenty-four Hour Reporting".

3. Prohibition of bypass:

   a. Bypass is prohibited and the Department may take enforcement action against a permittee for a bypass, unless:

      1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

      3) The permittee submitted notices as required under Part III.G.2 of this permit.

   b. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in Part III.G.3.a of this permit.

H. Upset Conditions

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of Part III.H.2 of this permit are met. No determination made

during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review (i.e. Permittees will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for noncompliance with technology-based permit effluent limitations).

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred, and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under Part II.I of this permit, “Twenty-four Hour Notice of Noncompliance Reporting;” and

   d. The permittee complied with any remedial measures required under Part III.D of this permit, "Duty to Mitigate.”

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

J. Changes in Discharge of Toxic Substances

Notification shall be provided to the Department as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:

   a. One hundred micrograms per liter (100 µg/L);

   b. Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

   c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

d. The level established by the Department in accordance with 40 CFR 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. Five hundred micrograms per liter (500 µg/L);

   b. One milligram per liter (1 mg/L) for antimony;

   c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Department in accordance with 40 CFR 122.44(f).

IV. GENERAL REQUIREMENTS

A. Planned Changes

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of pollutant discharged. This notification applies to pollutants which are not subject to effluent limitations in the permit.

B. Anticipated Noncompliance

The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application must be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for revoking, modifying and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

F. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information with a narrative explanation of the circumstances of the omission or incorrect submittal and why they weren't supplied earlier.

G. Signatory Requirements

All applications, reports or information submitted to the Department or the EPA shall be signed and certified.

1. All permit applications shall be signed as follows:

    a. For a corporation: by a responsible corporate officer;

    b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Department shall be signed by a person described above or by a duly authorized representative of that person. A person is considered a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Department; and

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or an individual occupying a named position.)

3. Changes to authorization. If an authorization under Part IV.G.2 of this permit is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.G.2 of this permit must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports

The Montana Water Quality Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $25,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public

inspection at the offices of the Department. As required by the Clean Water Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

K. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges.

L. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers

This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Department at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them;
3. The Department does not notify the existing permittee and the proposed new permittee of an intent to revoke or modify and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part IV.M.2 of this permit; and
4. Required annual and application fees have been paid.

N. Fees

The permittee is required to submit payment of an annual fee as set forth in ARM 17.30.201. If the permittee fails to pay the annual fee within 90 days after the due date for the payment, the Department may:

1. Impose an additional assessment computed at the rate established under ARM 17.30.201; and,
2. Suspend the processing of the application for a permit or authorization or, if the nonpayment involves an annual permit fee, suspend the permit, certificate or authorization for which the fee is required. The Department may lift suspension at any time up to one year after the suspension occurs if the holder has paid all outstanding fees, including all penalties, assessments and interest imposed under this sub-section. Suspensions are limited to one year, after which the permit will be terminated.

O. Reopener Provisions

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary), or other appropriate requirements if one or more of the following events occurs:

1. Water Quality Standards: The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.

2. Water Quality Standards are Exceeded: If it is found that water quality standards or trigger values in the receiving stream are exceeded either for parameters included in the permit or others, the department may modify the effluent limits or water management plan.

3. TMDL or Wasteload Allocation: TMDL requirements or a wasteload allocation is developed and approved by the Department and/or EPA for incorporation in this permit.

4. Water Quality Management Plan: A revision to the current water quality management plan is approved and adopted which calls for different effluent limitations than contained in this permit.

5. Toxic Pollutants: A toxic standard or prohibition is established under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit.

6. Toxicity Limitation: Change in the whole effluent protocol, or any other conditions related to the control of toxicants have taken place, or if one or more of the following events have occurred:

   a. Toxicity was detected late in the life of the permit near or past the deadline for compliance.

   b. The TRE/TIE results indicated that compliance with the toxic limits will require an implementation schedule past the date for compliance.

   c. The TRE/TIE results indicated that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits.

   d. Following the implementation of numerical controls on toxicants, a modified whole effluent protocol is needed to compensate for those toxicants that are controlled numerically.

   e. The TRE/TIE revealed other unique conditions or characteristics which, in the opinion of the Department, justify the incorporation of unanticipated special conditions in the permit.

V. DEFINITIONS

1. **"Act"** means the Montana Water Quality Act, Title 75, chapter 5, MCA.

2. **"Administrator"** means the administrator of the United States Environmental Protection Agency.

3. **"Acute Toxicity"** occurs when 50 percent or more mortality is observed for either species (See Part I.C of this permit) at any effluent concentration. Mortality in the control must simultaneously be 10 percent or less for the effluent results to be considered valid.

4. **"Arithmetic Mean" or "Arithmetic Average"** for any set of related values means the summation of the individual values divided by the number of individual values.

5. **"Average Monthly Limitation"** means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

6. **"Bypass"** means the intentional diversion of waste streams from any portion of a treatment facility.

7. **"Chronic Toxicity"** means when the survival, growth, or reproduction, as applicable, for either test species, at the effluent dilution(s) designated in this permit (see Part I.C.), is significantly less (at the 95 percent confidence level) than that observed for the control specimens.

8. **"Composite samples"** means a sample composed of four or more discrete aliquots (samples). The aggregate sample will reflect the average quality of the water or wastewater in the compositing or sample period. Composite sample may be composed of constant volume aliquots collected at regular intervals (simple composite) or flow proportioned.

9. **"Daily Discharge"** means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

10. **"Daily Maximum Limit"** means the maximum allowable discharge of a pollutant during a calendar day. Expressed as units of mass, the daily discharge is cumulative mass discharged over the course of the day. Expressed as a concentration, it is the arithmetic average of all measurements taken that day.

11. **"Department"** means the Montana Department of Environmental Quality (DEQ). Established by 2-15-3501, MCA.

12. **"Director"** means the Director of the Montana Department of Environmental Quality.

13. **"Discharge"** means the injection, deposit, dumping, spilling, leaking, placing, or failing to remove any pollutant so that it or any constituent thereof may enter into state waters, including ground water.

14. **"EPA"** means the United States Environmental Protection Agency.

15. **"Federal Clean Water Act"** means the federal legislation at 33 USC 1251, *et seq*.

16. **"Grab Sample"** means a sample which is taken from a waste stream on a one-time basis without consideration of flow rate of the effluent or without consideration for time.

17. **"Instantaneous Maximum Limit"** means the maximum allowable concentration of a pollutant determined from the analysis of any discrete or composite sample collected, independent of the flow rate and the duration of the sampling event.

18. **"Instantaneous Measurement"**, for monitoring requirements, means a single reading, observation, or measurement.

19. **"Minimum Level"** (ML) of quantitation means the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration point for the analyte, as determined by the procedure set forth at 40 CFR 136. In most cases the ML is equivalent to the Required Reporting Value (RRV) unless otherwise specified in the permit.

19. **"Mixing zone"** means a limited area of a surface water body or aquifer where initial dilution of a discharge takes place and where certain water quality standards may be exceeded.

20. **"Nondegradation"** means the prevention of a significant change in water quality that lowers the quality of high-quality water for one or more parameters. Also, the prohibition of any increase in discharge that exceeds the limits established under or determined from a permit or approval issued by the Department prior to April 29, 1993.

21. **"Regional Administrator"** means the administrator of Region VIII of EPA, which has jurisdiction over federal water pollution control activities in the state of Montana.

22. **"Severe property damage"** means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

23. **"TIE"** means a toxicity identification evaluation.

24. **"TMDL"** means the total maximum daily load limitation of a parameter, representing the estimated assimilative capacity for a water body before other designated uses are adversely affected. Mathematically, it is the sum of wasteload allocations for point sources, load allocations for non-point and natural background sources, and a margin of safety.

25. **"TRE"** means a toxicity reduction evaluation.

26. **"TSS"** means the pollutant parameter total suspended solids.

27. **"Upset"** means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Water Quality Division

MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM

Permit Fact Sheet

Permittee: CHS, Inc
P.O. Box 909
Laurel, Montana 59044

Permit No.: MT0000264

Receiving Waters: Outfall 002/003: Yellowstone River

Facility Information:

Name: CHS Inc., Laurel Refinery
Location: 802 Highway 212 South
Laurel, MT 59044

County: Yellowstone County

Contact: Shane LaCasse, Operations Manager

Fee Information:

Type: Private, Major

Number of Outfalls: Two (for fee determination)
Outfall 002: Process Wastewater (primary diffuser)
Outfall 003: Process Wastewater (secondary diffuser)

I. BACKGROUND

CHS, Inc. (also termed Permittee) is the owner and operator of the CHS, Inc. Laurel Refinery (also termed CHS Laurel Refinery, Refinery, or Facility).

A. Permit and Application Information

The CHS Laurel Refinery is currently regulated by Montana Pollutant Discharge Elimination System (MPDES) Permit No. MT0000264, which became effective on November 1, 2015, and expired on October 31, 2020 (2015-issued permit). CHS, Inc. submitted a renewal application on May 5th and applicable fees on April 29, 2020. On May 21, 2020, DEQ issued a Notice of Deficiency. CHS provided responses on July 22nd and August 21, 2020. DEQ issued a Completeness Determination letter on August 27, 2020, confirming that the 2015-issued permit remains fully effective and enforceable until DEQ develops and issues an updated permit.

The 2015-issued permit was appealed and modified, including by the Board of Environmental Review (BER), several times:

2015 – CHS Appeal October 14, 2015

2017 – BER-Modified (Case No BER 2015-07 WQ) June 2, 2017

2019 – Major Modification January 1, 2019 (appealed January 3, 2019)

2019 – BER-Modified December 23, 2019

2020 – BER-Modified October 30, 2020

In addition to the discharge to surface water regulated under this MPDES permit, CHS, Inc is also authorized under MPDES General Permit for discharge associated with industrial storm water MTR000099 to discharge storm water from non-process areas of the Facility.

B. Description of Facility, Discharge Point(s), and Mixing Zone(s)

1. Description and Location of Facility

The CHS Laurel Refinery is a petroleum refinery located in Laurel, MT along the Yellowstone River (**Appendix A**).

Table FS-01 summarizes general information related to the facility.

Table FS-01. Facility Information

Permittee	CHS, Inc.
Name of Facility	CHS Inc., Laurel Refinery
Facility Address	802 Highway 212 South, Laurel MT 59044
	Yellowstone County
Duly Authorized Contact	Shane LaCasse, Operations Manager
Signatory Authority	Jim Irwin, VP, Laurel Refinery
Mailing Address	P.O. Box 909, Laurel MT 59044
Billing Address	802 Highway 212 South, Laurel MT 59044
Type of Facility	Industrial – Petroleum Refining (SIC 2911, NAICS 324110)
Major or Minor Facility	Major
Number of Outfalls	Two for fee purposes
Receiving Waters	Outfall 002/003: Yellowstone River (2-port diffuser)

The refinery is designed to convert crude oil into a variety of fuels and petroleum-based products. The processes and methods used at the refinery include distillation/fractionation, desulfurization, catalytic cracking, catalytic reforming, hydrotreating, and alkylation.

The refinery first commenced production in 1930. Production has continued to increase from 45,500 barrels per day (bpd) of crude (1993 and 1999 permits) to a current (2021) crude throughput of 64,000 bpd (phone conversation and email with Shane LaCasse and George Fink on February 22, 2022).

2. Description of Wastewater Sources

All facility wastewater, including process wastewaters, noncontact cooling wastewaters, and process area storm water, and groundwater recovery system wastewater, are routed through the refinery's wastewater treatment system prior to discharge. Domestic wastewater from the Facility is discharged to the City of Laurel sanitary sewer system.

Appendix B contains the Flow Schematic/Water Balances for the facility wastewater.

Table FS-02 provides a summary of the major wastewater sources that are treated and discharged, based on 2018 and 2019 data provided in the 2020 Application Form 2C and Form 2C Attachment “Flow Schematic/Water Balance.”

Table FS-02. Sources of Facility Wastewater

Description	2018-2019 Average Flow (gpm)
Zones A – E Oily Wastewater	**440**
Sour Water	*245*
Oily Wastewater	*75*
Stormwater	*45*
Miscellaneous	*75*
Utility Wastewater	**400**
Cooling Tower Blowdown	*160*
Boiler Blowdown, RO Reject, Softeners	*240*
Remediation and Tank Cleaning	**130**
TOTAL Gallons per minute	**970**
Million gallons per day	**1.4**

3. Wastewater Treatment or Controls

CHS upgraded the wastewater treatment facility since the last permit renewal. Process wastewater currently undergoes the following treatment prior to discharge (**Appendix C**):

1. *Process wastewater streams* - most of the facility wastewater streams have initial oil/water/solids separation. In addition, since November 2019, all oily process wastewater is treated by a new oil/water surge tank (T-3436) followed by American Petroleum Institute (API) oil/water separation and most of the wastewater is treated by Dissolved Nitrogen Floatation (DNF) units.
2. *All wastewater* (process wastewater treated in step #1 plus utility wastewater, contaminated groundwater, and some stormwater) flows to:
   - Equalization Tank (T-20)
   - Activated Sludge Unit ("ASU," T-3445)
   - Clarifier (T-31)
   - Tertiary arsenic treatment consisting of:
     Recycle air floatation (RAF), in service June 2021
     Multimedia filters, in service September 2021
     Future - polishing filters (expected in service by Fall 2022)
   - New concrete east & west effluent basins (in service June 2019)

   The treated effluent is pumped to a two-port diffuser for direct discharge into the Yellowstone River (since June 2019). CHS retained the existing on-site retention ponds to be used as diversion impoundments in the case of off-spec wastewater as described below.

4. Discharge Points and Receiving Waters

Outfall 001 to Italian Drain (Back-up outfall)

On August 9, 2022, CHS emailed a request to remove Outfall 001 as it is not in service. Outfall 001 is removed from the MPDES permit and no longer a permitted outfall.

Outfall 002/003 to Yellowstone River

Outfalls 002/003 are discharges through a two-port diffuser located approximately 400 feet upstream from where the Italian Drain enters the river. The lower diffuser port is the primary outfall.

Table FS-03 below provides a description of the discharge points for Outfalls 002 and 003. CHS, Inc. will be able to discharge from only one outfall at any given time.

Table FS-03. Description of Discharge Points

Outfall	Description	Latitude/ Longitude	Receiving Water	Receiving Water Classification
002	Lower Port Primary Diffuser	45.65632, -108.75290	Yellowstone River	B-2
003	Upper Port Secondary Diffuser			

C. Summary of Existing Permit Requirements and Effluent Quality Data

CHS completed multiple wastewater upgrades in 2019 and 2021. DEQ determined that using monthly data since January 2020 is appropriate due to the recent wastewater facility upgrades, including:

- June 2019 - concrete basins and diffuser
- December 2019 - new oil/water surge tank system.

CHS subsequently installed arsenic treatment in May and September 2021 and plans to include additional arsenic treatment, polishing, in Fall of 2022; however, DEQ determined that beginning the Period of Record (POR) after the 2021 upgrades would not provide enough data. The POR for most parameters starts in 2020. For parameters with less data, DEQ used the available data since 2019.

Table FS-04 summarizes existing permit limits and effluent data for Outfall 002. DEQ excluded elevated data associated with a clarifier upset in September 2020 from the effluent data summary.

Table FS-04. Outfall 002 Effluent Data

Parameter *TR = Total Recoverable*	**Units**	**Permit Limits** (1)	**Minimum Value** (2)	**Average Value** (2)	**Maximum Value** (3)	**Number of Samples** (4)
NetDMR Monthly Data (January 2020 through April 2022**)**						
Flow	mgd	NA	1.0	1.2	2.2	28
Biochemical Oxygen Demand (BOD_5)	mg/L	NA	4	10	41	28
	lb/day	620 / 331	39	96	378	28
Chemical Oxygen Demand (COD)	mg/L	NA	48	85	516	27 (5)
	lb/day	4,425 / 2,288	440	836	2,788	27 (5)
Total Suspended Solids (TSS), net	mg/L	NA	2	20	123	27 (5)
	lb/day	532 / 339	2	138	484	27 (5)
Oil & Grease	mg/L	10	0.5	1.6	8.0	27 (5)
	lb/day	242 / 128	5	16	58	27 (5)
Phenol	µg/L	NA	2	6	35	28
	lb/day	4.5 / 2.2	0.02	0.06	0.33	28
Ammonia, as N	mg/L	NA	0.1	2	10.7	28
	lb/day	418 / 191	0.3	19	106	28
Arsenic, TR	µg/L	20 / 13 (6)	13	29	42	28
Chromium, TR	µg/L	NA	< 5	< 9	< 10	28
	lb/day	9.1 / 5.2	0.04	0.05	0.07	28
Hexavalent Chromium	µg/L	NA	< 5	< 9	<10	28
	lb/day	1.0 / 0.36	0.04	0.05	0.14	28
Fluoride	mg/L	NA	0.8	2.2	5.0	28
Selenium, TR	µg/L	NA	25	82	157	28
Nitrate + Nitrite	mg/L	NA	0.1	2.1	6.3	28
NetDMR Semi-Annual Data (July 2019 through April 2022)						
Cyanide, Total	µg/L	NA	4	4.8	5	5
Lead, TR	µg/L	NA	0.3	4.3	17.7	5
Mercury, TR	µg/L	NA	0.014	0.039	0.070	5
NetDMR Summer Data (August 2020 through October 2021)						
Total Nitrogen (TN) (7)(8)	mg/L	NA	0.8	5.5	9.2	14
	lb/day	NA	39	84	117	6
Total Phosphorus (TP) (8)	mg/L	NA	0.05	0.15	0.25	5 (5)
	lb/day	NA	0.6	1.8	2.8	5 (5)
Form 2C (through Summer 2020**)**						
Barium	µg/L	NA		137		1
Iron, TR	µg/L	NA	160	500	840	2
Temperature - Winter	°C	NA	--	18.1	27.7	723
Temperature - Summer	°C	NA	--	18.1	29.1	723
CHS Spreadsheets (January 2020 – June 2022)						
Aluminum, Dissolved	µg/L	NA	30	110	230	4
Sulfide, Total	µg/L	NA	< 40	< 61	140	125 (5)
	lb/day	3.9 / 1.8	0.19	0.41	1.3	27 (5)(9)
Sulfide, Dissolved	µg/L	NA	< 40	< 41	100	127 (5)
Hydrogen Sulfide (H_2S)	µg/L	NA	< 1	< 8	26	22 (9)
pH	s.u.	6.0 - 9.0	6.8	--	8.8	71 (10)

Parameter *TR = Total Recoverable*	**Units**	**Permit Limits** (1)	**Minimum Value** (2)	**Average Value** (2)	**Maximum Value** (3)	**Number of Samples** (4)
Total Residual Chlorine	mg/L	NA	0.03	0.14	0.42	25 (11)

Notes:
(1) Permit limits: daily maximum /30-day average, except Oil & Grease (daily maximum concentration) and pH (range).
(2) Minimum and average of the monthly averages.
(3) Maximum of the daily maxima.
(4) Number of samples: for NetDMR section the number of samples are the number of monthly DMRs; data typically collected more often. For all other categories the column represents the actual number of samples.
(5) Due to September 2020 clarifier upset, this summary removed that months' COD; TSS; oil and grease; TP, total sulfide, and dissolved sulfide.
(6) Arsenic limits become effective November 1, 2022.
(7) Total Nitrogen is the sum of Nitrate+ Nitrite plus Total Kjeldahl Nitrogen. Nitrogen concentration from CHS spreadsheet.
(8) Nutrient monitoring conducted August 1st to October 31st. TN load and TP concentration and load data from NetDMR reports August 2020 – October 2021.
(9) Total sulfide load from NetDMRs. DEQ calculated hydrogen sulfide from CHS data between April 2021 and June 2022, based on pH.
(10) Effluent pH taken in field by CHS 1/14/2021 through 6/9/2022.
(11) Total Residual Chloride (TRC) from CHS lab analysis since April 4, 2022. CHS began to add bleach to the RAF unit March 3, 2022.

In addition to the above, CHS has an acute Whole Effluent Toxicity (WET) limit of 'no acute toxicity.' During the four years of 2017 through 2020, CHS had one fathead minnow WET failure (July 10, 2017). However, beginning in 2021, CHS had multiple WET failures and is currently undertaking a Toxicity Identification Evaluation / Toxicity Reduction Evaluation (TIE/TRE), which is described in further detail in Part I.D, below.

Table FS-05 presents flow data for the CHS Laurel Refinery between 2010 and April 2022, with the period of record (POR) of 2018 – current shaded. The maximum daily flow over the past 4.5 years (2.29 mgd) is used for acute aquatic life calculations and the maximum average monthly flow over the past five years (1.62 mgd) is used for chronic aquatic life and human health calculations.

Table FS-05. Summary of Discharge Flow Rate (MGD)

Year	Maximum Daily (1)	Maximum Avg Monthly (2)	Annual Avg (3)
2010	2.17	1.46	1.15
2011	2.16	1.39	1.24
2012	2.13	1.44	1.33
2013	2.07	1.52	1.37
2014	2.23	1.46	1.36
2015	2.02	1.57	1.36
2016	2.10	1.46	1.28
2017	2.42	1.61	1.38
2018	**2.29**	**1.62**	**1.48**
2019	1.82	1.40	1.28
2020	2.20	1.41	1.26
2021	1.87	1.45	1.18
2022 (4)	1.64	1.22	1.18

Footnotes: Shaded rows are the current flow of record, and bold is the highest in that period.
(1) The **maximum daily flow** is the highest reported daily flow rate.
(2) The **average monthly flow** is calculated as the average of the daily flow rates within a calendar month; the highest average monthly flow rate is reported for the period shown.
(3) The **annual average flow** was calculated as the average of the reported discharge average daily flow rates for the year.
(4) Flow data through April 2022.

D. Compliance Summary

CHS, Inc. entered into an Administrative Order on Consent (AOC), effective December 28, 2016 (Docket WQ-16-07, FID #2523). The AOC addressed effluent limit exceedances on five occasions between March 31, 2014, and May 31, 2015. CHS paid the penalty in full and therefore satisfied the terms of the AOC.

DEQ conducted four compliance inspections since 2016:

- June 16, 2016 – violation for sampling, analysis, and recordkeeping issues.
- February 14, 2018 – no violations.
- April 16, 2020 – no violations.
- June 2022 – no violations.

CHS reported the following exceedances of permit limits since 2016:

- July 2018 – BOD_5 load (1,082 > 620 lb/day limit)
- September 2020 – Clarifier failure (described below)
- 2021 and 2022 – WET failures (described below)

The Refinery had problems with the wastewater treatment system clarifier beginning in 2020. There was an unanticipated bypass on August 27, 2020, due to the failure of two clarifier rake

supports. As a result, the facility reported a daily maximum oil & grease value of 26 mg/L (limit 10 mg/L). The Refinery brought down the clarifier for maintenance in July 2021; at the same time there were problems with the ASU resulting in elevated ammonia, COD, TSS, and slightly elevated oil & grease (3 and 5 mg/L). These problems were attributed as the cause for fathead minnow WET test failures on July 13th and 28th. Beginning in 2021, CHS had multiple WET failures:

- January 2021 - fathead minnow (re-test passed).
- July – September 2021: cluster of WET failures attributed to the clarifier bypass for maintenance. Failing the re-test triggered a TIE/TRE and monthly WET tests for Fathead Minnow. The failures were:
  - 7/13/2021 + 7/28/2021 – Fathead Minnow
  - 8/18/2021 – *Ceriodaphnia dubia*
- October - December 2021:
  - 10/18/21 – Fathead Minnow
  - 10/25/2021 – Fathead Minnow
  - 11/15/2021 – Fathead Minnow
  - 12/6/2021 – Fathead Minnow
- January – March 2022:
  - 1/10/2022 – Fathead Minnow and *Ceriodaphnia dubia*
  - 1/24/2022 – Fathead Minnow and *Ceriodaphnia dubia*
  - 2/14/2022 – Fathead Minnow and *Ceriodaphnia dubia*
- April – June 2022:
  - 4/25/2022 – Fathead Minnow and *Ceriodaphnia dubia*
  - 5/25/2022 – Fathead Minnow and *Ceriodaphnia dubia* (upset with elevated O&G)
  - 6/21/2022 - Fathead Minnow and *Ceriodaphnia dubia*

CHS failed a test and the retest for *Ceriodaphnia dubia*; they are actively pursuing a solution through their TIE/TRE that is underway for the fathead minnows. At the time of writing this Fact Sheet, CHS has not yet identified specific reasons for these failures.

E. Other Information

The City of Laurel Water Treatment Plant (Laurel WTP) is the sole water supplier for the Facility's domestic use, process, and cooling waters (CHS email 11/15/13). The city water intake is located on the Yellowstone River approximately 2,000 feet upstream from the CHS Laurel Refinery outfall. The raw water is either pumped directly to the Refinery without treatment as "process water" (three pumps) or pumped into the Laurel WTP for treatment before distribution as potable water (four pumps). The Laurel WTP treats the river water using conventional potable water treatment (settling, coagulation, flocculation and filtration). The majority of the CHS Laurel Refinery's water use is untreated process water. However, the Facility also uses treated potable water from the Laurel WTP primarily for domestic use, although the Facility also uses potable water for process water make-up in the spring when the water from the Yellowstone River is too turbid to use in their processes.

II. RATIONALE FOR PERMIT CONDITIONS

The Montana Water Quality Act requires that DEQ clearly specify any limits imposed on the volume, strength, and other significant characteristics of the waste to be discharged. The control of pollutants discharged is established through effluent limits and other requirements in the permit. There are two principal bases: technology-based effluent limits (TBELs) that specify the minimum level of treatment or control for conventional, non-conventional, and toxic pollutants; and water quality-based effluent limits (WQBELs) that attain and maintain applicable numeric and narrative water quality standards. TBELs are based on implementing available technologies to reduce or treat pollutants while WQBELs are designed to protect the beneficial uses of the receiving water.

A. Technology-based Effluent Limits

1. Scope and Authority

Federal regulations at 40 Code of Federal Regulations (CFR) 122.44(a) require that permits include effluent limits based on applicable technology-based standards, in accordance with 40 CFR 125.3(a). These requirements are incorporated into the state regulations at ARM 17.30.1344(2) and ARM 17.30.1207. Technology-based requirements may be national standards established by the United States Environmental Protection Agency (EPA) pursuant to Section 304 of the CWA, or, in some cases, standards established by the permit writer on a case-by-case basis.

EPA has promulgated national technology-based standards of performance ["effluent limit guidelines (ELGs)"] at 40 CFR Subchapter N for dischargers other than publicly owned treatment works. ELGs for industrial facilities are based on several levels of control:

- 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.
- 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.
- Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including BOD, TSS, fecal coliform, pH, and oil and grease.
- New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limits that represent state-of-the-art treatment technology for new sources.

CHS Laurel Refinery is considered an existing source for purposes of applying the ELGs, and the applicable requirements are BPT, BAT, and BCT.

2. Applicable Technology-based Effluent Limits

a. Petroleum Refinery

EPA has established ELGs for petroleum refineries at 40 CFR Part 419, *Effluent Limitations Guidelines for the Petroleum Refining Point Source Category*.

40 CFR 419 Appendix A provides a list of the processes included in the ELG development. **Table FS-06** provides a comparison of the process capacity at the facility in barrels per day (bpd) for each of the listed process categories, as well as related processes, based on the CHS Laurel Refinery table "Average Daily Production & Feedstock Data," 2020 MPDES Permit Application (7/10/2020).

Table FS-06. CHS Laurel Refinery Capacity (bpd)

Process Category and Process Operation		1993 & 1998	2015	2021
Crude				
Atmospheric Distillation		45,500	59,600	64,000
Crude Desalting		45,500	59,600	64,000
Vacuum Distillation		19,600	29,800	29,000
Cracking and Coking				
Fluid Catalytic Cracking (FCCU)		13,500	16,800	16,800
Delayed Coking		--	15,000	15,000
Hydrotreating		48,000	61,600	62,400
Distillate		*15,500*	--	--
Naphtha		*16,500*	--	--
Diesel		--	*24,000*	*25,000*
Cracking Feeds		*16,000*	*20,000*	*19,800*
Reformer Feeds		--	*17,600*	*17,600*
Asphalt				
Asphalt Production		21,200	4,000	6,500
Asphalt Emulsification		3,900	--	--
Lube				
Propane De-asphalting		3,800	--	--
Reforming and Alkylation				
Alkylation – Hydrofluoric Acid		7,200	4,000	3,750
Catalytic Reforming		11,300	12,500	13,600

CHS Laurel Refinery has been subject to *Subpart B - Cracking Subcategory* (40 CFR 419.20) since the 2015-issued permit, after lube was no longer a product at the facility. The provisions described in 40 CFR 419, Subpart B apply to all discharges from petroleum refining plants and associated areas, except for those under the following subcategories: Subpart C (Petrochemical), Subpart D (Lube), or Subpart E (Integrated). Regulated activities include discharges that are pumped, siphoned, or drained from preparation plant water circuits, ground water remediation, and ancillary areas related to the refining of petroleum.

DEQ developed facility-specific mass-loading limits for the CHS Laurel Refinery based on 40 CFR Part 419 Subpart B. The procedures are outlined in the *Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry*, EPA, June 1985, and these procedures remain the same as in those described for the 1999 and 2015-issued permits.

Details of the updated TBEL calculations, including the comparison of BPT, BAT, and BCT effluent limits are developed and presented in **Appendix D** (see Tables D-1 to D-10). DEQ determined that the following levels of control are required:

- BPT – for phenolic compounds,
- BAT (amended) – for total and hexavalent chromium, ammonia, and sulfides,
- BCT/BPT – for BOD_5, TSS, Oil & Grease, and
- BPT/BAT – for COD.

b. Contaminated Storm Water Runoff

40 CFR 419 Subpart B establishes BPT, BCT, and BAT level of control for contaminated storm water runoff. 40 CFR 419.11(g) defines contaminated runoff as 'any runoff which comes into contact with any raw material, intermediate product, finished product, by-product, or waste product located on the petroleum refinery property.' There are two types of runoff regulated under Subpart B: runoff commingled, and runoff *not* commingled with process wastewater, as follows:

Runoff Commingled with Process Wastewater

CHS is provided a credit calculated for the quantity of pollutants from contaminated storm water runoff treated with the process wastewater and discharged from the facility. The credit is calculated using the continuous allocation method, which uses one set of storm water runoff conditions for determining the credit, and that value is given throughout the year.

The credit was initially based on 15.3 acres of impervious process area in 1993. For the current renewal, the credit is based on 28 acres. The calculations for this credit are provided in Table D-9 in **Appendix D**.

Runoff not Commingled with Process Wastewater

40 CFR Part 419 - Subpart B allows the discharge of contaminated runoff that is not commingled or treated with process wastewater provided no single grab or composite sample exceeds the TBELs of 15 mg/L oil and grease and 110 mg/L total organic carbon (TOC). Contaminated runoff with oil and grease and TOC present above these levels requires additional treatment before it may be discharged. CHS has not identified any discharge of contaminated runoff that is not commingled or treated with process wastewater; therefore, it is not currently covered under this permit.

3. Calculated TBELs

The updated TBEL calculations are presented in Table D-10. In summary, DEQ made the following TBEL updates:

- Process categories and feedstock rates, and
- Stormwater contaminated area and rainfall.

Compliance with TBELs must be measured prior to dilution with the receiving water. ARM 17.30.1345(6)(a) requires that discharge limits for industrial facilities be stated as average monthly and maximum daily discharge limits unless impracticable. Effluent guidelines with numeric limits generally include both average monthly and maximum daily limits.

Table FS-07 summarizes the updated TBELs calculated in **Appendix D**. The TBELs calculated here will be compared to the existing limits and the most stringent will be the proposed permit limits with this renewal (see Part III.A):

Table FS-07. CHS Laurel Refinery – Updated TBELs Based on Subpart B

Parameter	Units	Current Operations	
		Daily Maximum Limits	30-day Average Limits
BOD_5	lb/day	1,256	698
COD	lb/day	9,390	4,871
Net TSS (1)	lb/day	876	558
Oil & Grease	lb/day	381	203
Phenols	lb/day	9.4	4.6
Ammonia	lb/day	830	377
Sulfide	lb/day	8.2	3.6
Total Chromium	lb/day	15.3	5.3
Hexavalent Chromium	lb/day	0.99	0.44
pH	s.u.	6.0 – 9.0 at all times	

Notes
(1) Permit allows credit for TSS in intake water in order to demonstrate compliance with a "net" limit as allowed under 40 CFR 122.45(g)(1)(ii) and ARM 17.30.1345(9)(a)(ii).

B. Water Quality-based Effluent Limits

1. Scope and Authority

Montana Code Annotated (MCA) 75-5-401(2) 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. Permits are required to include Water Quality-based Effluent Limits (WQBELs) if TBELs are not adequate to protect state water quality standards. 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 and designated uses for all state waters and numeric and narrative standards that protect those designated uses. These Surface Water Quality Standards include, by reference, *Circular DEQ-7—Montana Numeric Water Quality Standards* (2019). Dischargers are also subject to the mixing zone rules (ARM 17.30.501 *et seq*.) and Montana's nondegradation policy (ARM 17.30.701 *et seq*.).

The purpose of this section is to provide a basis and rationale for the proposed effluent limits on the CHS discharges to protect designated uses of the receiving waters based on Montana water quality standards.

2. Receiving Water - Applicable Beneficial Uses and Numeric and Narrative Standards

The Yellowstone River downstream of the Laurel WTP are classified as a B-2 waterbody and is subject to the water quality standards under ARM 17.30.624. The beneficial uses applicable to B-2 waterbodies are summarized in **Table FS-08**.

Table FS-08. Beneficial Uses of Receiving Waters

Outfall	Receiving Water	Classification	Beneficial Uses
002	Yellowstone River (after the Laurel WTP)	B-2	• Drinking, culinary and food processing purposes after conventional treatment • Bathing, swimming, and recreation • Growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers • Agricultural and industrial water supply
003			

Outfalls 002 and 003 (Yellowstone River)

Outfall 002 is the lower port, and Outfall 003 is the upper port, of a diffuser discharging into the Yellowstone River, located at 45.65632, -108.75290.

The assessment unit number for this segment of the Yellowstone River is MT43F001_011, YELLOWSTONE RIVER, City of Laurel PWS to City of Billings PWS. This segment is listed on the 2020 303(d) List for nitrate/nitrite and Chlorophyll-a (attributed to municipal point sources and crop production), and oil and grease (pipeline breaks), as well as other causes attributed to non-point sources. DEQ has not prepared a Total Maximum Daily Load (TMDL) document for this segment.

Receiving Water Characteristics

The magnitude of some numeric standards is dependent on characteristics of the receiving water such as pH, temperature, hardness, or the presence of certain fish species or early life stages of fish. The hardness value is the lower bound (25th percentile) of the interquartile range (IQR) of receiving water data. The pH and temperature values are the upper bound (75th percentile) of the IQR of receiving water data for these parameters.

The **Table FS-09** data for the Yellowstone River in the segment receiving the treated refinery wastewater are derived from STORET site MDEQ_WQ_WQX-Y06YELSR06 (Yellowstone River at Hwy 212 Bridge near Laurel) and from CHS. The ambient hardness value also includes 2015 CHS and Laurel Water Treatment plant data in addition to current data, due to a lack of new information.

DEQ determined that salmonid fish are “present” based on beneficial use for B-2 classified waters. The receiving water characteristics used in determining specific numeric standards are shown in **Table FS-09**.

Table FS-09. Yellowstone River Receiving Water Characteristics

Name of Receiving Water	Yellowstone River
Class of Receiving Water	B-2
Eco Region	Northwestern Great Plains (Large River)
Lower Bound Receiving Water Hardness (mg/L as $CaCO_3$) (1) (minimum and/or default is 25 mg/L, and maximum is 400 mg/L)	86
Upper Bound Receiving Water pH Value (2)	8.4
Upper Bound Receiving Water Temperature (°C) (2)	18.7
Are salmonid fish present in the receiving water?	Yes
Are fish in early life stages present in the receiving water?	Yes

Footnotes:
(1) The lower bound for hardness is 25th percentile, based on data between 2011 and 2022.
(2) The upper bound for pH and temperature is the 75th percentile of the datasets.

3. Nondegradation

Unless authorized by DEQ through a nondegradation analysis or exempted from review under 75-5-317, MCA, high quality waters must not be degraded. *High quality waters*, as defined in 75-5-103, MCA and ARM 17.30.702, 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. The Yellowstone River is considered high quality water except for parameters identified as impaired on the 2020 303(d) list.

In developing this renewed permit, DEQ concluded that the CHS discharge is not a new or increased discharge, and that existing uses of the receiving water are maintained and protected.

a. New or Increased Discharges

The provisions of ARM 17.30.701 *et seq*. (Nondegradation of Water Quality) apply to new or increased sources of pollution. Sources that are in compliance with the conditions of their permit and do not exceed the limits established in the permit or determined from a permit issued by DEQ prior to April 29, 1993, are not considered new or increased sources.

CHS is not a new source. The facility has had a permit to discharge since prior to 1993. In addition, DEQ reviewed whether the facility could be considered an increased source due to recent increases in production throughput and wastewater discharge rates:

- crude oil throughput has increased from 45,500 bpd in 1993 to the current production rate of 64,000 bpd.
- effluent average flow rates increased from 1.0 mgd in 1993 to 1.4 mgd for the 2015 renewal. Effluent flow has decreased since 2018 to ~ 1.2 mgd in 2021 – 2022. (See **Tables FS-02** and **FS-05**).

As discussed in Part II.A.3, the Facility's mass-based TBELs are capped at the most stringent level since 1993 (see **Table FS-17**). In addition, the level of treatment provided by the

Facility has continually improved their wastewater quality and the average flow has deceased since the previous permit renewal. Therefore, DEQ finds that CHS does not constitute a new or increased source within the definition of ARM 17.30.702.

b. Protection of Existing Uses

ARM 17.30.705(2)(a) requires that, for all state waters, existing and anticipated uses and the water quality necessary to protect those uses must be maintained. In practice, application of this regulation means that the effluent limits in an MPDES permit must be derived from and comply with all numeric and narrative standards associated with the existing and anticipated beneficial uses of the receiving water. Because there is no allowed increase in pollutant loadings from the discharge, issuance of the proposed permit complies with the requirements of this section of the regulations.

4. Mixing Zones

Under 75-5-301(4), MCA, the Board is required to adopt rules governing the granting of mixing zones. The Board adopted mixing zone regulations under ARM 17.30, Subchapter 5. A mixing zone is defined as a limited area of a water body where initial dilution of a discharge takes place, where water quality changes may occur, and where certain numeric water quality standards may be exceeded. Where a mixing zone is requested, DEQ must determine whether the requested mixing zone may be granted for a particular parameter and, if a mixing zone is granted, the type of mixing zone that is appropriate.

Acute and chronic standards for aquatic life and human health standards may not be exceeded outside of the mixing zone. The discharge must comply with the general prohibitions of ARM 17.30.637(1) which require that state surface waters, including mixing zones, must be free from substances which will:

(i) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines;

(ii) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 mg/L) or globules of grease or other floating materials;

(iii) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible;

(iv) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and

(v) create conditions which produce undesirable aquatic life.

Acute numeric water quality standards may not be exceeded, even within a mixing zone, unless DEQ specifically finds that allowing minimal initial dilution will not threaten or impair existing beneficial uses. DEQ must reevaluate the applicability and appropriateness of any dilution or mixing zones provided in each permit renewal.

Yellowstone River

The amount of dilution potentially granted for a mixing zone is based on the low flow conditions: the lowest 7-day flow over 10 years (7Q10) for all parameters.

There are no upstream flow gages proximate to CHS' Outfalls 002/003. DEQ calculated the Yellowstone River 7Q10 low flow statistics for CHS by subtracting the low flow of the

Clarks Fork Yellowstone River at Edgar and the refinery's highest monthly average discharge from the low flow of the Yellowstone River downstream at Billings (see **Table FS-10**). Low flow was obtained from the USGS *2015 Statistical Summaries of Streamflow in Montana, USGS – Streamflow Stats Table 1-1* which has not changed since the last permit modification. The calculated result is:

- 7Q10: 1,026 cfs (663 mgd)

Table FS-10. Yellowstone River Calculated Low Flow

Yellowstone River Low Flow Determination (Cubic Feet per Second, cfs)	**7Q10**
Billings USGS Station 06214500	1,130
Clarks Fork Yellowstone River USGS Station @ Edgar 06208500	(101)
CHS - Laurel Refinery –Maximum Average Monthly Flow (1)	(2.51)
Calculated Low Flow Upstream of the Refinery	**1,026 cfs**

Footnote:
(1) The highest monthly average discharge flow rate between 2018 and 2022 was 1.62 MGD which is equivalent to 2.51 cfs (see **Table FS-05**)

CHS constructed a two-port bankside diffuser on the Yellowstone River and began discharge through the lower port (Outfall 002) in June 2019. CHS has requested that source-specific mixing zones and any needed dilution allowances be granted for discharge from the two diffuser ports:

- Outfall 002 "lower port primary diffuser"
- Outfall 003 "upper port secondary diffuser"

The diffuser discharge is in the deepest part of the river, approximately 75 feet downstream from the Billings Bench Water Users Association (BBWA) intake, and 400 feet upstream from the Italian Drain.

CHS submitted a mixing zone study for the two-ports at this location in December 2017. The 2017 mixing zone study included modeling using CORMIX Version 10.0 GTS to define the acute and chronic mixing zone boundaries, to develop a minimum predicted dilution factor, and develop the corresponding proportion of the total 7Q10 that could be considered for 'dilution credit.'

To calculate the dilution granted for acute and chronic/human health standards, the POR maximum daily discharge flow (2.29 mgd) and the POR highest monthly average discharge flow (1.62 mgd) are multiplied by the appropriate dilution factor (DF) as presented in **Table FS-11.**

Table FS-11. Yellowstone River Mixing Zones for 2019-2022

Diffuser	Criterion Condition	Mixing Zone (MZ) Downstream Boundary	Plume Width @ End of MZ	Dilution Factor @ end of MZ (minimum)	Dilution mgd	*Dilution cfs*	Estimated % of River @ Low Flow
Outfall 002 Primary (lower)	Acute	100 feet	15 feet	34	77.9	121	11.8% (1)
	Chronic/HHS	1000 feet	68 feet	197	319	494	48.1% (2)
Outfall 003 Secondary (upper)	Acute	100 feet	13 feet	20	45.8	71	6.9% (1)
	Chronic/HHS	1000 feet	56 feet	111	180	279	27.2% (2)

Footnote: mgd = million gallons per day; cfs = cubic feet per second.

Acute: Estimated percent of river at low flow available for acute dilution is calculated by multiplying the maximum acute discharge (2.29 mgd) x DF at the end of the mixing zone. After converting the acute dilution mixing zone flow from mgd to cfs, this value is divided by the calculated 7Q10 of 1,026 cfs.

Chronic: Estimated percent of river at low flow available for chronic/HHS dilution is calculated by multiplying the maximum chronic discharge (1.62 mgd) x DF at the end of the mixing zone. After converting the chronic dilution mixing zone flow from mgd to cfs, this value is divided by the calculated 7Q10 of 1,026 cfs.

Based on the data and mixing zone study provided, DEQ may grant the percent available dilution for any parameters with assimilative capacity (i.e., the 75th percentile ambient concentration is below the lowest applicable standard). The appropriate dilution allotments will be used as part of the Reasonable Potential (RP) Analysis in the next section.

5. Reasonable Potential Analysis

a. Pollutants of Concern

Limits must be established in permits to control all pollutants or pollutant parameters that are or may be discharged at a level that will *cause*, have the *reasonable potential to cause*, or *contribute* to an excursion above any state water quality standard.

Pollutants and parameters are identified as pollutants of concern (POC) for one or more of the following reasons: because they have listed TBELs; were identified as needing WQBELs in the previous permit; are identified as present in the effluent through monitoring or otherwise expected present in the discharge; or are pollutants associated with impairment which may or may not have a Wasteload Allocation (WLA) in a TMDL.

DEQ evaluated pollutants regulated under the refinery ELG, listed as impaired for Yellowstone River, or identified as expected present in the renewal applications. **Table FS-12** lists the basis for listing each POC.

Table FS-12. Identification of POC

Parameter [1]	Basis for Identifying as POC [2]
BOD_5, COD, TSS	TBELs
Ammonia, Chromium (Total Recoverable and Hexavalent), Phenol, Sulfide ($\rightarrow H_2S$)	TBELs
Oil & Grease, pH	TBELs
Nitrate+Nitrite	Effluent Monitoring
Total Nitrogen, Total Phosphorus	Effluent Monitoring
Fluoride; Arsenic; Selenium	WQBEL, Effluent Monitoring
Aluminum (dissolved); H_2S; Cyanide; Iron; Lead; Mercury; Total Residual Chlorine (TRC)	Effluent Monitoring
Antimony; Barium; Nickel	Application Form 2C
Temperature	Effluent monitoring

Footnotes:
(1) All metals are total recoverable unless otherwise identified.
(2) POCs listed in Application Form 2C having at least one sample subject to Subchapter 6 or with a concentration greater than the required reporting value (RRV) in Circular DEQ-7.

b. RP Analysis Background

DEQ conducted a numeric RP analysis for each POC that has an applicable numeric water quality standard, to evaluate whether CHS has RP to exceed standards in either:

Outfall 002 / Outfall 003 – Yellowstone River.

RP for the discharge to cause exceedances of a WQBEL was evaluated using the following mass-balance equation (*Eq. 1*):

$$C_r = \frac{Q_d C_d + Q_s C_s}{Q_d + Q_s} \qquad (Eq.\ 1)$$

Given:

C_r = the resulting receiving water concentration
Q_d = critical effluent flow rate
C_d = critical effluent pollutant concentration
[= maximum concentration during the POR x TSD multiplier (C_{95})]
Q_s = critical stream flow (7Q10 x available dilution)
C_s = critical background receiving water pollutant concentration (75^{th} percentile)

Where the projected receiving water concentration (C_r) exceeds the lowest applicable numeric standard for the pollutant of concern, there is RP and WQBELs must be calculated. The RP analyses are provided in **Appendix E**, Tables E-1 to E-4. The following assumptions were made:

Critical Effluent Flow (Q_d)

For industrial sources, the critical effluent flow rate is based on a reasonable measure of actual production. The time period of the measure of production must correspond to the time period of the calculated permit limitations; for example, monthly production must be used to

calculate average monthly discharge limits. The critical effluent flow used for this renewal is the highest for 2018 – 2022 as follows:

- Acute aquatic life – 2.29 mgd based on the maximum daily flow.
- Chronic aquatic life/HH – 1.62 mgd based on the highest of the monthly average flow.

Critical Effluent Pollutant Concentration (C_d)

The critical effluent concentration is based on the 95th percentile of the expected effluent concentration observed or predicted in the discharge. Due to the low frequency of samples and the non-normal distribution of most effluents, DEQ follows the estimation procedures described in EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD) (EPA/505/2-90-001, March 1991) to estimate the 95th percentile of the daily values, by multiplying the maximum discharge concentration observed during the POR by a TSD multiplier, calculated using the number of effluent samples and corresponding coefficient of variation (CV).

See Appendix E for C_d.

Critical Receiving Water Flow (Q_s)

Critical stream flow is based on the available part of the 7Q10 considering dilution, as follows:

Outfall 002: see Part II.B.4. The Yellowstone River 7Q10 is calculated as 1,026 cfs. Based on the mixing zone study submitted in 2017, the amount of the low flow available for dilution is:

- Acute = 121 cfs or 78 mgd (= 11.8% of the 7Q10)
- Chronic/HH determinations = 494 cfs or 319 mgd (= 48.1% of the 7Q10)

Outfall 003: see above. The amount of the low flow available for dilution is:

- Acute = 71 cfs or 46 mgd (= 6.9% of the 7Q10)
- Chronic/HH determinations = 279 cfs or 180 mgd (= 27.2% of the 7Q10)

Critical Receiving Water Background Pollutant Concentration (C_s)

For purposes of conducting an RP analysis and determining assimilative capacity, the critical background receiving water concentration (C_s) is defined to be the 75th percentile or upper bound estimate of the interquartile range of the data.

Outfall 002/003: Yellowstone River background data included receiving water data supplied by CHS and STORET monitoring data.

C_s is provided in Appendix E, Tables E-3 and E-4.

c. Additional POC Discussion

Several of the parameters of concern have unique situations that require additional discussion:

- ***Hydrogen Sulfide***.

  Sulfide (including total and dissolved) is a known to be a pollutant in refinery discharge. Hydrogen sulfide and bisulfide ion (HS-), which together constitute dissolved sulfide,

remain in equilibrium with hydrogen ions, depending upon the disassociation in the water of interest.

CHS was required to monitor both effluent and ambient H_2S concentrations since the 2015-permit renewal. However, the ambient H_2S dataset provided by CHS was not sufficiently sensitive to demonstrate assimilative capacity in the Yellowstone River. Some of the reasons for the failure to achieve the necessary low levels of H_2S are:

- Hydrogen sulfide (H_2S) has a chronic aquatic life standard of 0.002 mg/L (or 2 µg/L). The required reporting value (RRV) of 20 µg/L is ten times greater than the H_2S standard (in other words, it is not possible to detect down to the standard).
- There is no direct laboratory method for analyzing for H_2S, because H_2S is a portion of dissolved sulfide with the percentage dependent on pH. The Energy Laboratory Reporting Levels (RLs) for dissolved sulfide over the period of record was consistently 40 µg/L. However, review of the ambient data submitted for the 2015-permit renewal (Attachment H-1) showed better sensitivity. These sulfide results ranged from non-detect at 8.2 µg/L up to 51 µg/L with a J-flag detection (greater than the minimum detection level (MDL) but less than RL). It is not clear why Energy Labs was unable to achieve sufficiently sensitive levels for dissolved sulfide during the current period of record.
- The approved method for determining H_2S concentration is the *Standard Methods for the Examination of Water and Wastewater 4500-S^2- H. Calculation of Un-Ionized Hydrogen Sulfide.* The equation for determining H_2S concentrations in effluent or ambient water is:

  H_2S (µg/L) = dissolved sulfide (µg/L) x %H_2S at the field pH

  As pH increases, the percentage of H_2S decreases. For instance, if the effluent is at pH 7.0 su approximately 50% of the dissolved sulfide is in the form of H_2S, but if the effluent pH is 8.0 su approximately 10% of the dissolved sulfide is H_2S. The method states that there is an expected error of +/- 40%.

Following the TSD approach, DEQ projected the following H_2S concentrations:

- **The H_2S critical discharge concentration (C_d)** based on 27 months of effluent data since 2019:
  - Maximum total sulfide concentration 140 µg/L.
  - Maximum dissolved sulfide concentration 100 µg/L.
  - CHS reported H_2S discharge concentration of < 40 µg/L. However, no basis was provided. DEQ calculated the maximum H_2S discharge concentration from CHS data between January 2021 – June 2022 based on two methods:
    1. **Look-up Figure Max** [(Dissolved sulfide x %H_2S based on pH at time of sample)] **= 38.5 µg/L** based on 71 data points between January 2021 and May 2022. See Figure 4500-S^2-H from Standard Methods. Since the estimated error for this method could be up to 40%, the H_2S concentration range for the maximum value is 23 to 54 µg/L.
    2. **Equation Max** [(Dissolved sulfide x % H_2S based on %H_2S = $1/(10^{pH-pK'}+1)$] **= 26 µg/L** based on 22 data points between April 2021 and May 2022.

Due to significantly more data using the first method, DEQ will use the look-up figure maximum value of 38.5 µg/L.

C_d = max H_2S concentration (38.5 µg/L) x TSD Multiplier of 0.94 **= 36.1 µg/L**

- **The H_2S critical upstream concentration (C_s)** is the 75th percentile of the calculated H_2S based on CHS ambient monitoring data between 2017 – 2022.
  - Total sulfide concentration – all non-detect at < 40 µg/L (17 samples).
  - Dissolved sulfide concentration – all non-detect at < 40 µg/L (17 samples).
  - H_2S concentrations calculated by Energy Labs were all non-detect with 16 samples < 40 µg/L and two samples < 50 µg/L. However, until late 2019 Energy Labs was incorrectly using the laboratory pH to calculate the H_2S concentration, rather than the field pH. Furthermore, no analysis was provided to document the assumptions for each datapoint.

    DEQ calculated the 75th percentile ambient H_2S concentration based on the detection level of 40 µg/L dissolved sulfide multiplied by the % H_2S at the 25th percentile pH (worst-case since the H_2S concentration is inversely proportional to the pH).

    The 17 reported field pH values between October 2019 and October 2021 ranged from 6.9 to 8.7 su, with a 25th percentile of 7.23 su. The worst-case ambient H_2S concentration is estimated to be 36% of the dissolved sulfide concentration at a pH of 7.23 su.

    C_s = 75th Percentile Ambient H_2S = < 40 µg/L x 36%, or **< 14.4 µg/L.**

Using the TSD method with a C_d of 36.1 µg/L and C_s of 14.4, the resulting mixed concentration (C_r) was determined to be 14.5 µg/L, and there is RP to exceed the chronic standard of 2 µg/L. A WQBEL will be developed.

- ***Nutrients.***

The narrative water quality standard found at ARM 17.30.637(1)(d) and (e) applies to this segment of the Yellowstone River. The Yellowstone River is listed as impaired for nitrate/nitrite and Chlorophyll-*a* (attributed to municipal point sources and crop production).

DEQ considered the recent and upcoming improvements to the facility's wastewater treatment and the dilution in the Yellowstone River as part of this narrative RP analysis (40 CFR 122.24(d)(1)(ii)).

- ***Nitrogen.*** Without a numeric TN standard, the RP analysis must be based on narrative evaluation. CHS conducted additional summer effluent and ambient monitoring since the 2015-permit was issued. Comparison of current data with the previous period of record (CHS Attachment H-2, 2015 and the 2015 Fact Sheet) indicates that the nitrogen concentration and load has decreased.
  - The maximum TN summer effluent concentration since 2020 was 9.2 mg/L compared to the maximum for the previous period of record of 32.6 mg/L (described as a statistical outlier) or 11.5 mg/L (without the outlier).

- the average TN summer effluent concentration since August 2020 was 5.5 mg/L, compared to the average for the previous period of record of 13.1 mg/L (including statistical outlier) or 9.2 mg/L (without statistical outlier).
- the current summer daily load average is 84 lb/day and the maximum is 117 lb/day, compared to a calculated average summer monthly load cap for the previous permit of 279 lb/day.

To compare relative TN contributions, DEQ took the current average monthly summer effluent load (84 lb/day TN) and compared to a conservative Yellowstone River average monthly summer load of 5,119 lb/day TN. The river load was calculated using the 14Q5 (1,364 mgd) and average ambient concentration (0.45 mg/L). Based on this, CHS contributes approximately 1.6% of the TN load.

CHS continues to improve treatment at the facility. DEQ expects that TN loading will be further reduced. DEQ finds that CHS's discharge is not causing or contributing to nuisance algae growth based on the current and expected TN load reductions, the probable sources of impairment identified as agriculture and municipal sources and the overall decreasing relative TN load. DEQ will continue to require summer effluent and ambient monitoring.

- ***Phosphorus.*** Effluent TP has overall reduced slightly from the previous renewal and does not constitute a significant portion of the rivers' load:
  - the maximum summer TP effluent concentration since August 2020 (excluding the September 2020 data due to a plant upset) was 0.25 mg/L which is slightly less than the maximum TP concentration from the six samples taken in summer of 2014 of 0.28 mg/L (CHS Attachment H-2, 2015).
  - the average summer TP since August 2020 was 0.15 mg/L which is reduced from the average summer concentration of 0.22 mg/L in 2014.
  - current TP effluent loads ranged from 0.6 to 2.8 lb/day (average of 1.8 lb/day) based on the five summer samples since August 2020 compared to a calculated cap of 3.3 lb/day in 2014 (based on 2015 Fact Sheet).
  - the maximum summer effluent concentration of TP (0.25 mg/L) is less than the maximum summer ambient concentration (0.44 mg/L).
  - The average summer TP effluent load is very small (< 0.4%) in comparison to an estimated average Yellowstone River TP load during the summer 14Q5 (discharge 1.8 lb/day TP compared to Yellowstone load of 421 lb/day)

  CHS continues to improve treatment at the facility. DEQ expects that TP loading will be further reduced. DEQ finds that CHS's discharge is not causing or contributing to nuisance algae growth based on the current and expected TP load reductions, the probable sources of impairment identified as agriculture and municipal sources and the overall decreasing relative TP load. DEQ will continue to require summer effluent and ambient monitoring.

➢ ***Arsenic***

After extensive research and development of the Demonstration of Natural (DON) and Nonanthropogenic Standards (NAS) arsenic documents, DEQ promulgated site specific

arsenic standards under ARM 17.30.618(2)(a) in 2020. The average annual arsenic standard for the segment of the Yellowstone River from the mouth of the Stillwater River to the mouth of the Clarks Fork of the Yellowstone River is 13 µg/L. DEQ may not grant a mixing zone for arsenic within this segment [ARM 17.30.618(3)].

CHS has invested significant capital and manpower to remove arsenic from the wastewater. **Appendix C** depicts the updated wastewater treatment system, including air floatation (installed May 2021) and multi-media filters (installed by September 2021), and the polishing filters which are being installed in Summer 2022 and are planned to be operational by Fall 2022.

Review of the arsenic concentration since October 2021 (after the upgraded wastewater plant was stabilized) shows that the maximum concentration of 38 µg/L is greater than the NAS of 13 µg/L and there is RP to exceed the arsenic standard. A WQBEL will be developed.

- ***Temperature***

The CHS Laurel refinery discharges cooling water and other process water with elevated temperature. Temperature increases are regulated under ARM 17.30.624(2)(e) "A 1 ºF maximum increase above naturally occurring water temperature is allowed within the range of 32 ºF to 66 ºF..."

Given:

- One (1) British Thermal Unit (BTU) is the amount of heat necessary to raise one (1) pound of water 1°F.
- *Discharge – critical assumptions based on DMR data June 2019 – April 2022*:

  Maximum discharge rate
  - Summer maximum discharge rate = 2.29 mgd = 2.29 x 10^6 gal/day
  - Winter maximum discharge rate = 1.82 mgd = 1.82 x 10^6 gal/day

  Maximum discharge temperature
  - Summer maximum temperature = 35.9 ºC = 96.6 ºF
  - Winter maximum temperature = 28.4 ºC = 83.1 ºF
- *Yellowstone River*:

  Critical flow (calculated 7Q10) = 663 mgd = 6.63 x 10^8 gal/day

  Critical ambient water temperature = 25th percentile based on 17 data points from CHS 2019-2021 and seven STORET sample points
  - Summer 25th ambient = 13.2 ºC = 55.8 ºF
  - Winter 25th ambient = 6.4 ºC = 43.5 ºF

To determine whether the refinery has RP to exceed the temperature standard, DEQ calculated the greatest potential British Thermal Unit (BTU) change in summer and winter temperatures by finding the difference between the maximum effluent temperature and the 25th percentile of the ambient condition and converting that to BTU based on the maximum daily discharge flow rate. The greatest increase was then compared to the BTU/day that would exceed the allowable 1°F increase in temperature:

Calculated Max Increase in BTU/day =

Summer increase: 2.29 x 10^6 gal/day x [96.6 ºF – 55.8 ºF] x 8.34 lb/gal
= 7.8 x 10^8 BTU/day

Winter increase: 1.82 x 10^6 gal/day x [83.1 ºF – 43.5 ºF] x 8.34 lb/gal
= 6.0 x 10^8 BTU/day

Calculated Allowed BTU/day = 6.63 x 10^8 gal/day x 1 °F (Δ temp) x 8.34
= **5.5 x 10^9 BTU/day**

Since 5.5 x 10^9 BTU/day is required to cause a temperature increase greater than the standard, and the maximum heat input from the refinery is 7.8 x 10^8 BTU/day, CHS does not have RP to exceed the temperature standard, and no limit is necessary.

- ***TBEL Parameters***

  There are no numeric standards for four parameters regulated by the ELG: BOD_5, COD, TSS, and pH; however, TBELs developed in Part II.A protect the beneficial uses of the receiving waters. DEQ finds there is no RP and additional water quality-based effluent limits are not needed.

d. RP Analysis Summary

ARM 17.30.1345 requires DEQ to develop WQBELs for any pollutant for which there is RP to cause or contribute to exceedances of instream numeric or narrative water quality standards, after application of any approved mixing zones. **Appendix E** (Tables #E-1 through #E-4) present the background and numeric RP analysis for Outfalls 002 and 003, based on the methodology described in EPA's TSD document. WQBELs are developed in **Part II.B.6**.

Outfall 002 – Numeric RP Summary:

The Yellowstone River mixing zones granted to CHS Laurel Refinery provides for dilution as provided in **Table FS-11** (also see **Attachment E Table #E-3**). **Table FS-13** summarizes the data for the parameters with RP after mixing for Outfall 002:

Table FS-13. Summary of Parameters with Numeric RP (Outfall 002 Yellowstone River)

Parameter	Units	Surface Water Quality Standards			Concentration after Mixing (C_r)		RP (WQBEL Needed?)
		Acute	Chronic	HH	Acute	Chronic/ HH	
Hydrogen Sulfide	µg/L	NA	2	NA	--	< 14	Yes.
Arsenic, TR	µg/L	340	150	13	46	46	Yes. See Footnote (1)

Footnotes:
(1) See ARM 17.30.618 for site-specific arsenic human health standard of 13 µg/L. There is no assimilative capacity, and no mixing or dilution is granted for arsenic.

Outfall 003 – Numeric RP Summary:

The Yellowstone River mixing zones granted to CHS Laurel Refinery provides for dilution as provided in **Table FS-11** (also see Attachment E Table #E-4). **Table FS-14** summarizes the data for the parameters with RP after mixing for Outfall 003:

Table FS-14. Summary of Parameters with Numeric RP (Outfall 003 Yellowstone River)

Parameter	Units	Surface Water Quality Standards			Concentration after Mixing (C_r)		RP (WQBEL Needed?)
		Acute	Chronic	Human Health	Acute	Chronic/ HH	
Total Residual Chlorine (TRC)	mg/L	0.019	0.011	4	0.027	0.005	Yes. C_r > acute
Hydrogen Sulfide	µg/L	NA	2	NA	--	< 14	Yes. C_r > chronic
Arsenic, TR	µg/L	340	150	13	46	46	Yes. See Footnote (1)

Footnotes:
(1) See ARM 17.30.618 for site-specific arsenic human health standard of 13 µg/L. There is no assimilative capacity, and no mixing or dilution is granted for arsenic.

WQBELs for any parameter with RP will be developed in the next section.

6. WQBEL Development

Narrative Standards

DEQ determined that there is RP to exceed narrative conditions for the following parameter:

Oil & Grease

With this renewal, DEQ is continuation of the oil & grease limit of 10 mg/L as a daily maximum limit at the end-of-pipe, for all outfalls (ARM 17.30.637).

Numeric - Acute and Chronic Aquatic Life Standards

To establish WQBELs for most parameters with RP, DEQ first calculates Wasteload Allocations (WLAs) from the applicable numeric water quality standards. These WLAs are then translated into Average Monthly Limits (AMLs) and Maximum Daily Limits (MDLs) based on the TSD approach. The most protective AML and the most protective MDL calculated for each parameter become the effluent limits.

As shown in *Equation 2* below, the mass-balance equation can be arranged to calculate the WLA (C_d) so that the discharge does not cause or contribute to an exceedance of the applicable water quality standard under critical conditions.

$$C_d = \frac{Q_r C_r - Q_s C_s}{Q_d} \qquad (Eq.\ 2)$$

The equation can also be expressed as:

$$C_d = C_r + [(Q_s/Q_d) \times (C_r - C_s)]$$

Given:

C_d = WLA (effluent pollutant concentration in mg/L or µg/L)
$Q_r = Q_s + Q_d$ (the resulting receiving water flow)
C_r = the resulting receiving water concentration after mixing
Q_s = critical stream flow of receiving water (available dilution of 7Q10)
C_s = critical river concentration (75^{th} percentile ambient concentration)
Q_d = critical effluent discharge flow rate

Numeric - Human Health Standards

For parameters where the HHS is the "limiting" standard, the AML is equal to the WLA, in accordance with TSD Section 5.4.4. Where the discharge is to a water body with no available dilution, or that is not meeting a numeric standard, the WLA (and therefore the AML) is equal to the HHS. In addition, for a parameter with an HHS in Circular DEQ-7, Footnote 16 states 'Surface or groundwater concentrations may not exceed these values,' so the MDL will also be set at the HHS.

Outfall 002 – WQBELs based on Numeric Standards:

Table FS-15 provides a summary of the Outfall 002 WQBELs (see Appendix E Table #E-5).

Table FS-15: Proposed Numeric WQBELs (Outfall 002 Yellowstone)

Parameter *TR = Total Recoverable*	**Units**	**WQBEL**		**Basis for WQBEL**
		MDL	**AML**	
Hydrogen Sulfide	µg/L	3.5	1.5	Circular DEQ-7
Arsenic, TR	µg/L	19	13	ARM 17.30.618(2)

Outfall 003 – WQBELs based on Numeric Standards:

Table FS-16 provides a summary of the Outfall 003 WQBELs (see Appendix E Table #E-6).

Table FS-16: Proposed Numeric WQBELs (Outfall 003 Yellowstone)

Parameter *TR = Total Recoverable*	**Units**	**WQBEL**		**Basis for WQBEL**
		MDL	**AML**	
Total Residual Chloride (TRC)	µg/L	19	8.5	Circular DEQ-7
Hydrogen Sulfide	µg/L	3.3	1.6	Circular DEQ-7
Arsenic, TR	µg/L	19	13	ARM 17.30.618(2)

7. Whole Effluent Toxicity Limits

ARM 17.30.637(1)(d) requires that state waters to be free from substances which will create conditions or combinations of material which are toxic or harmful to human, animals, plant or aquatic life. Acute toxicity occurs when 50 percent mortality is observed for any test species at any effluent concentration (LC50 ≤ 100% effluent). CHS is required to conduct acute testing because the effluent dilution ratio is greater than 10:1 to assure no acute lethality to organisms in the mixing zone. Section IV.B discusses the WET Testing requirements.

III. FINAL EFFLUENT LIMITS

The final effluent limits in the permit are based on the more stringent of the calculated TBELs and WQBELs for each parameter, subject to anti-backsliding and nondegradation.

A. Anti-backsliding Analysis

Section 402(o) of the Clean Water Act and 40 CFR 122.44(l) require, with some exceptions, that effluent limits or conditions in reissued permits be at least as stringent as those in the existing permit. In Appendix D, DEQ developed the current TBELs. Table D-10 presents the calculated TBELs for the current production levels.

Table FS-17 compares these calculated TBELs to the previous TBELs from the 2015 permit**.** The TBELs calculated for the current conditions are less stringent than the existing permit limits and the existing permit limits will be maintained, except for the current MDL for hexavalent chromium is slightly more restrictive than the previous limit.

Table FS-17. Comparison of Existing and Calculated TBELs (1)

Parameter	Units	Daily Maximum Limits		30-day Average Limits		Category
		Previous	Current	Previous	Current	
BOD_5	lb/day	**620**	1,256	**331**	698	BPT/BCT
COD	lb/day	**4,425**	9,390	**2,288**	4,871	BPT/BAT
Net TSS (2)	lb/day	**532**	876	**339**	558	BPT/BCT
Oil & Grease	lb/day	**242**	381	**128**	203	BPT/BCT
Phenols	lb/day	**4.5**	9.4	**2.2**	4.6	BPT
Ammonia	lb/day	**418**	830	**191**	377	BAT
Sulfide	lb/day	**3.9**	8.2	**1.8**	3.6	BAT
Total Chromium	lb/day	**9.1**	15.3	**5.2**	5.3	BAT
Hexavalent Chromium	lb/day	**1.0**	**0.99**	**0.36**	0.44	BAT
pH	S.U.	6.0 – 9.0				BPT/BCT

Notes
(1) The TBELs proposed in this renewal are the most stringent and are indicated in bold and shading.
(2) Permit allows credit for TSS in intake water in order to demonstrate compliance with a "net" limit as allowed under 40 CFR 122.45(g)(1)(ii) and ARM 17.30.1345(9)(a)(ii).

B. Stringency of Requirements for Individual Pollutants

The above evaluation identifies the TBELs which will implement the most stringent applicable federal technology-based requirements, with consideration for anti-backsliding requirements. In addition, WQBELs were developed to be more stringent than TBELs as necessary to meet water quality standards. The more stringent limits will attain both the technology and water quality standards.

C. Final Effluent Limits

Outfall 002 – Yellowstone River

Beginning on the effective date of the permit, and lasting until the end of the permit, CHS Laurel Refinery will be required to meet the following effluent limits at Outfall 002 (see **Table FS-18**):

Table FS-18. Outfall 002 - Final Effluent Limits

Parameter *TR = Total Recoverable*	Units	Effluent Limits	
		Maximum Daily	Average Monthly
BOD_5	lb/day	620	331
COD	lb/day	4,425	2,288
Net TSS	lb/day	532	339
Oil and Grease	mg/L	10	--
	lb/day	242	128
Phenol	lb/day	4.5	2.2
Ammonia, Total as N	lb/day	418	191
Chromium, TR	lb/day	9.1	5.2
Chromium, Hexavalent	lb/day	0.99	0.36
Sulfide	lb/day	3.9	1.8
Hydrogen Sulfide (H_2S) (1)	µg/L	3.5	1.5
Arsenic, TR (2)	µg/L	19	13
pH	s.u.	Between 6.0 and 9.0, all times	
Whole Effluent Toxicity, Acute, LC_{50}	% effluent	No acute toxicity	

Footnote:
(1) The H_2S limits become effective **November 1, 2025**. Any calculated results that show "non-detect" for H_2S at the RRV of 20 µg/L is considered compliance with the effluent limit.
(2) The arsenic limits become effective **November 1, 2025**.

There shall be no discharge of floating solids or visible foam other than trace amounts.

There shall be no discharge that causes visible oil sheen in the receiving stream.

There shall be no discharge of wastewater which reacts or settles to form an objectionable sludge deposit or emulsion beneath the surface of the receiving stream or upon adjoining shorelines.

There shall be no discharge from Outfall 002 at any time there is discharge from Outfall 003.

Outfall 003 – Yellowstone River

Beginning on the effective date of the permit, until the end of the permit, CHS Laurel Refinery will be required to meet the following effluent limits at Outfall 003 (see **Table FS-19**):

Table FS-19. Outfall 003 - Final Effluent Limits

Parameter *TR = Total Recoverable*	Units	Effluent Limits	
		Maximum Daily	Average Monthly
BOD_5	lb/day	620	331
COD	lb/day	4,425	2,288
Net TSS	lb/day	532	339
Oil and Grease	mg/L	10	--
	lb/day	242	128
Phenol	lb/day	4.5	2.2
Ammonia, Total as N	lb/day	418	191
Sulfide	lb/day	3.9	1.8
Hydrogen Sulfide (H_2S) (1)	µg/L	3.3	1.6
Chromium, TR	lb/day	9.1	5.2
Hexavalent Chromium	lb/day	0.99	0.36
Total Residual Chlorine (net) (2)	µg/L	19	8.5
Arsenic, TR (3)	µg/L	19	13
pH	s.u.	Between 6.0 and 9.0, all times	
Whole Effluent Toxicity, Acute, LC_{50}	% effluent	No acute toxicity	

Footnote:
(1) The H_2S limits become effective **November 1, 2025**. Any calculated results that show "non-detect" for H_2S at the RRV of 20 µg/L is considered compliance with the effluent limit.
(2) CHS may demonstrate compliance with the TRC limit by discounting the manganese oxide interference and reporting the net TRC concentration. Any results less than the RL of 50 µg/L are considered compliance with the effluent limit.
(3) The arsenic limits become effective **November 1, 2025**.

There shall be no discharge of floating solids or visible foam other than trace amounts.

There shall be no discharge that causes visible oil sheen in the receiving stream.

There shall be no discharge of wastewater which reacts or settles to form an objectionable sludge deposit or emulsion beneath the surface of the receiving stream or upon adjoining shorelines.

There shall be no discharge from Outfall 003 at any time there is discharge from Outfall 002.

IV. Rationale for Monitoring and Reporting Requirements

The following provides the rationale for the monitoring and reporting requirements for this facility. Samples will reflect the nature of the discharge. Samples shall be collected, preserved, and analyzed in accordance with approved procedures listed in 40 CFR 136. As a minimum, the constituents shall be monitored at the frequencies and with the types of measurements indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge.

Data supplied by CHS must meet either provide a detect or non-detect at the required Reporting Level (RL) which is either the Required Reporting Value (RRV) listed in Circular DEQ-7 or another detection level that is DEQ's best determination of a level that can be achieved using EPA-approved methods or methods approved by DEQ.

Results shall be submitted electronically on NetDMRs by the 28th of the following month. If there is no discharge from an outfall for the month, "No Discharge" shall be indicated for that outfall.

A. Monitoring Locations and Frequency

Outfalls 002 & 003

The parameters to be monitored and monitoring frequency for Outfalls 002 & 003 are provided in **Table FS-20** below. Self-monitoring shall be conducted at the outlet of the discharge pumps prior to the forced main unless another location is requested and approved by DEQ in writing.

Table FS-20. Summary of Effluent Monitoring Requirements (1) – Outfalls 002 and 003

Parameter	Units	Monitoring Frequency	Type	Reporting Requirement	RL
Flow	MGD	Continuous	Instantaneous (2)	Daily Max & Mo Avg	--
pH	s.u.	1/Day	Instantaneous (2)	Daily Min & Daily Max	0.1
BOD_5	mg/L	1/Week	Composite	Daily Max & Mo Avg	--
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
COD	mg/L	1/Week	Composite	Daily Max & Mo Avg	--
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
TSS – Intake Water	mg/L	1/Week	Composite	None	--
TSS – Effluent Gross	mg/L	1/Week	Composite	None	--
TSS – Net (3)	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Oil and Grease	mg/L	1/Week	Grab	Daily Max & Mo Avg	1
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Phenol	µg/L	1/Month	Grab	Daily Max & Mo Avg	10
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Ammonia (as N)	mg/L	1/Week	Composite	Daily Max & Mo Avg	0.07
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Sulfide, Total	µg/L	1/Week	Composite	Daily Max & Mo Avg	--
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Sulfide, Dissolved	µg/L	1/Week	Composite	Daily Max & Mo Avg	--
Hydrogen Sulfide (H_2S) (4)	µg/L	1/Week	Calculated	Daily Max & Mo Avg	20
Chromium, TR	µg/L	1/Month	Composite	Daily Max & Mo Avg	10
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Chromium, Hexavalent	µg/L	1/Month	Composite	Daily Max & Mo Avg	2
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Arsenic, TR	µg/L	1/Week	Composite	Daily Max & Mo Avg	1
Total Residual Chlorine, Net	µg/L	1/Week	Grab	Daily Max & Mo Avg	50
Fluoride	mg/L	1/Quarter	Composite	Report	200

Parameter	Units	Monitoring Frequency	Type	Reporting Requirement	RL
Aluminum, Dissolved	µg/L	1/Quarter	Composite	Report	9
Cyanide	µg/L	1/Quarter	Grab	Report	3
Iron, TR	µg/L	1/Quarter	Composite	Report	20
Lead, TR	µg/L	1/Quarter	Composite	Report	0.3
Mercury, TR	µg/L	1/Quarter	Composite	Report	0.005
Selenium, TR	µg/L	1/Quarter	Composite	Report	1
Alpha Emitters	pCi/L	2/Year	Composite	Report	--
Beta Emitters	mrem/yr	2/Year	Composite	Report	--
Radium 228 + total	pCi/L	2/Year	Composite	Report	--
Nitrate + Nitrite (Nov 1 – July 31)	mg/L	1/Quarter	Composite	Daily Max & Mo Avg	0.02
Nitrate + Nitrite (Aug 1 – Oct 31)	mg/L	1/Week (5)	Composite	Daily Max & Mo Avg	0.02
Total Kjeldahl Nitrogen (TKN)	mg/L	1/Week (5)	Composite	Mo Avg	0.225
TN (6)	mg/L	1/Month (5)	Calculated	Mo Avg	0.245
	lb/day	1/Month (5)	Calculated	Mo Avg	--
TP	mg/L	1/Week (5)	Composite	Mo Avg	0.003
	lb/day	1/Month (5)	Calculated	Mo Avg	--
Temperature	° C	1/Month	Instantaneous	Daily Max & Mo Avg	0.1
Whole Effluent Toxicity, Acute	% Effluent	1/Quarter (7)	Grab	Pass/Fail	--

Footnotes: RL = Reporting Level

(1) The effluent monitoring location must be after all treatment has been completed (*i.e.*, downstream from all treatment units, and prior to entry to the receiving waters).
(2) Requires recording device or totalizer.
(3) Mass-based net TSS calculated by first determining mass-based net TSS discharge on a daily basis, then determining daily maximum and monthly average for the month.
(4) H2S concentrations are calculated based on the dissolved sulfide concentration and the sample pH and other parameters at time of sampling, in accordance with Standard Methods 4500-S2- H, unless another method is proposed by CHS and accepted by DEQ. Field data (pH, conductivity (µmhos/cm) and temperature), taken of an unpreserved water sample shall be recorded at the time the dissolved sulfide sample is collected. This field data must be used in the H2S calculations.
(5) Monitoring required only during the summer season of August 1 – October 31st.
(6) TN is the sum of Nitrate+Nitrite and TKN.
(7) Per the 2021/2022 TIE/TRE, two species conducted at least monthly until CHS is approved to revert to quarterly. At minimum, failure of any acute WET test requires that the permittee comply with the Permit's Special Conditions.

Composite samples shall, as a minimum, be composed of four or more discrete aliquots (samples) of equal volume. The aliquots shall be combined in a single container for analysis (simple composite). The time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours.

Yellowstone River – Ambient Conditions

As a minimum, the following constituents shall be monitored for the Yellowstone River at the frequency and with the type of measurement indicated. Results must be provided on the NetDMRs. CHS must use a sufficiently sensitive method to detect the parameters at or above the RRV as specified in Circular DEQ-7 or other Reporting Level specified by DEQ; if this is not possible for any of the samples an explanation must be provided. Upstream Monitoring Requirements as specified in this section shall be conducted beginning in **2022** through **2025**.

Table FS-21 Upstream Monitoring Requirements

Parameter	Units	Monitoring Frequency	Type	RL
Sulfide, Dissolved	µg/L	1/Quarter	Grab	--
Hydrogen Sulfide (H_2S)	µg/L	1/Quarter (1)	Calculated	20
pH	s.u.	1/Quarter (1)	Instantaneous	0.1
Conductivity	µmhos/cm	Optional for H_2S (1)	Instantaneous/Grab	--
Total Dissolved Solids	mg/L	Optional for H_2S (1)	Grab	--
Temperature	°C	1/Quarter (1)	Instantaneous	0.1
Hardness, as $CaCO_3$	mg/L	1/Quarter	Grab	--
Total Nitrogen (2)	µg/L	1/Month (3)	Grab or Calculated	0.245
Total Phosphorus	µg/L	1/Month (3)	Grab	0.003
Aluminum, Dissolved	µg/L	1/Quarter	Grab	9
Cyanide	µg/L	1/Quarter	Grab	3
Iron, TR	µg/L	1/Quarter	Grab	20
Lead, TR	µg/L	1/Quarter	Grab	0.3
Mercury	µg/L	1/Quarter	Grab	0.005
Selenium	µg/L	1/Quarter	Grab	1
Alpha emitters	pCi/L	1/Quarter	Instantaneous	--
Beta emitters	mrem/yr	1/Quarter	Instantaneous	--
Radium, 228 and total	pCi/L	1/Quarter	Instantaneous	--

Footnotes: RL = Reporting Level

(1) H_2S concentrations are calculated based on the dissolved sulfide concentration and pH (using look-up table), and potentially TDS and other field parameters (for equation method) in accordance with Standard Methods 4500-S^{2-} H, unless another method is proposed by CHS and accepted by DEQ. Field data taken of an unpreserved water sample shall be recorded *at the time the dissolved sulfide sample is collected*. This field data must be used to calculate the H_2S concentration from the laboratory-provided dissolved sulfide data.

(2) TN can be determined by either the persulfate method or the sum of Nitrate + Nitrite and TKN, as long as the method is capable of having a detect or meeting the RRV.

(3) Monitoring required only during the Yellowstone summer season of August 1 – October 31st.

B. Whole Effluent Toxicity (WET)

CHS initiated a Toxicity Identification Evaluation / Toxicity Reduction Evaluation (TIE/TRE) in 2021 and continues to investigate probable sources of WET failures for both species and conduct accelerated (at least monthly) WET testing. CHS will need to continue monthly two-species WET testing until they can demonstrate treatment improvements that are sufficient to pass at least six months. At this point CHS can request to revert to two-species on a quarterly basis and DEQ will review and agree, if appropriate.

For each WET test, CHS shall conduct an acute static renewal toxicity test on a grab sample of the effluent. Testing will employ two species per quarter and will consist of five effluent concentrations (100, 50, 25, 12.5, 6.25 percent effluent) and a control. Dilution water and the control shall consist of the receiving water.

The toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to*

Freshwater and Marine Organisms, EPA-821-R-02-012 and the *Region VIII EPA NPDES Acute Test Conditions - Static Renewal Whole Effluent Toxicity Test* testing protocols. The permittee shall conduct an acute 48-hour static renewal toxicity test using *Ceriodaphnia* sp. and an acute 96-hour static renewal toxicity test using fathead minnows (*Pimephales promelas*). The control of pH in the toxicity test utilizing CO2 enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration. If more than 10 percent control mortality occurs, the test is considered invalid and shall be repeated until satisfactory control survival is achieved unless a specific individual exception is granted by DEQ. This exception may be granted if less than 10 percent mortality was observed at the dilutions containing high effluent concentrations.

If acute toxicity occurs in a routine test (not as part of the accelerated testing for a TIE/TRE), an additional test is required to be conducted within 14 days of the date of the initial sample. Should acute toxicity occur in the second test, testing shall occur once a month until further notified by DEQ. In all cases, the results of all toxicity tests must be submitted to the Department in accordance with Part II of this permit.

Failure to initiate or conduct an adequate TIE/TRE, or delays in the conduct of such tests, shall not be considered a justification for noncompliance with the whole effluent toxicity limits contained in Part I.B of this permit. A TRE plan needs to be submitted to DEQ within 45 days after confirmation of the continuance of the effluent toxicity.

The quarterly WET test results from the laboratory shall be reported along with the NetDMR report no later than the 28th day of the month following the completed reporting period. The format for the laboratory report shall be consistent with the latest revision of the EPA form Region VIII Guidance for Acute Whole Effluent Reporting and shall include all chemical and physical data as specified.

Typically, if the results for four consecutive quarters of testing indicate no acute toxicity, the permittee may request a reduction to semi-annual acute toxicity testing on two species. However, because of the frequency of WET failures over the past year, CHS is not eligible to further reduce the frequency to semi-annual during this permit cycle. CHS must continue the accelerated testing until they are able to prove the TIE/TRE was successful (by passing six months of two-species tests); at that time DEQ will review and, if appropriate, approve the reduction to quarterly two-species tests.

V. RATIONALE FOR SPECIAL CONDITIONS

A. Additional Monitoring and Special Studies

1. Whole Effluent Toxicity (TIE/TRE)

Should the effluent exceed the acute toxicity limitation in a routine test and is confirmed as persistent by the additional test (as discussed in this Fact Sheet Part IV.B), a TIE/TRE shall be undertaken by the permittee to establish the cause of the toxicity, locate the source(s) of the toxicity, and develop control of, or treatment for the toxicity. Failure to conduct an adequate TIE/TRE, or delays in the conduct of such tests, shall not be considered a justification for

noncompliance with the whole effluent toxicity limits. A TRE plan needs to be submitted to DEQ within 45 days after confirmation of the continuance of the effluent toxicity.

2. Arsenic and Hydrogen Sulfide

DEQ has determined that CHS cannot immediately demonstrate compliance with the new total recoverable arsenic and hydrogen sulfide limits. Since they are actively investigating source controls and completing the installation of tertiary arsenic treatment by this fall, DEQ has determined that it is appropriate to provide a three-year compliance schedule.

Beginning in January 2023, CHS shall submit an annual report to DEQ no later than January 28th for each year, with the final report due November 14, 2025. The report shall summarize the progress made in achieving compliance with the arsenic and hydrogen sulfide effluent limits over the previous year and the actions planned for the upcoming year.

The first year's annual report will include a Standard Operating Procedure for collecting data and computing the Hydrogen Sulfide concentrations for both the effluent and the ambient conditions. The raw data, computations, and results for the monthly NetDMR hydrogen sulfide values will be attached as a report in FACTS or NetDMR.

B. Rationale for Standard Conditions

Standard Conditions, which apply to all MPDES permits in accordance with ARM 17.30.1342 and additional conditions applicable to specified categories of permits in accordance with ARM 17.30.1343, are included in Section III of this permit.

VI. NONSIGNIFICANCE DETERMINATION

The proposed effluent limits have been maintained below the nondegradation levels and do not constitute a new or increased source of pollutants pursuant to ARM 17.30.702(16). Therefore, a nonsignificance analysis is not required.

VII. APPENDICES

Appendix A.	Facility Layout
Appendix B.	Water Flow Diagram
Appendix C.	Wastewater Treatment System Diagram
Appendix D.	TBEL Calculations
Appendix E.	RP Analysis and WQBEL Calculations

By: Christine Weaver, August 2022


Not secure | svc.mt.gov/msl/mtcadastral
Montana Cadastral
SEARCH
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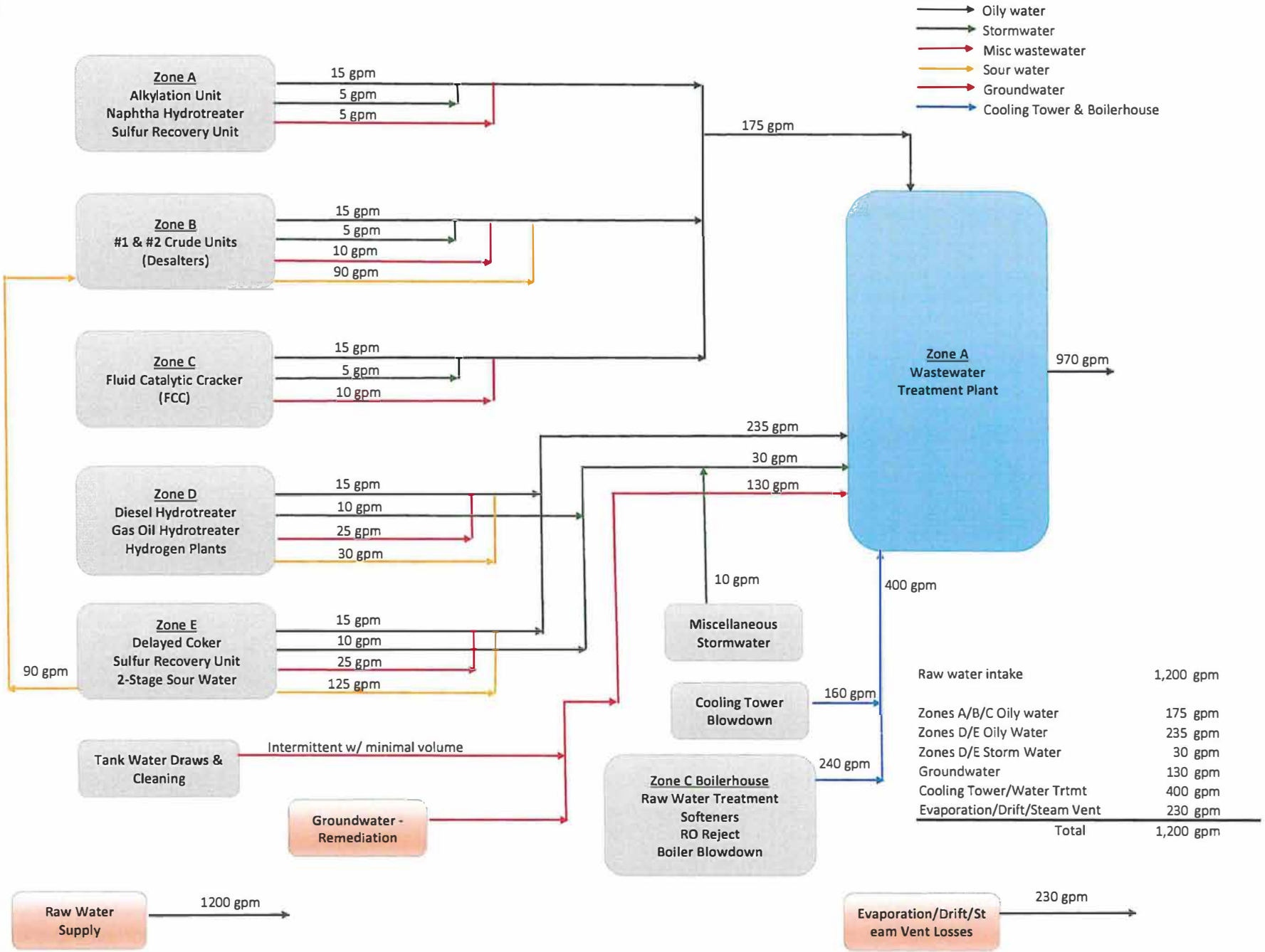
Try Cadastral Beta
Print Button workarounds
City of Laurel
Appendix A
Refinery Offices
Retention Ponds
Outfall 001
CHS Laurel Refinery
Refinery Wastewater Treatment Plant
New Forced Main Effluent Pipe
Effluent Outfalls 002/003
New Final Effluent Basins
Arsenic Treatment System (future)
S 3rd St
S 4th St
S 5th St
S 6th St
S 9th St
S Laurel Rd
Bernhardt Rd
Nutting Rd
Frank Rd
Bobcat Dr
Grizzly Cir
Bobcat Cir
Badger Square
Yellowstone Ave S
Lindy Ln
087
April 2020

Appendix B

CHS Laurel Refinery

Flow Schematic/Wastewater Balance (2018-2019)

Mar-20



Appendix C

CHS Refinery Wastewater Treatment System Simplified Flow Diagram (2020)

New equipment shown in orange.

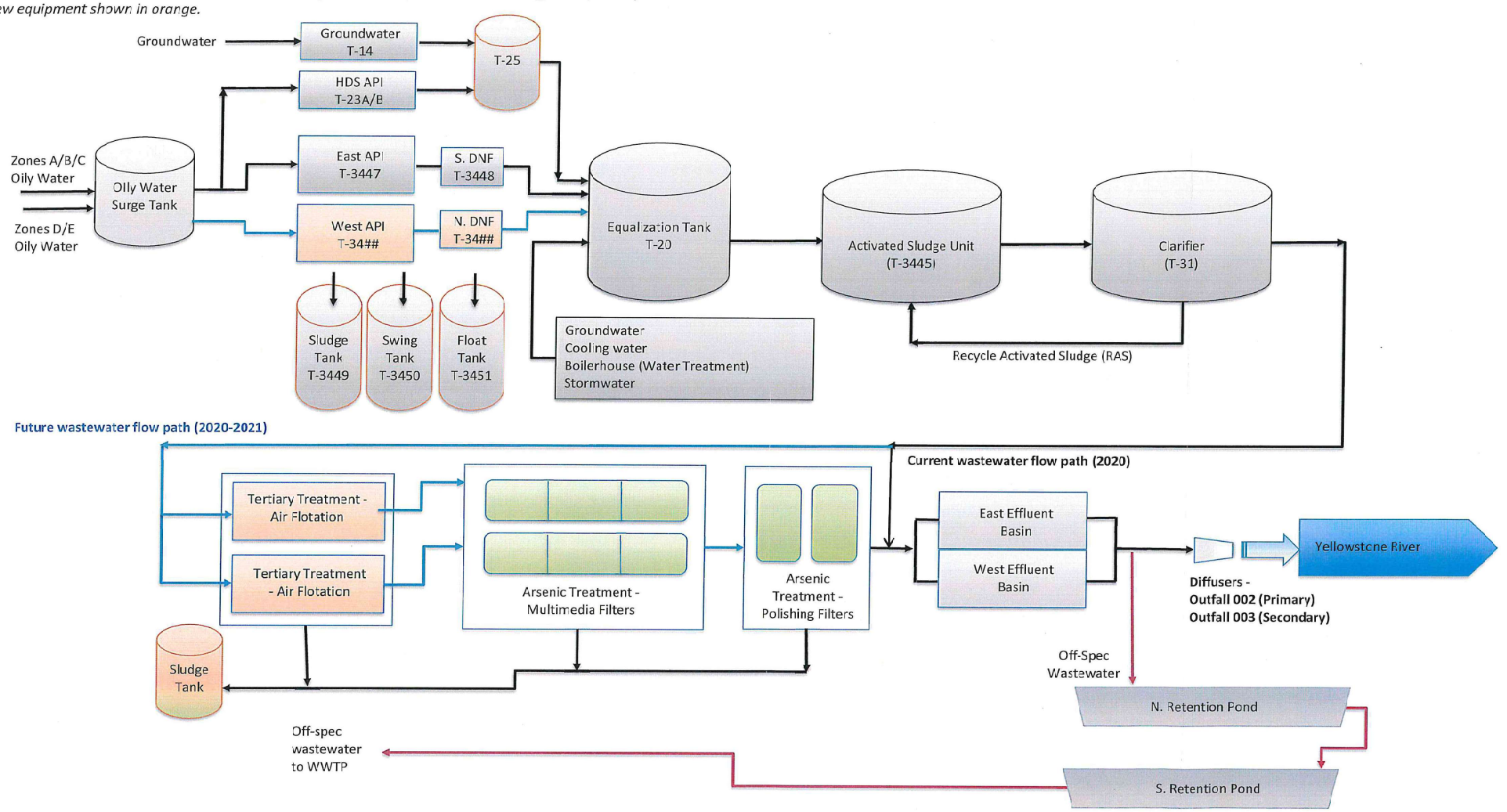


Table D-1. CHS Laurel Refinery Process Configuration Worksheet ("Current")

Process [1]	2021 Process Feedstock Rate, BPD	Process Feedstock Rate Relative to Refinery Feedstock Rate	Weighting Factor [2]	Process Configuration
Crude				
Atmospheric Distillation	64,000	1.00		
Desalters	64,000	1.00		
Vacuum Distillation	29,000	0.45		
		2.45	1	2.5
Cracking & Coking				
Fluid Cat Cracker	16,800	0.26		
Delayed Coking	15,000	0.23		
Catalytic Hydrotreating				
Reformer Feeds	17,600	0.28		
Diesel	25,000	0.39		
Cracking Feeds	19,800	0.31		
		1.47	6	8.8
Asphalt				
Production	6,500	0.102		
		0.102	12	1.2
Reforming & Alkylation				
Reforming (semi-regen)	13,600	0.21		
Alkylation (HF Production)	3,750	0.06		
		0.27	1	0.3
			Total Refinery Process Configuration:	**12.8**

Footnote:

(1) Processes organized under sub-categories as listed in Appendix A to Part 419.

(2) Weighting factors provided in 40 CFR 419.42(b)(3), except DEQ assigned Reforming & Alkylation as a "1" since the processes were not assigned a weighting factor and they did not fit into any of the other process categories.

Table D-2. CHS Laurel Refinery Aggregate Factor Worksheet ("Current")

Total Refinery Aggregate Factor = Size Factor x Process Factor		
Size Factor	40 CFR 419.22(b)(1): for 50,000 to 74,900 BPD:	1.04
Process Factor	40 CFR 419.22(b)(2): Total Refinery Process Configuration ≥ 9.5:	1.89
	Total Refinery Aggregate Factor:	**1.97**

Footnote:

(1) Total Refinery Process Configuration developed in Table D-1.

Table D-3 BPT, BAT, and BCT Base Loadings Rates per 1000 BPD Feedstock

Pollutant	40 CFR 419 Subpart B Effluent Limitations, lbs per 1000 BPD					
	BPT		BAT		BCT	
	max daily	avg monthly	max daily	avg monthly	max daily	avg monthly
BOD_5	9.9	5.5			9.9	5.5
TSS	6.9	4.4			6.9	4.4
COD	74	38	74	38		
Oil & grease	3.0	1.6			3.0	1.6
Phenolics	0.074	0.036	(1)	(1)		
Ammonia-N	6.6	3.0	6.6	3.0		
Sulfide	0.065	0.029	0.065	0.029		
Chromium, Total	0.150	0.088	(1)	(1)		
Hexavalent Chromium	0.012	0.0056	(1)	(1)		
pH	6.0-9.0	6.0-9.0			6.0-9.0	6.0-9.0

Footnote:
(1) BAT for these three parameters (pheonolics, total Cr, and hex Cr) derived as per 40 CFR 419.23(c)(1); see Tables D-4 and D-5.

Table D-4. Amended BAT Base Loadings Rates per 1000 BPD Feedstock [40 CFR 419.23(c)(1)]

Refining Process	amended BAT, lbs per 1000 BPD					
	phenolics		total Cr		hex Cr	
	max daily	avg monthly	max daily	avg monthly	max daily	avg monthly
Crude	0.0130	0.003	0.011	0.004	0.0007	0.0003
Cracking/Coking	0.147	0.036	0.119	0.041	0.0076	0.0034
Asphalt	0.079	0.019	0.064	0.022	0.0041	0.0019
Lube	0.369	0.09	0.299	0.104	0.0192	0.0087
Reforming/Alkylation	0.132	0.032	0.107	0.037	0.0069	0.0031

Table D-5. Amended BAT Loadings, CHS Laurel Refinery

Refining Process	Throughput, 1000 BPD	amended BAT, lbs/day					
		phenolics		total Cr		hex Cr	
		max daily	avg monthly	max daily	avg monthly	max daily	avg monthly
Crude	157	2.04	0.47	1.73	0.63	0.11	0.05
Cracking/Coking	94.2	13.85	3.39	11.2	3.86	0.72	0.32
Asphalt	6.5	0.51	0.12	0.42	0.14	0.03	0.01
Lube	0	0.00	0.00	0.00	0.00	0.00	0.00
Reforming/Alkylation	17.35	2.29	0.56	1.86	0.64	0.12	0.05
Total Refinery Limit:		18.7	4.5	15.2	5.3	1.0	0.4

Table D-6. Comparison of BPT and Amended BAT Limits (1)

Pollutant	Max Daily (lb/day)		Avg Monthly (lb/day)	
	BPT	amended BAT	BPT	amended BAT
phenolics	***9.3***	18.7	***4.53***	4.54
total Cr	18.9	***15.2***	11.1	***5.3***
hex Cr	1.5	***1.0***	0.7	***0.4***

Footnote:
(1) Most stringent limit is indicated in bold-italics and shading.

Table D-7. CHS Laurel Refinery Daily Maximum Effluent Limits ("Current")

Basis/Parameter	Effluent Limitation Factor (lb/1000 bbl)	Aggregate Factor (=Size x Process)	Refinery Feedstock Rate (1000 BPD)	Effluent Limitation (lb/day)
BPT (40 CFR 419.22)				
BOD_5	9.9			1245
TSS	6.9			868
COD	74			9309
Oil & grease	3.0	1.97	64	377
Phenols	0.074			9.3
Chromium, Total	0.150			19
Chromium, hexavalent	0.012			1.5
BAT (40 CFR 419.23)				
COD	74			9309
Ammonia	6.6	1.97	64	830
Sulfide	0.065			8.2
Sum of Product Effluent Limits [(1)]				
Phenols		NA		18.7
Chromium, Total		NA		15.2
Hex Chromium		NA		0.97
BCT (40 CFR 419.24) [(2)]				
BOD_5	9.9			1245
TSS	6.9	1.97	64	868
Oil & Grease	3.0			377

Footnote:
(1) BAT for these three parameters derived as per 40 CFR 419.23(c)(1); see Tables D-4 and D-5.
(2) In addition, pH is limited to 6.0 - 9.0.

Table D-8. CHS Laurel Refinery Monthly Average Effluent Limits ("Current")

Basis/Parameter	Effluent Limitation Factor (lb/1000 bbl)	Aggregate Factor (=Size x Process)	Refinery Feedstock Rate (1000 BPD)	Effluent Limitation (lb/day)
BPT (40 CFR 419.22)				
BOD_5	5.5			692
TSS	4.4			554
COD	38			4831
Oil & grease	1.6	1.97	64	201
Phenols	0.036			4.5
Chromium, Total	0.088			11
Chromium, hexavalent	0.0056			0.7
BAT (40 CFR 419.23)				
COD	38.4			4831
Ammonia	3.0	1.97	64	377
Sulfide	0.029			3.6
Sum of Product Effluent Limits [(1)]				
Phenols		NA		4.5
Chromium, Total		NA		5.3
Hex Chromium		NA		0.4
BCT (40 CFR 419.24) [(2)]				
BOD_5	5.5			692
TSS	4.4	1.97	64	554
Oil & Grease	1.6			201

Footnote:
(1) BAT for these three parameters derived as per 40 CFR 419.23(c)(1); see Tables D-4 and D-5.
(2) In addition, pH must remain within the range of 6.0 - 9.0 su.

Table D-9. Calculation of Storm Water Pollutant Credits, CHS Laurel Refinery "Current" (40 CFR 419 Subpart B)

Pollutant	Treatment	Estimated Daily Flow, 1000 gal/day	Daily Maximum		Monthly Average	
			lb/1000 gal	Limit (lb/day)	lb/1000 gal	Limit (lb/day)
BOD	BPT/BCT	26.8	0.4	10.73	0.22	5.90
TSS	BPT/BCT		0.28	7.51	0.18	4.83
COD	BPT/BAT		3.0	80.5	1.5	40.2
Oil and grease	BPT/BCT		0.13	3.49	0.067	1.80
Phenols	BPT/BAT		0.0029	0.0778	0.0014	0.0376
Chromium, total	BAT		0.005	0.1341	0.0018	0.0483
Chromium, hexavalent	BPT/BAT		0.00052	0.0139	0.00023	0.0062

STORM WATER CREDIT DETERMINATION

Process area ("Current"):	28.0	ac
	43,560	sft/ac
	1,219,680	sft
Relative storm water runoff :	90%	
Estimated storm water runoff area:	1,097,712	sft
Estimated mean annual rainfall, Laurel MT:	14.3	in/yr
	12	in/ft
	1.19	ft/yr
	1,097,712	sf runoff area
	1,309,022	cu ft runoff volume
	7.48	gal/cu ft
	9,791,481	gal/yr
=	**26,826**	**gal/day**

Table D-10. CHS Technology-based Effluent Limitations ("Current")

Parameter	Max daily (lb/day)			Avg monthly (lb/day)			Basis
	Process	SW	**Total**	Process	SW	**Total**	
BOD_5	1245	10.7	**1256**	692	5.9	**698**	BPT/BCT
TSS	868	7.5	**876**	554	5	**558**	BPT/BCT
COD	9309	80	**9390**	4831	40	**4871**	BPT/BAT
Oil & grease	377	3.5	**381**	201	1.8	**203**	BPT/BCT
Phenolics	9.3	0.08	**9.4**	4.5	0.04	**4.6**	BPT
Ammonia-N	830	0	**830**	377	0	**377**	BAT
Sulfide	8.2	0	**8.2**	3.6	0.0	**3.6**	BAT
Chromium, Total	15.2	0.1	**15.3**	5.3	0.0	**5.3**	BAT
Hexavalent Chromium	0.97	0.01	**0.99**	0.43	0.01	**0.44**	BAT

Footnote:
(1) In addition, pH must remain within the range of 6.0 - 9.0 su.

Table E-1: CHS Laurel Refinery Critical Effluent Concentrations (Cd)

	(FN)	Units	RRV	Maximum Observed (1) 2020 Form 2C	Maximum Observed (1) CHS Spreadsheet	Maximum Observed (1) DMR	Max Conc	TSD #	TSD CV	TSD Pn (% for n samples at 95th%)	TSD Z-Score	TSD Multiplier	C_d
TBELs													
Ammonia		mg/L	0.07	9.7	2020 - 4/2022	10.7	**10.7**	*236*	*0.8*	*0.99*	*2.24*	***0.65***	**7.0**
Oil & Grease		mg/L	1.0	5.0		8.0	**8.0**	*235*	*0.58*	*0.99*	*2.24*	***0.7***	**5.8**
Chromium, TR	(2)	µg/L	10	< *10*		*10*	***10***	*104*	*0.6*	*0.97*	*1.90*	***0.86***	***9***
Chromium, Hexavalent		µg/L	2	< *10*		*10*	***10***	*28*	*0.6*	*0.90*	*1.27*	***1.22***	***12***
Phenol		µg/L	10	40			**40**	*105*	*0.6*	*0.97*	*1.91*	***0.86***	**34**
Nutrients													
Nitrate+Nitrite (N+N)		mg/L	0.02	8.3		6.3	**8.3**	*73*	*1.1*	*0.96*	*1.75*	***0.90***	**7.5**
Metals/Toxics													
Chlorine, Total Residual	(3)	mg/L	0.1		0.42		**0.42**	25	*0.75*	*0.89*	*1.21*	***1.33***	**0.56**
Fluoride		mg/L	0.2	13		5	**13**	*52*	*0.43*	*0.94*	*1.59*	***1.02***	**13.3**
H_2S	(4)	µg/L	20		39		**39**	*71*	*0.80*	*0.96*	*1.74*	***0.94***	**36.1**
Aluminum, Dissolved		µg/L	9.0		230		**230**	*4*	*0.60*	*0.47*	*(0.07)*	***2.59***	**595**
Antimony, TR	(2)	µg/L	0.5	0.8			**0.8**	*1*	*0.60*	*0.05*	*(1.64)*	***6.2***	**5.0**
Arsenic, TR	(2)	µg/L	1.0			42	**42**	*28*	*0.27*	*0.90*	*1.27*	***1.10***	**46**
Barium, TR	(2)	µg/L	3.0	137			**137**	*1*	*0.60*	*0.05*	*(1.64)*	***6.2***	**849**
Cyanide		µg/L	3.0			5	**5.0**	*5*	*0.60*	*0.55*	*0.12*	***2.3***	**11.6**
Iron, TR	(2)	µg/L	20	840			**840**	*2*	*0.60*	*0.22*	*(0.76)*	***3.79***	**3,188**
Lead, TR	(2)	µg/L	0.3	1.5		17.7	**17.7**	*5*	*0.60*	*0.55*	*0.12*	***2.3***	**41.1**
Mercury, TR	(2)	µg/L	0.005	0.07		0.07	**0.07**	*5*	*0.60*	*0.55*	*0.12*	***2.3***	**0.16**
Nickel, TR	(2)	µg/L	2.0	4.0			**4.0**	*1*	*0.60*	*0.05*	*(1.64)*	***6.2***	**24.8**
Selenium, TR	(2)	µg/L	1.0	112		157	**157**	*52*	*0.37*	*0.94*	*1.59*	***1.02***	**160**

Footnote:
(1) 2020 Form 2C data through July 2020; DMRs through April 2022. Arsenic effluent data since October 2021, cyanide data since 2019.
(2) TR = Total Recoverable
(3) Net Total Residual Chlorine (TRC) due to interference with manganese oxide.
(4) TBEL regulated as Sulfide; WQBEL standard expressed as Hydrogen Sulfide (H_2S). Max H_2S calculated based on dissolved sulfide and pH.

Table #E-2: Yellowstone River - Ambient Conditions (75th percentile)

	2015	**2022**		2022 Source
TBELs				
Ammonia	0.05	**0.05**	mg/L	CHS 2015-2020 (5 samples)
Oil & Grease	3.5	**3.5**	mg/L	No new data, assume same as 2015 (CHS Att H-1)
Sulfide, Total		**40**	µg/L	CHS 2017 - 2022 (19 samples)
Chromium, TR	< 10	*2*	µg/L	No new data, Storet 2005 (2 points)
Chromium, Hexavalent	<10	*10*	µg/L	No new data, assume same as 2015 (CHS Att H-1)
Phenol	1	**1**	µg/L	No new data, assume same as 2015
Nutrients				
Nitrate+Nitrite (N+N)	0.54	**0.24**	mg/L	CHS 2017 - 2022 (188 samples)
Metals/Toxics				
Chlorine, Total Residual	0.00	**0.00**	mg/L	
Fluoride	0.48	**0.60**	mg/L	CHS 2018 - 2022 (133 samples)
H2S	*0.003*	***14.4***	µg/L	DEQ Fact Sheet Calculations - ambient is < 14 due to nondetects.
Aluminum, Dissolved	22.8	**71**	µg/L	MDEQ_WQ_WQX-Y06YELSR06 (2016 - 2 samples)
Antimony, TR	0.6	**0.6**	µg/L	No new data, assume same as 2015
Arsenic, TR	13.1	**13**	µg/L	NAS = assumed background
Barium, TR	30.5	**30.5**	µg/L	No new data, assume same as 2015
Cyanide	5	**3.5**	µg/L	Downstream (Phillips66 Ambient Monitoring). No other data.
Iron, TR	183	**400**	µg/L	CHS 2018 - 2022 (132 samples)
Lead, TR	2	**1.6**	µg/L	MDEQ_WQ_WQX-Y06YELSR06 (2016 - 2 samples)
Mercury, TR		**0.029**	µg/L	Downstream (Phillips66 Ambient Monitoring). No other data.
Nickel, TR	2	**2**	µg/L	No new data, assume same as 2015
Selenium, TR	0.5	***1***	µg/L	CHS 2018 - 2022 (133 samples)

Table E-3: Yellowstone River - Outfall 002 Reasonable Potential Analysis

	Units	C_d (1)	C_s (2)	Acute C_r (3)	Acute Std	Acute C_r > Std?	Chronic/HH C_r	Chronic Std	Chronic C_r > Std?	Human Health Std	Human Health C_r > Std?	RP? Notes:
TBELs												
Ammonia	mg/L	7.0	0.05	**0.2**	2.6	NO	**0.09**	1.0	NO	NA	NO	No.
Oil & Grease	mg/L	5.8	3.50	**3.6**	10	NO	**3.5**	10	NO	NA	NO	**Yes due to narrative.**
Chromium, TR	µg/L	*8.6*	2.0	**2.2**	NA	NO	**2.0**	NA	NO	100	NO	No.
Chromium, Hexavalent	µg/L	*12*	10.0	**10.1**	16	NO	**10.0**	11	NO	NA	NO	No.
Phenol	µg/L	34	1.0	**1.9**	NA	NO	**1.2**	NA	NO	4,000	NO	No.
Nutrients												
Nitrate+Nitrite (N+N)	mg/L	7.5	0.2	**0.4**	NA	NO	**0.3**	NA	NO	10	NO	No.
Metals/Toxics												
Chlorine, Total Residual	mg/L	0.56	-	**0.016**	0.019	NO	**0.003**	0.011	NO	4.0	NO	No.
Fluoride	mg/L	13.3	0.6	**1.0**	NA	NO	**0.7**	NA	NO	4.0	NO	No.
H2S	µg/L	36	14	***15***	NA	NO	***15***	**2**	**YES**	NA	NO	**Yes. Chronic RP.**
Aluminum, Dissolved	µg/L	595	71	**86**	750	NO	**74**	87	NO	NA	NO	No.
Antimony, TR	µg/L	5.0	0.6	**0.7**	NA	NO	**0.6**	NA	NO	5.6	NO	No.
Arsenic, TR	**µg/L**	**46**	**13.0**	**46**	**340**	**NO**	**46**	**150**	**NO**	**13**	**YES**	**Yes. HHS based on ARM 17.30.618(2)(a) and no mixing.**
Barium, TR	µg/L	849	30.5	**54**	NA	NO	**35**	NA	NO	1,000	NO	No.
Cyanide	µg/L	12	3.5	**3.7**	22.0	NO	**3.5**	5.2	NO	4	NO	No.
Iron, TR	µg/L	3,188	400	**479**	NA	NO	**414**	1000	NO	NA	NO	No.
Lead, TR	µg/L	41	1.6	**2.7**	67	NO	**1.8**	2.6	NO	15	NO	No.
Mercury, TR	µg/L	0.16	0.029	**0.033**	1.7	NO	**0.03**	0.91	NO	0.05	NO	No.
Nickel, TR	µg/L	25	2.0	**2.6**	413	NO	**2.1**	45.9	NO	100	NO	No.
Selenium, TR	µg/L	160	1.0	**5.5**	20	NO	**1.8**	5	NO	50	NO	No.

Footnotes:

(1) C_d = Critical discharge concentration, based on maximum observed (see Table E-1).

(2) Cs = critical upstream concentration is the 75th percentile, based on:

(3) C_r calculated based on a mass-balance equation using the following low flow assumptions (except arsenic gets no dilution):

$$Cr = \frac{(Qd \times Cd) + (Qs \times Cs)}{Qd + Qs}$$

Available Dilution - Yellowstone

Acute 7Q10 Qs 1026 cfs x % 11.8 = **78** mgd

Chronic 7Q10 Qs = 1026 cfs x % 48.1 = **319** mgd

Discharge for POR (2018-2022)

Acute Qd = **2.29** **mgd - Max Daily Flow**

Chronic Qd = **1.62** **mgd - Highest of Monthly Avg Flow**

Table E-4: Yellowstone River - Outfall 003 Reasonable Potential Analysis

	Units	C_d (1)	C_s (2)	Acute C_r (3)	Acute Std	Acute C_r > Std?	Chronic/HH C_r	Chronic Std	Chronic C_r > Std?	Human Health Std	Human Health C_r > Std?	RP? Notes:
TBELs												
Ammonia	mg/L	7.0	0.05	**0.4**	2.6	NO	**0.11**	1.0	NO	NA	NO	No.
Oil & Grease	mg/L	5.8	3.5	**3.6**	10	NO	**3.5**	10	NO	NA	NO	Yes, based on narrative.
Chromium, TR	µg/L	*8.6*	2.0	**2.3**	NA	NO	**2.1**	NA	NO	100	NO	No.
Chromium, Hexavalent	µg/L	*12*	10.0	***10***	16	NO	***10***	11	NO	NA	NO	No.
Phenol	µg/L	34	1.0	**2.6**	NA	NO	**1.3**	NA	NO	4,000	NO	No.
Nutrients												
Nitrate+Nitrite (N+N)	mg/L	7.5	0.2	**0.6**	NA	NO	**0.3**	NA	NO	10	NO	No.
Metals/Toxics												
Chlorine, Total Residual	**mg/L**	**0.56**	-	**0.027**	**0.019**	**YES**	**0.005**	**0.011**	**NO**	**4.0**	**NO**	**Yes, Acute RP.**
Fluoride	mg/L	13.3	0.6	**1.2**	NA	NO	**0.7**	NA	NO	4.0	NO	No.
H2S	µg/L	36	*14*	***15***	NA	NO	***14.6***	**2**	**YES**	NA	NA	**Yes. Chronic RP.**
									NO		NO	
Aluminum, Dissolved	µg/L	595	71	**96**	750	NO	**76**	87	NO	NA	NO	No.
Antimony, TR	µg/L	5.0	0.6	**0.8**	NA	NO	**0.6**	NA	NO	5.6	NO	No.
Arsenic, TR	µg/L	46	13.0	**46**	340	NO	**46**	150	NO	**10**	**YES**	**Yes.** HHS based on ARM 17.30.618(2)(a) and no mixing.
Barium, TR	µg/L	849	30.5	**70**	NA	NO	**38**	NA	NO	1,000	NO	No.
Cyanide	µg/L	12	3.5	**3.9**	22.0	NO	**3.6**	5.2	NO	4	NO	No.
Iron, TR	µg/L	3,188	400	**533**	NA	NO	**425**	1000	NO	NA	NO	No.
Lead, TR	µg/L	41	1.6	**3.5**	67	NO	**2.0**	2.6	NO	15	NO	No.
Mercury, TR	µg/L	0.16	0.029	**0.035**	1.7	NO	**0.03**	0.91	NO	0.05	NO	No.
Nickel, TR	µg/L	25	2.0	**3.1**	413	NO	**2.2**	45.9	NO	100	NO	No.
Selenium, TR	µg/L	160	1.0	**8.6**	20	NO	**2.4**	5	NO	50	NO	No.

Footnotes:

(1) C_d = Critical discharge concentration, based on maximum observed (see Table E-1).

(2) Cs = critical upstream concentration is the 75th percentile, based on:

(3) C_r calculated based on a mass-balance equation using the following low flow assumptions:

$$Cr = \frac{(Qd \times Cd) + (Qs \times Cs)}{Qd + Qs}$$

Available Dilution - Yellowstone

Acute 7Q10 Qs	1026	cfs x % 6.9	=	**46**	**mgd**
Chronic 7Q10 Qs =	1026	cfs x % 27.2	=	**180**	**mgd**

Discharge for POR (2018-2022)

Acute Qd =	**2.29**	**mgd - Max Daily Flow**
Chronic Qd =	**1.62**	**mgd - Highest of Monthly Avg Flow**

Table E-5: Numeric WQBEL Development for Yellowstone River (Outfall 002)

Parameters		Standards (C_r)			C_s			7Q10	Qs		Q_d		Wasteload Allocations (C_d)				LTA			n	WQBELs			
units in ug/L unless otherwise indicated		Acute	Chronic	HHS [1]	Background Stream Conc	Acute Dilution	Chronic Dilution		Acute	Chronic/ HHS	Acute	Chronic/ HHS	**Acute (WLA_a)**	**Chronic (WLA_c)**	**HHS**	CV	Acute (LTAa)	Chronic (LTAc)	**Minimum (LTAm)**		**Acute ALS**	**Chronic ALS**	**HH-Std**	
		µg/L	µg/L	µg/L	µg/L	%	%	cfs	mgd	mgd	mgd	mgd	µg/L	µg/L [3]	µg/L		µg/L	µg/L	**µg/L**		**MDL**	**AML**	**MDL**	**AML**
Hydrogen Sulfide	µg/L	NA	2.0	NA	*14.4*	11.8%	48%	1026	78	319	2.3	1.6	NA	2.0	NA	0.8	NA	0.9	**0.9**	4	3.5	**1.5**	**NA**	**NA**
Arsenic, TR	µg/L	340	150	13		0%	0%	0	0	0	2.3	1.6	340	150	13	0.27	190	111	111	4	198	137	**19**	**13**

Footnote:
(1) Arsenic HHS standard from ARM 17.30.618(2)(a), becomes average monthly limit. No mixing zone is allowed.

Table E-6: Numeric WQBEL Development for Yellowstone River (Outfall 003)

Parameters		Standards (C_r)			C_s			Qs		Q_d		Wasteload Allocations (C_d Footnote (1)			LTA					n	WQBELs			
		Acute	Chronic	HHS [1]	Background Stream Conc	Acute Dilution	Chronic Dilution	7Q10	Acute	Chronic/ HHS	Acute	Chronic/ HHS	Acute (WLA_a)	Chronic (WLA_c)	HHS	CV	Acute (LTAa)	Chronic (LTAc)	Minimum (LTAm)		Acute ALS	Chronic ALS	HH-Std	
						%	%	cfs	mgd	mgd	mgd	mgd									MDL	AML	MDL	AML
Total Residual Chlorine	mg/L	0.019	0.011	4	0.0	6.9%	27%	1026	45.8	180	2.3	1.6	0.40	0.011	4	0.8	0.10	0.0048	**0.0048**	4	**0.0194**	**0.0085**	4	NA
Hydrogen Sulfide	µg/L	NA	2	NA	*14.4*	11.8%	48%	1026	78	319	2.3	1.6	NA	2.0	NA	0.6	NA	1.1	**1.1**	4	3.3	1.6	NA	NA
Arsenic, TR	µg/L	340	150	13		0.0%	0%	0	0	0	2.3	1.6	340	150	13	0.27	190	111	**111**	4	198	137	**19**	**13**

Footnote:
(1) Arsenic HHS standard from ARM 17.30.618(2)(a), becomes average monthly limit. No mixing zone is allowed.

#E-7 Yellowstone River - Ammonia Stds Development

Freshwater Aquatic Life Standards for total ammonia nitrogen (mg/L NH_3-N plus NH_4-N) - footnote 7, Circular DEQ-7 (2019)

	Temperature˚C	**pH**	Water Quality Standard (mg/L ammonia-N)	
			Acute	**Chronic**
CMC (acute)	N/A	8.39	2.64	N/A
CCC (chronic)	18.7	8.39	N/A	1.00

#E-8 Yellowstone River Hardness-Based Metals Standards (from Circular DEQ-7, FN 12 rev June 2019)

Ambient Total Hardness (as $CaCO_3$) **86** **mg/L***

Cadmium		Copper		Chromium (III)		Lead		Nickel		Silver		Zinc	
Acute	*Chronic*	*Acute*	*Chronic*	*Acute*	*Chronic*	*Acute*	*Chronic*	*Acute*	*Chronic*	*Acute*	*Chronic*	*Acute*	*Chronic*
1.64 (µg/L)	0.70 (µg/L)	12.1 (µg/L)	8.2 (µg/L)	1594 (µg/L)	76 (µg/L)	67 (µg/L)	2.6 (µg/L)	413 (µg/L)	46 (µg/L)	3.1 (µg/L)	N/A (µg/L)	105 (µg/L)	105 (µg/L)
0.0016 (mg/L)	0.0007 (mg/L)	0.012 (mg/L)	0.0082 (mg/L)	1.6 (mg/L)	0.076 (mg/L)	0.067 (mg/L)	0.0026 (mg/L)	0.41 (mg/L)	0.046 (mg/L)	0.0031 (mg/L)	NA (mg/L)	0.11 (mg/L)	0.11 (mg/L)

*25th percentile of hardness 2011 - 2022

DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)
Environmental Assessment

Water Protection Bureau

Name of Project: CHS, Inc. – Laurel Refinery

Location of Project: 802 Highway 212 South
City/Town: Laurel, MT
County: Yellowstone

Description of Project:
This is the renewal of a Montana Pollutant Discharge Elimination System (MPDES) permit, MT0000264, for CHS, Inc. - Laurel Refinery.

Agency Action and Applicable Regulations:
The proposed action of DEQ is to renew the MPDES permit for a five-year cycle.

Administrative Rules of Montana (ARM Title 17 Chapter 30):
- Subchapter 2 – Water Quality Permit Application and Annual Fees.
- Subchapter 5 – Mixing Zones in Surface and Ground Water.
- Subchapter 6 – Surface Water Quality Standards.
- Subchapter 7 – Nondegradation of Water Quality.
- Subchapter 11 – Storm Water Discharges
- Subchapter 12 and 13 – Montana Pollutant Discharge Elimination System Standards.

Montana Water Quality Act, MCA 75-5-101 et. seq.

Summary of Issues:
DEQ proposes to renew the MPDES permit for the CHS, Inc. Laurel Refinery which discharges into the Yellowstone River. The discharge is treated through the facility's wastewater treatment facility that includes oil/water separation, equalization, an activated sludge unit and clarifier, and tertiary treatment for arsenic.

The draft MPDES permit includes technology-based effluent limits that have no significant changes from the previous permit, and water quality-based effluent limits for arsenic, total residual chlorine, and hydrogen sulfide to protect the beneficial uses of the receiving waters. The draft MPDES permit also include effluent and whole effluent toxicity monitoring requirements.

The permit will ensure compliance with the Montana Water Quality Act and protection of the beneficial uses of the Yellowstone River.

Affected Environment & Impacts of the Proposed Project:
Y = Impacts may occur (explain under Potential Impacts).
N = Not present or No Impact will likely occur

IMPACTS ON THE PHYSICAL ENVIRONMENT	
RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES
1. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE: Are soils present which are fragile, erosive, susceptible to compaction, or unstable? Are there unusual or unstable geologic features? Are there special reclamation considerations?	(N) This facility is long established and represents no new impacts. Facility production expansion has (and will) occur within the existing facility boundary.
2. WATER QUALITY, QUANTITY AND DISTRIBUTION: Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality?	(N) The facility is long established and represents no new impacts. Drinking water wells and the City of Laurel Water Treatment Plant intake are located upgradient from the facility. Effluent limits and monitoring protect the Yellowstone River.
3. AIR QUALITY: Will pollutants or particulate be produced? Is the project influenced by air quality regulations or zones (Class I airshed)?	(N) Sources of air pollution are covered under the facility's Title V operating permit.
4. VEGETATION COVER, QUANTITY AND QUALITY: Will vegetative communities be significantly impacted? Are any rare plants or cover types present?	(N) This facility is long established and represents no new impacts.
5. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS: Is there substantial use of the area by important wildlife, birds or fish?	(N) This facility is long established and represents no new impacts.
6. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES: Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Species of special concern?	(N) This facility is long established and represents no new impacts. Furthermore, the permit maintains existing technology-based limits and establishes more stringent water quality-based limits as needed.
7. SAGE GROUSE EXECUTIVE ORDER: Is the project proposed in core, general or connectivity sage grouse habitat, as designated by the Sage Grouse Habitat Conservation Program (Program) at: https://sagegrouse.mt.gov/ If yes, did the applicant attach documentation from the Program showing compliance with Executive Order 12-2015 and the Program's recommendations? If so, attach the documentation to the EA and address the Program's recommendations in the permit. If project is in core, general or connectivity habitat and the applicant did not document consultation with the Program, refer the applicant to the Sage Grouse Habitat Conservation Program.	(N) The facility is not within core, connectivity, or general sage grouse habitat as designated by the Sage Grouse Conservation Program.
8. HISTORICAL AND ARCHAEOLOGICAL SITES: Are any historical, archaeological or paleontological resources present?	(N) This facility is long established and represents no new impacts.
9. AESTHETICS: Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light?	(N) This facility is long established and represents no new impacts.
10. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY: Will the project use resources that are limited in the area? Are there other activities nearby that will affect the project? Will new or upgraded powerline or other energy source be needed?	(N) This facility is long established and represents no new impacts.
11. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES: Are there other activities nearby that will affect the project?	(N) This facility is long established and represents no new impacts.

IMPACTS ON THE HUMAN ENVIRONMENT	
RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES
12. HUMAN HEALTH AND SAFETY: Will this project add to health and safety risks in the area?	(N) No impacts from this renewal are expected.
13. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION: Will the project add to or alter these activities?	(N) No impacts from this renewal are expected.
14. QUANTITY AND DISTRIBUTION OF EMPLOYMENT: Will the project create, move or eliminate jobs? If so, estimated number.	(N) No impacts from this renewal are expected.
15. LOCAL AND STATE TAX BASE AND TAX REVENUES: Will the project create or eliminate tax revenue?	(N) No impacts from this renewal are expected.
16. DEMAND FOR GOVERNMENT SERVICES: Will substantial traffic be added to existing roads? Will other services (fire protection, police, schools, etc.) be needed?	(N) No impacts from this renewal are expected.
17. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS: Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?	(N) No impacts from this renewal are expected.
18. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES: Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract?	(N) No impacts from this renewal are expected.
19. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING: Will the project add to the population and require additional housing?	(N) No impacts from this renewal are expected.
20. SOCIAL STRUCTURES AND MORES: Is some disruption of native or traditional lifestyles or communities possible?	(N) No impacts from this renewal are expected.
21. CULTURAL UNIQUENESS AND DIVERSITY: Will the action cause a shift in some unique quality of the area?	(N) No impacts from this renewal are expected.
22. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES	(N) No impacts from this renewal are expected.
22(a). PRIVATE PROPERTY IMPACTS: Are we regulating the use of private property under a regulatory statute adopted pursuant to the police power of the state? (Property management, grants of financial assistance, and the exercise of the power of eminent domain are not within this category.) If not, no further analysis is required.	(No)
22(b). PRIVATE PROPERTY IMPACTS: Is the agency proposing to deny the application or condition the approval in a way that restricts the use of the regulated person's private property? If not, no further analysis is required.	(No)
22(c). PRIVATE PROPERTY IMPACTS: If the answer to 22(b) is affirmative, does the agency have legal discretion to impose or not impose the proposed restriction or discretion as to how the restriction will be imposed? If not, no further analysis is required. If so, the agency must determine if there are alternatives that would reduce, minimize or eliminate the restriction on the use of private property, and analyze such alternatives. The agency must disclose the potential costs of identified restrictions.	

23. Description of and Impacts of other Alternatives Considered: None

24. Summary of Magnitude and Significance of Potential Impacts: None

25. Cumulative Effects: None

26. Preferred Action Alternative and Rationale: The preferred action is to reissue the MPDES permit. This action is preferred because the permit program provides the regulatory mechanism for protecting water quality by enforcing the terms of the MPDES permit.

Recommendation for Further Environmental Analysis:

[ ] EIS [ ] More Detailed EA [X] No Further Analysis

Rationale for Recommendation:

27. Public Involvement: A 30-day public comment period will be held.

28. Persons and agencies consulted in the preparation of this analysis: Montana Sage Grouse Habitat Conservation Program.

EA Checklist Prepared By: Christine Weaver **Date:** August 2022

Approved By:

____DRAFT_____ ___DRAFT_____
Jon Kenning, Chief Date
Water Protection Bureau

803 Highway 212 South
P.O. Box 909
Laurel, MT 59044-0909

September 16, 2022

Mr. Jon Kenning
Montana Department of Environmental Quality
Water Protection Bureau
Permitting & Compliance Division
PO Box 200901
Helena, MT 59620-0901

Re: Comments on Draft Permit
Permit MT0000264 - CHS Inc. Laurel Refinery

Dear Mr. Kenning:

The CHS Inc. Laurel Refinery has reviewed the draft MPDES Permit MT0000264 (August 2022) and associated documents. We respectfully submit the following comments on these documents.

Draft Permit MT0000264

1. Pages 4 and 5, Tables 1 and 2. CHS continues to expend resources and make progress toward compliance with the proposed arsenic limits; however, CHS believes it is allowable and appropriate to consider a dilution allowance (independent of any mixing zone analysis) when performing the reasonable potential analysis for arsenic. 40 C.F.R. 122.4(d)(1)(i); NPDES Permit Writers' Manual, § 6.2.2.
2. Pages 4 and 5, Tables 1 and 2. CHS believes that the anti-backsliding analysis of TBELs is incorrect and the newly calculated TBELs should govern. Anti-backsliding applies when an existing TBEL that was developed on a case-by-case basis using best professional judgment (BPJ) is revised. NPDES Permit Writers' Manual, §7.2.1.1. As noted in the Fact Sheet (p. 12), the TBELs for this permit renewal are calculated in the same way as the 1999 and 2015 permit renewals based on the effluent limitations promulgated in 40 CFR Part 419 Subpart B. Thus, there is no revision to the type of TBEL that would trigger anti-backsliding.
3. Page 5, Table 2 Outfall 003. CHS proposes Total Residual Chlorine (TRC) limits for Outfall 003 be set at a concentration that accounts for the mixing zone. The proposed limit of 0.019 mg/L would very likely preclude use of chlorine in the arsenic treatment process. This would in effect prevent CHS from using Outfall 003 as it may be impossible then to attain compliance with the arsenic effluent limit. Consequently, CHS proposes a limit of 0.26 mg/L TRC for Outfall 003, which after taking into account the mixing zone, would keep the expected TRC C_r well below the standard. CHS would appreciate the opportunity to discuss the TRC limit further to ensure a reasonable limit is provided that allows for compliance. If those discussions indicate that further information is required from CHS, including for consideration of a mixing zone, dilution, a variance, and/or a compliance schedule,

EXHIBIT
D - Appeal

CHS requests additional time to present such information to DEQ. As noted by DEQ, the TRC is not a result of the refining process; rather, it is related to the treatment recently required for arsenic.

4. Page 5, Table 2 Outfall 003. CHS proposes that no Hydrogen Sulfide limit be established at this time. Rather continued monitoring be performed to establish sampling, field measurements and potential interferences.
5. Additionally, CHS believes that the high hydrogen sulfide concentration in the Yellowstone River (Fact Sheet concentration: 14.4 ug/L vs standard of 2 ug/L) may be due to non-anthropogenic sources. This would require any proposed hydrogen sulfide to be set on the background concentration in the river, similar to the methodology used to set the arsenic NAS.
6. Regarding the hydrogen sulfide aquatic life standard of 2 ug/L, CHS believes the application of the standard needs to be reevaluated to consider regional species. This standard was set based on a document developed by the New York Dept. of Environmental Conservation and appears to be based on eastern species of fish.
7. Page 6, Table 3.
    a. The Reporting Limit for Hydrogen Sulfide is directly related to the method and RL for dissolved sulfide. If the laboratory cannot achieve the total sulfide (dissolved) reporting limit of 20 ug/L, the hydrogen sulfide calculation cannot meet the RL. This once again points to the need to work through the sampling, field measurement and analytical method issues with local and possibly out-of-state laboratories prior to including a permit limit for Hydrogen Sulfide.
    b. Beta Emitters units are shown as mrem/yr. We believe the units should be pCi/L, similar to the other radiochemistry parameters. The measurement and calculation of the dose in mrems/year involves factors that are not typically monitored (e.g., species of concern, exposure time, etc.). In summary, reporting of a dose exposure is well beyond typical monitoring and reporting.
8. Page 8, Table 4. Upstream Monitoring. As previously noted, Beta Emitters units are shown as mrem/yr. We believe the units should be pCi/L, similar to the other radiochemistry parameters.
9. Pages 4 & 5. CHS requests a general variance for the requirement that there be no discharge from Outfall 002 anytime there is discharge from Outfall 003 (and vice versa). Switching the Outfalls will require a short period of dual flow. This dual flow is to prevent over-pressuring the piping and equipment. CHS would like to have formal language included to allow dual flow for a period of less than 2 hours. CHS will maintain documentation of these events.
10. Page 9, Section 3. WET Monitoring. CHS requests that the permit include language to allow the refinery effluent samples to be pretreated to remove Total Residual Chlorine. This is allowed based on language in Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (EPA-821-R-02-012). However, CHS would like language in the permit to clearly allow the pretreatment since residual chlorine is proving to be a necessary condition to successfully treat arsenic in the wastewater.

Draft Fact Sheet MT0000264

1. Page 3, Section 2. Note that the refinery also has septic systems on-site that handle domestic and sanitary wastewaters.
2. Page 16, Section II.B.3.b. It should also be noted that because the permit complies with all existing numeric and narrative standards, existing uses are protected.

CHS appreciates the extension of the arsenic standard compliance date as the operation of the new arsenic treatment plant is still in the testing phase.

If you have any questions or need additional information, please contact George Fink (george.fink@chsinc.com).

Sincerely,

Jim Irwin
Vice President, Laurel Refinery
CHS, Inc. - Laurel Refinery

Cc: Rainie DeVaney, MDEQ

CHS, Inc. – Laurel Refinery
MPDES Permit Number MT0000264
Response to Public Comment

The Montana Department of Environmental Quality (DEQ) issued Public Notice MT-22-16 on August 15, 2022. The Public Notice provided the tentative determination to issue a wastewater discharge permit renewal to CHS, Inc. for their Laurel Refinery under the Montana Pollutant Discharge Elimination System (MPDES) permit MT0000264. The notice included the draft permit, Fact Sheet, and Environmental Assessment (EA). The notice required that all written comments be received or postmarked by Thursday, September 15, 2022.

DEQ received written comments from CHS, Inc. and Western Environmental Law Center on behalf of Earthworks and the Montana Environmental Information Center (MEIC). DEQ has considered these comments in preparation of the final permit and decision. A summary of the comments and DEQ's response is as follows; this Response to Comments is an addendum to and supersedes relevant parts of the Fact Sheet to the extent those changes are described herein. The full set of comments is available upon request from DEQ.

A. CHS Comments:

1. **Comment 1:** Pages 4 and 5, Tables 1 and 2. CHS continues to expend resources and make progress toward compliance with the proposed arsenic limits; however, CHS believes it is allowable and appropriate to consider a dilution allowance (independent of any mixing zone analysis) when performing the reasonable potential analysis for arsenic. 40 C.F.R. 122.4(d)(1)(i); NPDES Permit Writers' Manual, § 6.2.2.

   Response 1:

   40 CFR 122.4(d)(1)(i) does not exist. For purposes of responding to this comment, DEQ assumes the commenter is referencing 40 CFR 122.44(d)(1)(i).

   DEQ has long recognized that the Yellowstone River has natural arsenic concentrations above the Department Circular DEQ-7 human health standard (HHS) of 10 µg/L. After extensive research, the Montana Board of Environmental Review (BER) completed rulemaking in 2020 for nonanthropogenic arsenic standards (NAS) along four segments of the Yellowstone River.

   CHS is in the segment of the Yellowstone where the BER adopted a NAS of 13 µg/L total recoverable arsenic (Administrative Rules of Montana (ARM) 17.30.618). The NAS is expressed as 13 µg/L total recoverable arsenic on a calendar year basis. It replaces the applicable human health standard of 10 µg/L and accounts for natural variability in the Yellowstone River. When establishing the NAS, the BER concluded dilution allowances could not be granted for the segments of the Yellowstone River affected by the NAS provision (see the Montana Administrative Register 2020, 1618-1625) and, as such, mixing zones cannot be granted (see ARM 17.30.618(3)).

   When calculating a water quality-based effluent limit, DEQ may provide a dilution allowance or grant a mixing zone, if appropriate. Dilution allowances may only be provided for pollutants where assimilative capacity, or the ability for the receiving water to accept and dilute the pollutants, is available. When adopting the NAS water quality standards for segment of the Yellowstone River, the BER determined and stated in ARM

17.30.618 that providing dilution is not appropriate because the receiving water does not have assimilative capacity to accept and dilute the pollutant. Therefore, a dilution allowance is not appropriate nor is a mixing zone appropriate.

CHS is not allowed a dilution allowance for arsenic because there is no assimilative capacity in the Yellowstone River. CHS needs to meet the arsenic limit at the end of pipe.

DEQ has not made changes to the final permit in response to this comment.

2. **Comment 2:** Pages 4 and 5, Tables 1 and 2. CHS believes that the anti-backsliding analysis of TBELs is incorrect and the newly calculated TBELs should govern. Anti-backsliding applies when an existing TBEL that was developed on a case-by-case basis using best professional judgment (BPJ) is revised. NPDES Permit Writers' Manual, §7.2.1.1. As noted in the Fact Sheet (p. 12), the TBELs for this permit renewal are calculated in the same way as the 1999 and 2015 permit renewals based on the effluent limitations promulgated in 40 CFR Part 419 Subpart B. Thus, there is no revision to the type of TBEL that would trigger anti-backsliding.

   Response 2:

   DEQ does not agree CHS should be allowed to discharge at less stringent Technology-based Effluent Limits (TBELs). As stated on page 13 of the Fact Sheet, "Table FS-07 summarizes the updated TBELs calculated in Appendix D. The TBELs calculated here will be compared to the existing limits and the most stringent will be the proposed permit limits with this renewal (see Part III.A)…"

   40 CFR 122.44(l) requires limits in a renewed permit to be at least as stringent as the final limits in the previous permit except as provided in paragraph (l)(2) of the section, unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for a permit modification. Paragraph (l)(2) exceptions are based on Best Professional Judgement; this does not apply for this renewal.

   The increased production capacity at CHS does not justify relaxing the ELG-based load limits. Similarly, discharge limits are not relaxed for municipalities simply because their population increases. If simply discharging a greater volume of pollutants was exception to federal anti-backsliding rules, then there would be no point in having anti-backsliding rules.

   Furthermore, if DEQ increased the permitted loads, nondegradation rules would apply. The purpose of the nondegradation rules in ARM 17.30 Subchapter 7 is to "prohibit degradation of high-quality state waters …" DEQ does this by capping pollutant loads to 1993 permit levels, unless a nonsignificance review is conducted as set forth in ARM 17.30.715 to show that incremental changes are not significant.

   DEQ has not made changes to the final permit in response to this comment.

3. **Comment 3:** Page 5, Table 2 Outfall 003. CHS proposes Total Residual Chlorine (TRC) limits for Outfall 003 be set at a concentration that accounts for the mixing zone. The

proposed limit of 0.019 mg/L would very likely preclude use of chlorine in the arsenic treatment process. This would in effect prevent CHS from using Outfall 003 as it may be impossible then to attain compliance with the arsenic effluent limit.

Response 3:

Based on your comment, DEQ reviewed the Fact Sheet Table E-6 excel calculations and found a typographical error. The correction changed the chronic Wasteload Allocation from 0.0048 to 1.2 mg/L and the resulting final effluent limits for Outfall 003 are:

- Maximum Daily Limit = 0.4 mg/L (400 µg/L)
- Average Daily Limit = 0.17 mg/L (170 µg/L)

The limits outlined above will replace the limits in Table 2 in the Final Permit.

4. **Comment 4:** Page 5, Table 2 Outfall 003. CHS proposes that no Hydrogen Sulfide limit be established at this time. Rather continued monitoring be performed to establish sampling, field measurements and potential interferences.

Response 4:

DEQ included hydrogen sulfide (H_2S) effluent limits and monitoring requirements in the 2015 Permit that was issued September 16, 2015, appealed by CHS, and modified by the BER in 2017. The 2017 BER-modified permit removed the H_2S limits for the permit cycle. As part of the Board Order for Final Agency Decision Case No BER 2015-07 WQ dated June 6, 2017, the BER stated under item 9:

> "As pertinent to CHS's Appeal Issue No. 1, it is appropriate to modify the appealed MPDES Permit to remove Water Quality Based Effluent Limitations ("WQBELs") for Hydrogen Sulfide and that; instead, the MPDES Permit should contain monitoring requirements to include the monitoring of dissolved sulfide and pH. This monitoring information is necessary to determine whether WQBELs for Hydrogen Sulfide should be implemented during the next MPDES permitting cycle and such determination will be based, in part, upon an analysis of effluent and Yellowstone River data. Through the use of Standard Methods (SM) 4500-S^2, CHS will calculate and report Hydrogen Sulfide concentrations from its measurements of dissolved sulfide as a function of pH."

As a result, CHS was required to monitor effluent and ambient (Yellowstone River) for dissolved sulfide and hydrogen sulfide, and DEQ was required evaluate for WQBELs this permit cycle. CHS was required to ensure the lab analysis could achieve 20 µg/L H_2S (the Required Reporting Value (RRV) in Circular DEQ-7).

Subsequently, CHS applied for a major permit modification in 2018. Part of the modification requested was for dilution credit from a two-port diffuser. DEQ's evaluation in the 2018 Fact Sheet included an updated Reasonable Potential (RP) analysis, where it was noted that CHS had RP to exceed the H_2S standard based on non-detects. DEQ stated data were needed that met the RRV of 20 µg/L. For the three Yellowstone River samples, one had a Reporting Level (RL) of 50 µg/L and the other two had RLs of 40 µg/L. Furthermore, none of the 36 effluent samples met the RRV of 20 µg/L. The hydrogen sulfide RL for the current ambient dataset provided by CHS remained at 40 µg/L.

Plenty of time has been available to evaluate sulfide monitoring processes. Oil refineries began reporting sulfides, including hydrogen sulfide, in their wastewater in EPA studies as early as 1974. These studies included the CHS refinery in Laurel. See the *Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category*, April 1974.

CHS has RP to exceed the hydrogen sulfide standard based on available data. Therefore, WQBELs are reasonable.

No changes were made to the final permit in response to this comment.

5. **Comment 5:** Additionally, CHS believes that the high hydrogen sulfide concentration in the Yellowstone River (Fact Sheet concentration: 14.4 µg/L vs standard of 2 µg/L) may be due to non-anthropogenic sources. This would require any proposed hydrogen sulfide to be set on the background concentration in the river, similar to the methodology used to set the arsenic NAS.

Response 5:

CHS has not provided information to support that non-anthropogenic source(s) have caused elevated ambient hydrogen sulfide concentrations in the Yellowstone River. Regardless of source, DEQ must account for background concentrations in reasonable potential analysis, assimilative capacity determinations and water quality based effluent limit development.

DEQ calculated the Yellowstone River's critical ambient H_2S concentration of 14.4 µg/L based on 17 dissolved sulfide samples, taken between 2017 and 2022, that were all non-detect (see Fact Sheet page 22). Specifically, DEQ calculated the critical upstream concentration (75th percentile of H_2S) based on the laboratory Reporting Level (RL) of 40 µg/L and the critical ambient pH of 7.23 su (25th percentile because inversely proportional) using *Standard Methods for the Examination of Water and Wastewater 4500-S^2 - H. Calculation of Un-Ionized Hydrogen Sulfide*.

DEQ is required to write permit limits to the standards on record at the time of the renewal and not based on speculation about how those standards may change in the future.

No changes were made to the final permit in response to this comment.

6. **Comment 6:** Regarding the hydrogen sulfide aquatic life standard of 2 ug/L, CHS believes the application of the standard needs to be reevaluated to consider regional species. This standard was set based on a document developed by the New York Dept. of Environmental Conservation and appears to be based on eastern species of fish.

Response 6:

MPDES permits must include effluent limits, monitoring requirements and other conditions to ensure beneficial uses of the receiving water body are protected and must implement applicable Montana's state water quality standards. The hydrogen sulfide chronic aquatic life standard of 2 µg/L is the applicable standard in Circular DEQ-7.

No changes were made to the final permit in response to this comment.

7. **Comment 7:** Page 6, Table 3.

   a. The Reporting Limit for Hydrogen Sulfide is directly related to the method and RL for dissolved sulfide. If the laboratory cannot achieve the total sulfide (dissolved) reporting limit of 20 µg/L, the hydrogen sulfide calculation cannot meet the RL. This once again points to the need to work through the sampling, field measurement and analytical method issues with local and possibly out-of-state laboratories prior to including a permit limit for Hydrogen Sulfide.

   b. Beta Emitters units are shown as mrem/yr. We believe the units should be pCi/L, similar to the other radiochemistry parameters. The measurement and calculation of the dose in mrems/year involves factors that are not typically monitored (e.g., species of concern, exposure time, etc.). In summary, reporting of a dose exposure is well beyond typical monitoring and reporting.

   Response 7:

   a. It is not clear why Energy Labs has been unable to achieve the H_2S RRV of 20 µg/L. DEQ is reviewing RRV's for various parameters including hydrogen sulfide as part of the triennial review.

      Because of the difficulty in establishing a sampling protocol for both effluent and ambient conditions, as well as the limits of analysis, DEQ provided a 3-year compliance schedule. CHS is expected to immediately begin developing the protocol and conducting the sampling.

   b. DEQ-7 includes beta emitters reported as mrem/year consistent with units used by EPA. Millirems per year is the appropriate unit, as it is the unit used to set regulatory limits that protect against long-term health effects in a population. It measures the biological risk of exposure to radiation and are the appropriate units whereas PCi/L measures radiation released by a radioactive material.

   No changes were made to the final permit in response to this comment.

8. **Comment 8:** Page 8, Table 4. Upstream Monitoring. As previously noted, Beta Emitters units are shown as mrem/yr. We believe the units should be pCi/L, similar to the other radiochemistry parameters.

   Response 8:

   See response to Comment 7.

9. **Comment 9:** Pages 4 & 5. CHS requests a general variance for the requirement that there be no discharge from Outfall 002 anytime there is discharge from Outfall 003 (and vice versa). Switching the Outfalls will require a short period of dual flow. This dual flow is to prevent over-pressuring the piping and equipment. CHS would like to have formal language included to allow dual flow for a period of less than 2 hours. CHS will maintain documentation of these events.

Response 9:

CHS's wastewater treatment system that discharges treated effluent through one discharge pipe to either the lower or the upper port of the diffuser (Outfall 002 or 003). The critical discharge flow is the same, the critical discharge concentrations are the same, and the critical ambient parameter concentrations are the same. The only difference between the two outfalls is there is more dilution for the lower outfall (Outfall 002). As a result, the effluent limits are slightly more stringent for Outfall 003.

After consideration of the comment, DEQ will change the requirements as follows:

- Outfall 002: replace "There shall be no discharge from Outfall 002 at any time there is discharge from Outfall 003," with "At any time there is discharge from both Outfall 002 and 003, the effluent limits for Outfall 003 will apply. CHS will inform DEQ of the beginning and end of the dual discharge."
- Outfall 003: remove "There shall be no discharge from Outfall 003 at any time there is discharge from Outfall 002."

10. Comment 10: Page 9, Section 3. WET Monitoring. CHS requests that the permit include language to allow the refinery effluent samples to be pretreated to remove Total Residual Chlorine. This is allowed based on language in Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (EPA-821-R-02-012). However, CHS would like language in the permit to clearly allow the pretreatment since residual chlorine is proving to be a necessary condition to successfully treat arsenic in the wastewater.

Response 10:

CHS did not present enough evidence to determine whether the TRC levels are a cause of the acute toxicity. CHS began using chlorine in the wastewater treatment process in Spring 2022. Coinciding with the use of chlorine, the TRC effluent levels jumped from non-detect (< 0.03 to < 0.05 mg/L) to between 0.06 to 1.3 mg/L. However, CHS was failing Whole Effluent Toxicity (WET) tests prior to the addition of chlorine.

The current WET language in the draft permit (third paragraph) reads:

> The toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, EPA-821-R-02-012 and the *Region VIII EPA NPDES Acute Test Conditions - Static Renewal Whole Effluent Toxicity Test* testing protocols. The permittee shall conduct an acute 48-hour static renewal toxicity test using *Ceriodaphnia* sp. and an acute 96-hour static renewal toxicity test using fathead minnows (*Pimephales promelas*). The control of pH in the toxicity test utilizing CO_2 enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection.

DEQ will add this to the requirement:

> Furthermore, if CHS can demonstrate in the Toxicity Identification Evaluation / Toxicity Reduction Evaluation (TIE/TRE) that chlorine is a contributing factor for the acute test failures, DEQ may consider sample pre-treatment for removal of chlorine. CHS may provide parallel acute tests, but not replace existing tests, until DEQ has approved this revision, in writing.

See Page 9 of the Final Permit.

Fact Sheet

11. Comment 11: Page 3, Section 2. Note that the refinery also has septic systems on-site that handle domestic and sanitary wastewaters.

Response 11:

Since onsite septic systems are not discharges through Outfalls 002 & 003 to the Yellowstone River, they are not included in this permit. If these systems are found to be greater than 5,000 gallons per day, DEQ may require a Montana Ground Water Pollution Control System permit.

No changes were made to the final permit in response to this comment.

12. Comment 12: Page 16, Section II.B.3.b. It should also be noted that because the permit complies with all existing numeric and narrative standards, existing uses are protected.

Response 12:

DEQ agrees with this statement. However, since Fact Sheets are developed to be part of the public comment package and not revised, this statement is noted in this Response to Comments.

No changes were made to the final permit in response to this comment.

B. Western Environmental Law Center on behalf of Earthworks and the Montana Environmental Information Center (MEIC):

13. Comment 13: WET testing violations.

CHS, Inc.'s current and proposed MPDES permits have an acute WET limit of "no acute toxicity." CHS has repeatedly failed its WET testing and thereby violated its permit limits. Section 75-5-401(2), MCA, provides that DEQ must "allow the issuance or continuance of a permit only if the department finds that operation consistent with the limitations of the permit will not result in pollution of any state waters." DEQ must consider the WET violations when determining whether the proposed permit limitations will prevent pollution of any state waters.

Response 13:

MPDES permits regulate the discharge of pollutants to state surface waters. MPDES permits include effluent limits, monitoring requirements, and other special conditions to

protect the beneficial uses of the receiving water and ensure water quality standards are met.

Limits and conditions in MPDES permits are not defined as pollution (75-5-103, MCA).

When a permittee is out of compliance with the limits and conditions of an expiring or expired permit, DEQ has a choice of actions under ARM 17.30.1313(3):

(a) initiate enforcement action;

(b) issue a notice of intent to deny the new permit;

(c) issue a new permit under ARM 17.30.1370 with appropriate conditions; or

(d) take other actions authorized by the MPDES rules.

DEQ has chosen to issue a renewed permit with appropriate conditions and continue to work with CHS on identifying the source of toxicity and evaluate toxicity reduction opportunities. Operation consistent with the limits of the permit will not result in the pollution of any state waters.

The 2015-issued permit required WET testing, outlined requirements for any failed WET test and included requirements for the development of Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE). After CHS failed their first WET test, they complied with the terms of their permit by conducting a retest. After failing the retest, CHS complied with the MPDES permit by developing, submitting, and implementing a TIE/TRE and conducting increased monitoring (monthly WET tests rather than quarterly). (See 2015 issued Permit Part I.C.2 ¶4.)

Because the specific source(s) of toxicity and a proposed remedy have not yet been identified, CHS continues to monitor more frequently and to follow their TIE/TRE. DEQ has maintained the increased WET monitoring requirement as part of this permit renewal; and CHS is not eligible for a reduction in WET monitoring for the term of this permit. (See 2022 Final Permit Part I.C.3 ¶1.)

DEQ agrees that, by failing acute WET tests, CHS has exceeded their acute WET permit limit. However, DEQ must allow the continuance of a permit if DEQ finds that operation consistent with the permit will not result in the pollution of state waters. The fact that a permittee is violating any terms of the permit does not reflect on the sufficiency of the permit itself. See ARM 17.30.1342 (1) The permittee shall comply with all conditions of this permit and (4) The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

CHS is complying with their permit Special Condition by undertaking the TIE/TRE requirement and has recently upgraded to a new wastewater treatment plant designed to remove toxics from the wastewater. CHS' discharge continues to be authorized under MPDES permit MT0000264 and is not classified as pollution.

No change to the final permit will be made in response to this comment.

14. Comment 14: WET Effluent Toxicity Requirements

The draft MPDES Permit fails to demonstrate that the effluent will comply with the WET test permit requirements or uphold the MWQA's protections for aquatic life. ARM 17.30.1311(4)("No permit may be issued: . . ."[w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected states.")

Response 14:

The fact that CHS is violating the WET permit limit does not mean that the conditions of the permit are inadequate. As stated on page 27 of the Fact Sheet:

> "ARM 17.30.637(1)(d) requires that state waters to be free from substances which will create conditions or combinations of material which are toxic or harmful to human, animals, plant or aquatic life. … CHS is required to conduct acute testing … to assure no acute lethality to organisms in the mixing zone."

WET is the same as any other parameter with a permit limit. DEQ develops permit limits at levels designed to ensure the discharge will not cause or contribute to an exceedance of any water quality standard. Enforcement and other actions are available to DEQ to bring the permittee into compliance. See Response to Comment 13.

No change to the final permit will be made in response to this comment.

15. Comment 15: Arsenic

The previous permit included an effective date for arsenic limits of November 1, 2022. In the proposed permit, DEQ granted another three-year compliance schedule to meet the arsenic limit, without making a reasonable finding that the compliance schedule will lead to compliance with effluent limitation or that the compliance schedule is appropriate.

EPA issued the memorandum *Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits* on May 10, 2007 (2007 EPA Memo), regarding the use of compliance schedules in NPDES permitting for WQBELS.

Prior to granting an additional three years to come into compliance with the WQBEL for arsenic, DEQ must provide a rationale on why continuing to allow CHS, Inc. to exceed water quality standards is appropriate. As part of its analysis, DEQ must take into account the applicable factors in the 2007 EPA Memo and specifically determine whether CHS, Inc. has made a good faith effort to comply prior to allowing it to continue to exceed water quality standards.

Response 15:

The 2007 EPA Memo is a statement not adopted into rule. The proposed permit's compliance schedules in accordance with Department rules under ARM 17.30.1350 Schedules of Compliance.

Regarding the compliance schedule provided for arsenic, DEQ first introduced an arsenic limit in the 2015-issued permit. CHS appealed the permit to the BER, which stayed the limit during the numerous permit appeals, eventually decided on October 30, 2020.

CHS began preliminary studies and designs to address new permit requirements, but the arsenic limit was a moving target. With the arsenic limit in limbo, CHS engineers struggled on a path forward because differences in a few parts per billion in the limit meant major design reconsideration to the WWTP.

During this period, CHS did not sit idle, but instead continued to design and make upgrades to the WWTP for the past four years. The upgrades have cost approximately $50MM. CHS provided annual reports that kept DEQ informed of the larger aspects. The WWTP upgrades are estimated to be complete in Fall 2022.

Prior to the WWTP upgrades, the average arsenic discharge concentration was 52 µg/L with a maximum of 90 µg/L. Progress on the WWTP has already reduced the average arsenic concentration to 26 µg/L with a maximum of 38 µg/L. While the current concentration is double the final average monthly arsenic effluent limit of 13 µg/L, it is half of the previous concentration and demonstrates a good-faith effort by CHS.

CHS has been working to upgrade the facility's wastewater treatment capabilities and has installed major pieces of equipment between 2018 and 2022. CHS continues to, troubleshoot and make engineering changes to refine the treatment. Also, the reduction of arsenic has proven to be represented by an exponential decay curve where each incrementally lower number requires increasingly more engineering and longer times to achieve. Typically, WWTPs without arsenic concerns take three years of tests and runs, especially in Montana where WWTPs must optimize for all seasons -- so operators may have to wait a full year to see if their troubleshooting addressed problems observed during a prior season. DEQ expects that CHS will continue to work to improve the wastewater operations after completing the most recent phase.

Because of the scale of the operations and the fact that this is not a 'off-the-shelf' technology, it is reasonable to provide time for CHS to continue their improvements.

No changes were made to the final permit in response to this comment.

16. <u>Comment 16</u>: Hydrogen Sulfide

The Fact Sheet discusses the requirement that CHS, Inc. "monitor both effluent and ambient H_2S concentrations since the 2015-permit renewal." Yet, CHS, Inc. failed to comply with that monitoring requirement.

<u>Response 16:</u>

CHS conducted the required monitoring for both effluent and ambient H_2S concentrations in accordance with the monitoring requirements (effluent monitoring on page 7 and ambient (upstream) monitoring on page 10) which both became effective with the 2017 BER-modified permit.

As discussed on page 21 of the 2022 Fact Sheet, monitoring for hydrogen sulfide is not straightforward. CHS originally mis-interpreted how to report the associated conditions because hydrogen sulfide changes forms based on pH and conductivity. Furthermore, their laboratory, Energy Labs, routinely provided a Reporting Level of 40 µg/L for

dissolved sulfide, when available information provides an RL of 32 µg/L (NEMI.gov) and previous analyses obtained < 10 µg/L sulfide.

The final permit includes a Special Condition requiring CHS to development of a Standard Operating Procedure that is designed to remedy these problems.

See also response to comment #7.

No changes were made to the final permit in response to this comment.

17. Comment 17: Hydrogen Sulfide

In the draft permit, DEQ has granted CHS, Inc. another three-year compliance schedule to meet the hydrogen sulfide limit, without making a reasonable finding that the compliance schedule will lead to compliance with effluent limitation or that the compliance schedule is appropriate. As part of its analysis, DEQ must take into account the relevant factors from the 2007 EPA memo and specifically determine whether CHS, Inc. has made a good faith effort to comply prior to allowing it to continue to exceed water quality standards.

Response 17:

The 2007 EPA Memo is a statement not adopted into rule. The proposed permit's compliance schedules in accordance with Department rules under ARM 17.30.1350 Schedules of Compliance.

DEQ did not provide an H_2S compliance schedule for CHS in prior permits, so the current permit is not providing another compliance schedule. Beginning with the 2017-BER modified permit, CHS was only required to monitor for H_2S, to provide data for DEQ to conduct the Reasonable Potential (RP) analysis as part of this renewal cycle. There were not prior H_2S limits in any of CHS' effective permits. The proposed H_2S limits are therefore new WQBELs and it is reasonable to include a compliance schedule for new WQBELs.

CHS cannot currently demonstrate compliance with these limits. It is appropriate to include a Compliance Schedule when there are new WQBELs that the facility may not immediately meet, and the facility will potentially require new treatment technology. See response to Comment #3 on CHS's good faith efforts to address permit limits and timelines for WWTP changes. Because sulfur and arsenic are known to speciate and react in sediments, CHS will have to be careful that technology addressing hydrogen sulfide does not in turn create another arsenic problem.

No changes were made to the final permit in response to this comment.

18. Comment 18: Mixing Zones - new

For the first time, DEQ proposes to grant CHS, Inc. mixing zones for both outfalls.

CHS, Inc. is applying for a source-specific mixing zone. ARM 17.30.518 states that a "source specific surface or groundwater mixing zone will only be granted after the applicant demonstrates to the department that the requested mixing zone will comply with the

requirements of ARM 17.30.506 and 17.30.507 and the provisions of 75.5.303, MCA." The proposed discharge fails to meet these criteria.

Response 18:

A mixing zone study was prepared in March 2015 and submitted as part of the modified renewal application package for the 2015-issued Permit:

- *Outfall Mixing Zone Study Report for CHS Inc Laurel Refinery*, CH2M, March 2015

This submittal included review of ARM 17.30.518 requirements. CHS was provided a source-specific mixing zone in the 2015-issued permit (which was retained after the appeal by the BER on June 2, 2017). (See MPDES Permit MT0000264 page 3, Outfall 002 Description.) This 1,000-foot chronic/ 100-foot acute mixing zone was granted for a proposed single-port diffuser that was never built.

Instead, CHS submitted an updated mixing zone study for a proposed two-port diffuser as part of the 2018 major modification request.

- *Outfall Mixing Zone Study Report Update CHS Outfall Improvement Project,* CH2M, August 16, 2017 (received December 2017). This report included review of ARM 17.30.518 requirements.

DEQ's 2018 Fact Sheet discussed the dilution factors provided by these two ports and concluded there was no RP to exceed standards for six parameters (2018 Major Modification FS page 12). As part of this 2018 review, arsenic was not afforded any dilution since there was recognized to be no assimilative capacity, hydrogen sulfide was not afforded any dilution because of data limitations, and ammonia was indeterminant due to the pending wastewater treatment upgrades. DEQ's interpretation was that no mixing zone was needed as there was no RP for any parameter to exceed a standard.

DEQ reevaluated the mixing zone study conclusions during permit development and found that the continued use of the mixing zone study conclusions to be appropriate. DEQ also finds that the mixing zone study included all necessary information to support a source specific mixing zone.

No changes were made to the final permit in response to this comment.

19. Comment 19: Mixing Zones – WET Failures

The repeated WET test failures, and the ongoing tests to determine toxicity, indicate that a mixing zone cannot be authorized. The discharge must comply with the general prohibitions of ARM 17.30.637(1)(d) which require that state surface waters, including mixing zones, must be free from substances which will "create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life."

Response 19:

The WET tests are conducted at 100% effluent, which does not include any consideration of a mixing zone. Also see response to comment 14. No changes were made to the final permit in response to this comment.

20. Comment 20: Nutrients

This segment of the Yellowstone River is listed as impaired for nitrate/nitrite and Chlorophyll-*a*. DEQ's conclusion that nutrient discharges from CHS are "not causing or contributing to nuisance algae growth" due to "the probable sources of impairment identified as agriculture and municipal sources" subverts the required analysis that DEQ should have conducted in evaluating the full cumulative sources and their contribution to impairment.

DEQ has not prepared a Total Maximum Daily Load (TMDL) document for this segment. DEQ concludes that "CHS's discharge is not causing or contributing to nuisance algae growth …" This conclusion ignores CHS's very real contribution to effluent concentrations and is almost entirely speculative as DEQ has not conducted the requisite TMDL analysis to identify the sources of TN effluent for the waterbody in question.

ARM 17.30.637(2) prohibits discharges for wastes alone "or in combination with other wastes or activities that will, or can reasonably be expected to violate, any of the standards." What may be characterized as a de-minimis contribution by DEQ may in fact be the consequential and additional pollution that is impairing this segment of the Yellowstone.

Response 20:

a. Montana's Statewide TMDL Advisory Group has not selected the Yellowstone River for TMDL development. 75-5-703(10), MCA states that a discharger may continue discharging in the absence of TMDL.

   Montana's assessment report indicates the source of the impairment is likely TN, not TP in the Yellowstone River. A TMDL would ask a discharger to reduce their share of the TN load to alleviate the impairment. CHS is not a new discharger to the Yellowstone River, so DEQ does not have to model cumulative impacts to understand effects on the river because the discharge is already impacting the river and reduction is already happening.

   During permit review, DEQ found that CHS has already reduced its load 70% during the summer to 84 lb/day compared to calculated summertime load of 279 lb/day in the previous permit. Since CHS is only 1.6% of the TN load of the Yellowstone River, a 70% reduction would be in line with reductions expected in a TMDL for such a small source. The improvement in water quality has not shown up in the most recent impairment list because the data used in the assessment was gathered 2003.

   Because CHS has not completed the final stages of the WWTP upgrade nor had time to optimize the additional treatment, DEQ expects that further nutrient reductions will be accomplished. Both ambient and effluent summer TN monitoring will be required in order to provide information for the next renewal cycle.

No changes were made to the final permit in response to this comment.

21. Comment 21: Nondegradation

DEQ conducted a rudimentary analysis and made the unsupported finding that the proposed discharge does not constitute a new or increased source under Montana's non-degradation policy.

DEQ failed to consider CHS's repeated and long-standing failure to meet compliance for WET and arsenic limits. Notably, under ARM 17.30.715(b), DEQ cannot exempt discharges of carcinogens, including arsenic, "at concentrations less than or equal to the concentrations of those parameters in the receiving water." In order to comply with Montana's nondegradation requirements, DEQ must conduct an evaluation of CHS's discharges and has a mandatory duty to evaluate whether those discharges, through cumulative and synergistic effects, will cause degradation.

Response 21:

CHS's facility is not considered a new or increased source for purposes of nondegradation review. CHS's facility and its related discharge was in existence prior to April 29, 1993 and, through MPDES permitting, DEQ has capped the facility's mass-based limits as set forth the Fact Sheet to ensure the loading of pollutants have not increased through time. (see 2022 Fact Sheet Table FS-17).

ARM 17.30.715(1)(b) describes criteria for DEQ to determine if a discharge from a new or increased source result in nonsignificant changes "include discharges containing carcinogenic parameters … at concentrations less than or equal to the concentrations of those parameters in the receiving water;". CHS is not a new or increased source as defined by Montana's Nondegradation Policy and this nonsignificance analysis is not applicable and not required.

DEQ agrees that CHS has exceeded their WET permit limits. Nonetheless, the fact that a permittee has exceeded permit limits or violates any terms of the permit does not reflect on the sufficiency of the permit itself or the permit's nondegradation analysis. Operation consistent with the permit limits will not result in the degradation of state waters. See ARM 17.30.1342(1) The permittee shall comply with all conditions of this permit and (4) The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. These requirements are included in the renewed permit in Part III.A Duty to Comply and Part III.D. Duty to Mitigate.

No changes were made to the final permit in response to this comment.

22. Comment 22: The draft EA fails to comply with MEPA – the EA fails to take a hard look at potential impacts to water quality and aquatic life from the discharge and describe the potential range of mitigation measures

According to the EA, this facility is long established and represents no new impacts to water quality, fish or aquatic life (EA, p. 2), however the Fact Sheet states that beginning in 2021, CHS has had multiple and ongoing WET failures. As a result of these repeated WET test

failures, the EA cannot assume that water quality and aquatic life are protected. Further, the toxic effects to daphnia and fathead minnows may not accurately represent the potential harm to other aquatic species in the receiving waters which may be more sensitive.

The EA should describe the potential impacts of repeatedly discharging effluent that is acutely toxic to some aquatic life and describe the range of mitigation measures to address these toxicity issues.

Response 22:

MPDES permits include effluent limits, monitoring and reporting requirements, and Special Conditions that are designed to protect the beneficial uses of the receiving waterbody. The fact that a permittee is violating any terms of the permit does not reflect on the sufficiency of the environmental assessment or permit itself. See Response to Comments 13 & 21.

No changes were made to the final EA in response to this comment.

23. Comment 23: The EA fails to take a hard look at potential cumulative effects from the proposed discharge.

The EA fails to take a hard look at the potential impacts to aquatic life from the refinery's discharges in conjunction with other potential impacts. The EA should consider the potential cumulative effects to water quality and nuisance algal growth from these additional nutrients, when factoring the already impaired condition of the stream from agricultural activities and municipal point sources. It should also consider the potential cumulative effects on water quality and aquatic life of repeatedly discharging acutely toxic effluent.

Response 23:

The proposed action reviewed under the EA is the renewal of CHS' MPDES permit for a five-year cycle. DEQ concluded that the draft permit included TBELs with no significant changes (one parameter was slightly tightened) and new and existing WQBELs to protect the beneficial uses of the Yellowstone River. DEQ found the permit will ensure compliance with the Montana Water Quality Act and protection of the beneficial uses of the Yellowstone River. Also see response to Comment #13.

No changes were made to the final EA in response to this comment.

24. Comment 24: Deny Permit

DEQ must "allow the issuance or continuance of a permit only if the department finds that operation consistent with the limitations of the permit will not result in pollution of any state waters." § 75-5-401(2), MCA; see also, ARM 17.30.1311(4) (no wastewater discharge permit may be issued "[w]hen the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected states.")

Given CHS, Inc.'s ongoing permit violations, the conditions included in the draft MPDES Permit are insufficient to ensure CHS, Inc.'s compliance with the applicable water quality

requirements. DEQ should deny the MPDES permit renewal application and require CHS, Inc. to come into compliance with its existing permit conditions by a date-certain.

Response 24:

75-5-401(2) MCA and ARM 17.30.1311(4) are requirements for DEQ to set permit limits conditions that protect beneficial uses, not about when a discharger does not meet those limits and conditions. The fact that a permittee is violating any terms of the permit does not reflect on the sufficiency of the permit itself. The commenter has offered no suggestions on how any change in the new or previous permits would somehow alter the fact that the wastewater treatment plant needed to meet the limits has been undergoing a major overhaul. DEQ has a valid complete application from CHS for permit renewal and finds the permit has the necessary limitations and conditions to protect beneficial uses and therefore meets 75-5-401(2), MCA and ARM 17.30.1311(4). Also, see Response to Comments 13 & 21.

No changes were made to the final permit in response to this comment.

Table E-6: Numeric WQBEL Development for Yellowstone River (Outfall 003)

*corrected with Response to Comments September 2022

Parameters		Standards (C_r)			C_s				Qs		Q_d		Wasteload Allocations (C_d) Footnote (1)			LTA					WQBELs			
		Acute	Chronic	HHS [1]	Background Stream Conc	Acute Dilution	Chronic Dilution	7Q10	Acute	Chronic/ HHS	Acute	Chronic/ HHS	**Acute (WLA_a)**	**Chronic (WLA_c)**	**HHS**	CV	Acute (LTAa)	Chronic (LTAc)	**Minimum (LTAm)**	n	**Acute ALS MDL**	**Chronic ALS AML**	**HH-Std MDL**	**HH-Std AML**
						%	%	cfs	mgd	mgd	mgd	mgd												
Total Residual Chlorine	mg/L	0.019	0.011	4	0.0	6.9%	27%	1026	45.8	180	2.3	1.6	0.40	**1.2**	4	0.8	0.10	**0.54**	**0.10**	4	**0.40**	**0.17**	4	NA
Hydrogen Sulfide	µg/L	NA	2	NA	*14.4*	11.8%	48%	1026	78	319	2.3	1.6	NA	2.0	NA	0.6	NA	1.1	**1.1**	4	3.3	1.6	NA	NA
Arsenic, TR	µg/L	340	150	13		0.0%	0%	0	0	0	2.3	1.6	340	150	13	0.27	190	111	**111**	4	198	137	**19**	**13**

Footnote:
(1) Arsenic HHS standard from ARM 17.30.618(2)(a), becomes average monthly limit. No mixing zone is allowed.

Major Industrial
Permit No.: MT0000264

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER THE
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Montana Water Quality Act, Title 75, Chapter 5, Montana Code Annotated (MCA) and the Federal Water Pollution Control Act (the "Clean Water Act"), 33 U.S.C. § 1251 *et seq.,*

CHS, Inc.

is authorized to discharge from its **Laurel Refinery**

located at **802 Highway 212 South, Laurel, MT,**

to receiving waters named **Yellowstone River**

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

This permit shall become effective: **November 1, 2022**

This permit and the authorization to discharge shall expire at midnight, **October 31, 2027**

FOR THE MONTANA DEPARTMENT OF
ENVIRONMENTAL QUALITY

Jon Kenning, Chief
Water Protection Bureau
Water Quality Division

Issuance Date: September 30, 2022

EXHIBIT
F - Appeal

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I. EFFLUENT LIMITATIONS, MONITORING REQUIREMENTS & OTHER CONDITIONS

A. Description of Discharge Points and Mixing Zone

The authorization to discharge provided under this permit is limited to those outfalls specially designated below as discharge locations. Discharges at any location not authorized under an MPDES 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	Description
002	**Location:** Lower port primary diffuser, discharging into the Yellowstone River, located at 45°39'22.32" N latitude, 108°45'10.86" W longitude. **Mixing Zone:** None. There are no effluent limits that require a mixing zone. **Treatment Works**: Refinery wastewater treatment plant.
003	**Location:** Upper port secondary diffuser, discharging into the Yellowstone River, located at 45°39'22.32" N latitude, 108°45'10.86" W longitude. **Mixing Zone:** Acute mixing for 100 feet to provide 6.9% dilution, and chronic mixing for 1,000 feet to provide 27% dilution, for Total Residual Chlorine. **Treatment Works**: Refinery wastewater treatment plant.

B. Effluent Limitations

Outfall 002 – Lower Port Primary Diffuser to Yellowstone River

Beginning November 1, 2022, until the end of the permit, CHS Laurel Refinery will be required to meet the following effluent limits at Outfall 002:

Table 1. Outfall 002 - Final Effluent Limits

Parameter *TR = Total Recoverable*	Units	Effluent Limits	
		Maximum Daily	**Average Monthly**
BOD_5	lb/day	620	331
COD	lb/day	4,425	2,288
Net TSS	lb/day	532	339
Oil and Grease	mg/L	10	--
	lb/day	242	128
Phenol	lb/day	4.5	2.2
Ammonia, Total as N	lb/day	418	191
Chromium, TR	lb/day	9.1	5.2
Chromium, Hexavalent	lb/day	0.99	0.36
Sulfide	lb/day	3.9	1.8
Hydrogen Sulfide (H_2S) (1)	µg/L	3.5	1.5
Arsenic, TR (2)	µg/L	19	13
pH	s.u.	Between 6.0 and 9.0, all times	
Whole Effluent Toxicity, Acute, LC_{50}	% effluent	No acute toxicity	

Footnote:
(1) The H_2S limits become effective **November 1, 2025**. Any calculated results that show "non-detect" for H_2S at the RRV of 20 µg/L is considered compliance with the effluent limit.
(2) The arsenic limits become effective **November 1, 2025**.

There shall be no discharge of floating solids or visible foam other than trace amounts.

There shall be no discharge that causes visible oil sheen in the receiving stream.

There shall be no discharge of wastewater which reacts or settles to form an objectionable sludge deposit or emulsion beneath the surface of the receiving stream or upon adjoining shorelines.

At any time there is discharge from both Outfall 002 and 003, the effluent limits for Outfall 003 will apply. CHS will inform DEQ of the beginning and end of the dual discharge.

Outfalls 003 – Upper port secondary diffuser to Yellowstone River

Beginning November 1, 2022, until the end of the permit, CHS Laurel Refinery will be required to meet the following effluent limits at Outfall 003:

Table 2. Outfall 003 - Final Effluent Limits

Parameter *TR = Total Recoverable*	Units	Effluent Limits	
		Maximum Daily	**Average Monthly**
BOD_5	lb/day	620	331
COD	lb/day	4,425	2,288
Net TSS	lb/day	532	339
Oil and Grease	mg/L	10	--
	lb/day	242	128
Phenol	lb/day	4.5	2.2
Ammonia, Total as N	lb/day	418	191
Sulfide	lb/day	3.9	1.8
Hydrogen Sulfide (H_2S) (1)	µg/L	3.3	1.6
Chromium, TR	lb/day	9.1	5.2
Hexavalent Chromium	lb/day	0.99	0.36
Total Residual Chlorine (net) (2)	µg/L	400	170
Arsenic, TR (3)	µg/L	19	13
pH	s.u.	Between 6.0 and 9.0, all times	
Whole Effluent Toxicity, Acute, LC_{50}	% effluent	No acute toxicity	

Footnote:
(1) The H_2S limits become effective **November 1, 2025**. Any calculated results that show "non-detect" for H_2S at the RRV of 20 µg/L is considered compliance with the effluent limit.
(2) CHS may demonstrate compliance with the TRC limit by discounting the manganese oxide interference and reporting the net TRC concentration. Any results less than the RL of 50 µg/L are considered compliance with the effluent limit.
(3) The arsenic limits become effective **November 1, 2025**.

There shall be no discharge of floating solids or visible foam other than trace amounts.

There shall be no discharge that causes visible oil sheen in the receiving stream.

There shall be no discharge of wastewater which reacts or settles to form an objectionable sludge deposit or emulsion beneath the surface of the receiving stream or upon adjoining shorelines.

C. Monitoring Requirements

Samples shall be collected, preserved, and analyzed in accordance with approved procedures listed in 40 CFR 136. Data supplied by CHS must meet either provide a detect or non-detect at the required Reporting Level (RL) which is either the Required Reporting Value (RRV) listed in Circular DEQ-7 or another detection level that is DEQ's best determination of a level that can be achieved using EPA-approved methods or methods approved by DEQ.

Results shall be submitted electronically on NetDMRs by the 28th of the of the month following the end of the monitoring period.

1. *Outfalls 002 and 003*

Samples will reflect the nature of the discharge. As a minimum, the constituents shall be monitored at the frequencies and with the types of measurements indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge.

Self-monitoring of effluent shall be conducted following final treatment, at the outlet of the discharge pumps prior to the forced main unless another location is requested and approved by DEQ in writing. If there is no discharge from an outfall for the month, "No Discharge" shall be indicated for that outfall.

Table 3. Summary of Effluent Monitoring Requirements (1) – Outfalls 002 and 003

Parameter	Units	Monitoring Frequency	Type	Reporting Requirement	RL
Flow	MGD	Continuous	Instantaneous (2)	Daily Max & Mo Avg	--
pH	s.u.	1/Day	Instantaneous (2)	Daily Min & Daily Max	0.1
BOD_5	mg/L	1/Week	Composite	Daily Max & Mo Avg	--
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
COD	mg/L	1/Week	Composite	Daily Max & Mo Avg	--
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
TSS – Intake Water	mg/L	1/Week	Composite	None	--
TSS – Effluent Gross	mg/L	1/Week	Composite	None	--
TSS – Net (3)	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Oil and Grease	mg/L	1/Week	Grab	Daily Max & Mo Avg	1
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Phenol	µg/L	1/Month	Grab	Daily Max & Mo Avg	10
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Ammonia (as N)	mg/L	1/Week	Composite	Daily Max & Mo Avg	0.07
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Sulfide, Total	µg/L	1/Week	Composite	Daily Max & Mo Avg	--
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Sulfide, Dissolved	µg/L	1/Week	Composite	Daily Max & Mo Avg	--
Hydrogen Sulfide (H_2S) (4)	µg/L	1/Week	Calculated	Daily Max & Mo Avg	20
Chromium, TR	µg/L	1/Month	Composite	Daily Max & Mo Avg	10
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Chromium, Hexavalent	µg/L	1/Month	Composite	Daily Max & Mo Avg	2
	lb/day	1/Month	Calculated	Daily Max & Mo Avg	--
Arsenic, TR	µg/L	1/Week	Composite	Daily Max & Mo Avg	1
Total Residual Chlorine, Net	µg/L	1/Week	Grab	Daily Max & Mo Avg	50

Parameter	Units	Monitoring Frequency	Type	Reporting Requirement	RL
Fluoride	mg/L	1/Quarter	Composite	Report	200
Aluminum, Dissolved	µg/L	1/Quarter	Composite	Report	9
Cyanide	µg/L	1/Quarter	Grab	Report	3
Iron, TR	µg/L	1/Quarter	Composite	Report	20
Lead, TR	µg/L	1/Quarter	Composite	Report	0.3
Mercury, TR	µg/L	1/Quarter	Composite	Report	0.005
Selenium, TR	µg/L	1/Quarter	Composite	Report	1
Alpha Emitters	pCi/L	2/Year	Composite	Report	--
Beta Emitters	mrem/yr	2/Year	Composite	Report	--
Radium 228 + total	pCi/L	2/Year	Composite	Report	--
Nitrate + Nitrite (Nov 1 – July 31)	mg/L	1/Quarter	Composite	Daily Max & Mo Avg	0.02
Nitrate + Nitrite (Aug 1 – Oct 31)	mg/L	1/Week (5)	Composite	Daily Max & Mo Avg	0.02
Total Kjeldahl Nitrogen (TKN)	mg/L	1/Week (5)	Composite	Mo Avg	0.225
TN (6)	mg/L	1/Month (5)	Calculated	Mo Avg	0.245
	lb/day	1/Month (5)	Calculated	Mo Avg	--
TP	mg/L	1/Week (5)	Composite	Mo Avg	0.003
	lb/day	1/Month (5)	Calculated	Mo Avg	--
Temperature	° C	1/Month	Instantaneous	Daily Max & Mo Avg	0.1
Whole Effluent Toxicity, Acute	% Effluent	1/Quarter (7)	Grab	Pass/Fail	--

Footnotes: RL = Reporting Level

(1) The effluent monitoring location must be after all treatment has been completed (*i.e.*, downstream from all treatment units, and prior to entry to the receiving waters).
(2) Requires recording device or totalizer.
(3) Mass-based net TSS calculated by first determining mass-based net TSS discharge on a daily basis, then determining daily maximum and monthly average for the month.
(4) H2S concentrations are calculated based on the dissolved sulfide concentration and the sample pH and other parameters at time of sampling, in accordance with Standard Methods 4500-S2- H, unless another method is proposed by CHS and accepted by DEQ. Field data (pH, conductivity (µmhos/cm) and temperature), taken of an unpreserved water sample shall be recorded at the time the dissolved sulfide sample is collected. This field data must be used in the H2S calculations.
(5) Monitoring required only during the summer season of August 1 – October 31st.
(6) TN is the sum of Nitrate+Nitrite and TKN.
(7) Per the 2021/2022 TIE/TRE, two species conducted at least monthly unless CHS is approved to revert to quarterly. At minimum, failure of any acute Whole Effluent Toxicity (WET) test requires that the permittee comply with the Permit's Special Conditions.

Composite samples shall, as a minimum, be composed of four or more discrete aliquots (samples) of equal volume. The aliquots shall be combined in a single container for analysis (simple composite). The time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours.

2. *Yellowstone River – Ambient Conditions*

As a minimum, the following constituents shall be monitored for the Yellowstone River at the frequency and with the type of measurement indicated. Results must be

provided on NetDMRs by the 28th of the month following the end of the monitoring period. CHS must use a sufficiently sensitive method to detect the parameters at or above the RRV as specified in Circular DEQ-7 or other Reporting Level specified by DEQ; if this is not possible for any of the samples an explanation must be provided.

Upstream Monitoring Requirements as specified in this section shall be conducted beginning in **2022** through **2025**. CHS shall submit a topo map or aerial photo indicating the ambient monitoring location. If the sample location is changed, CHS shall submit a revised monitoring location prior to taking the next sample.

Table 4. Upstream Monitoring Requirements for Yellowstone River

Parameter	Units	Monitoring Frequency	Type	RL
Sulfide, Dissolved	µg/L	1/Quarter	Grab	--
Hydrogen Sulfide (H_2S)	µg/L	1/Quarter (1)	Calculated	20
pH	s.u.	1/Quarter (1)	Instantaneous	0.1
Conductivity	µmhos/cm	Optional for H_2S (1)	Instantaneous/Grab	--
Total Dissolved Solids	mg/L	Optional for H_2S (1)	Grab	--
Temperature	°C	1/Quarter (1)	Instantaneous	0.1
Hardness, as CaCO3	mg/L	1/Quarter	Grab	--
Total Nitrogen (2)	µg/L	1/Month (3)	Grab or Calculated	0.245
Total Phosphorus	µg/L	1/Month (3)	Grab	0.003
Aluminum, Dissolved	µg/L	1/Quarter	Grab	9
Cyanide	µg/L	1/Quarter	Grab	3
Iron, TR	µg/L	1/Quarter	Grab	20
Lead, TR	µg/L	1/Quarter	Grab	0.3
Mercury	µg/L	1/Quarter	Grab	0.005
Selenium	µg/L	1/Quarter	Grab	1
Alpha emitters	pCi/L	1/Quarter	Instantaneous	--
Beta emitters	mrem/yr	1/Quarter	Instantaneous	--
Radium, 228 and total	pCi/L	1/Quarter	Instantaneous	--

Footnotes: RL = Reporting Level

(1) H_2S concentrations are calculated based on the dissolved sulfide concentration and pH (using look-up table), and potentially TDS and other field parameters (for equation method) in accordance with Standard Methods 4500-S^{2-} H, unless another method is proposed by CHS and accepted by DEQ. Field data taken of an unpreserved water sample shall be recorded *at the time the dissolved sulfide sample is collected*. This field data must be used to calculate the H_2S concentration from the laboratory-provided dissolved sulfide data.

(2) TN can be determined by either the persulfate method or the sum of Nitrate + Nitrite and TKN, as long as the method is capable of having a detect or meeting the RRV.

(3) Monitoring required only during the Yellowstone summer season of August 1 – October 31st.

3. *Whole Effluent Toxicity (WET) Monitoring – Acute Toxicity*

CHS is required to continue monthly two-species WET testing and the Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) investigations until they have identified and reduced the source of toxicity and can demonstrate treatment improvements that are sufficient to pass two-species WET tests for at least six months. At this point CHS can request to revert to two-species on a quarterly basis and DEQ will review and approve or disapprove, in writing.

For each WET test, CHS shall conduct an acute static renewal toxicity test on a grab sample of the effluent. Testing will employ two species and will consist of five effluent concentrations (100, 50, 25, 12.5, 6.25 percent effluent) and a control. Dilution water and the control shall consist of the receiving water.

The toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, EPA-821-R-02-012 and the *Region VIII EPA NPDES Acute Test Conditions - Static Renewal Whole Effluent Toxicity Test* testing protocols. The permittee shall conduct an acute 48-hour static renewal toxicity test using *Ceriodaphnia* sp. and an acute 96-hour static renewal toxicity test using fathead minnows (*Pimephales promelas*). The control of pH in the toxicity test utilizing CO_2 enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection.

Furthermore, if CHS can demonstrate in the TIE/TRE that chlorine is a contributing factor for the acute test failures, DEQ may consider sample pre-treatment for removal of chlorine. CHS may provide parallel acute tests, but not replace existing tests, until DEQ has approved this revision, in writing.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration. If more than 10 percent control mortality occurs, the test is considered invalid and shall be repeated until satisfactory control survival is achieved unless a specific individual exception is granted by DEQ. This exception may be granted if less than 10 percent mortality was observed at the dilutions containing high effluent concentrations.

If acute toxicity occurs in a routine test (not as part of the accelerated testing for a TIE/TRE), an additional test is required to be conducted within 14 days of the date of the initial sample. Should acute toxicity occur in the second test, testing shall occur once a month until further notified by DEQ. In all cases, the results of all toxicity tests must be submitted to the Department in accordance with Part II of this permit. All WET tests including retests must be two species.

Failure to initiate or conduct an adequate TIE/TRE, or delays in the conduct of such tests, shall not be considered a justification for noncompliance with the whole effluent toxicity limits contained in Part I.B of this permit. A TRE plan

needs to be submitted to DEQ within 45 days after confirmation of the continuance of the effluent toxicity.

The quarterly WET test results from the laboratory shall be reported along with the NetDMR report no later than the 28th day of the month following the completed reporting period. The format for the laboratory report shall be consistent with the latest revision of the EPA form Region VIII Guidance for Acute Whole Effluent Reporting and shall include all chemical and physical data as specified.

CHS is not eligible to further reduce the frequency to semi-annual during this permit cycle. CHS must continue the accelerated testing until they are able to prove the TIE/TRE was successful (by passing six months of two-species tests); at that time DEQ will review and, if appropriate, approve the reduction to quarterly two-species tests.

D. Special Conditions

1. *Toxicity Identification Evaluation / Toxicity Reduction Evaluation (TIE/TRE)*

Should the effluent exceed the acute toxicity limitation in a routine test and is confirmed as persistent by the additional test, a TIE/TRE shall be undertaken by the permittee to establish the cause of the toxicity, locate the source(s) of the toxicity, and develop control of, or treatment for the toxicity. Failure to conduct an adequate TIE/TRE, or delays in the conduct of such tests, shall not be considered a justification for noncompliance with the whole effluent toxicity limits. A TRE plan needs to be submitted to DEQ within 45 days after confirmation of the continuance of the effluent toxicity.

2. *Arsenic and Hydrogen Sulfide*

Beginning in January 2023, CHS shall submit an annual report to DEQ no later than January 28th for each year, with the final report due November 14, 2025. The report shall summarize the progress made in achieving compliance with the arsenic and hydrogen sulfide effluent limits over the previous year and the actions planned for the upcoming year.

The first year's annual report will include a Standard Operating Procedure for collecting data and computing the Hydrogen Sulfide concentrations for both the effluent and the ambient conditions. The raw data, computations, and results for the monthly NetDMR hydrogen sulfide values will be attached as a report in FACTS or NetDMR.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling

Samples taken in compliance with the monitoring requirements established under Part I of the permit shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

B. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under Part 136, Title 40 of the Code of Federal Regulations, unless other test procedures have been specified in this permit. All flow-measuring and flow-recording devices used in obtaining data submitted in self-monitoring reports must indicate values within 10 percent of the actual flow being measured.

C. Penalties for Tampering

The Montana Water Quality Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six months, or by both.

D. Reporting of Monitoring Results

Monitoring results must be reported within a Discharge Monitoring Report (DMR). Monitoring results must be submitted electronically (NetDMR web-based application) no later than the 28th day of the month following the end of the monitoring period. Whole effluent toxicity (biomonitoring) results must be reported with copies of the laboratory analysis report on forms from the most recent version of EPA Region VIII's "Guidance for Whole Effluent Reporting." If no discharge occurs during the entire reporting period, "No Discharge" must be reported within the respective DMR.

All other reports must be signed and certified in accordance with Part IV.G 'Signatory Requirements' of this permit and submitted to DEQ at the following address:

Montana Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, Montana 59620-0901

E. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit must be submitted to the Department in either electronic or paper format and be postmarked no later than 14 days following each schedule date unless otherwise specified in the permit.

F. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using approved analytical methods as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

G. Records Contents

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The initials or name(s) of the individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The time analyses were initiated;
5. The initials or name(s) of individual(s) who performed the analyses;
6. References and written procedures, when available, for the analytical techniques or methods used; and
7. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

H. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time. Data collected on site, Discharge Monitoring Reports, and a copy of this MPDES permit must be maintained on site during the duration of activity at the permitted location.

I. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee shall report any serious incidents of noncompliance as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The report shall be made to the Water Protection Bureau at (406) 444-5546 or the Office of Disaster and Emergency Services at (406) 324-4777. The following examples are considered serious incidents:
    a. Any noncompliance which may seriously endanger health or the environment;
    b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G of this permit, "Bypass of Treatment Facilities"); or
    c. Any upset which exceeds any effluent limitation in the permit (see Part III.H of this permit, "Upset Conditions").

2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. a description of the noncompliance and its cause;

   b. the period of noncompliance, including exact dates and times;

   c. the estimated time noncompliance is expected to continue if it has not been corrected; and

   d. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Protection Bureau, by phone, (406) 444-5546.

4. Reports shall be submitted to the addresses in Part II.D of this permit, "Reporting of Monitoring Results".

J. Other Noncompliance Reporting

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.D of this permit are submitted. The reports shall contain the information listed in Part II.I.2 of this permit.

K. Inspection and Entry

The permittee shall allow the head of the Department or the Director, or an authorized representative thereof, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give the Department or the Regional Administrator advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance.

B. Penalties for Violations of Permit Conditions

The Montana Water Quality Act provides that any person who violates a permit condition of the Act is subject to civil or criminal penalties not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions of the Act is subject to a fine of not more than $50,000 per day of violation, or by imprisonment for not more than 2 years, or both, for subsequent convictions. MCA 75-5-611(a) also provides for administrative penalties not to exceed $10,000 for each day of violation and up to a maximum not to exceed $100,000 for any related series of violations. Except as provided in permit conditions on Part III.G of this permit, "Bypass of Treatment Facilities" and Part III.H of this permit, "Upset Conditions", nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. However, the permittee shall operate, as a minimum, one complete set of each main line unit treatment process whether or not this process is needed to achieve permit effluent compliance.

F. Removed Substances

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard.

G. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts III.G.2 and III.G.3 of this permit.

2. Notice:

   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.

   b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.I of this permit, "Twenty-four Hour Reporting".

3. Prohibition of bypass:

   a. Bypass is prohibited and the Department may take enforcement action against a permittee for a bypass, unless:

      1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

      3) The permittee submitted notices as required under Part III.G.2 of this permit.

   b. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in Part III.G.3.a of this permit.

H. Upset Conditions

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of Part III.H.2 of this permit are met. No determination made

during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review (i.e. Permittees will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for noncompliance with technology-based permit effluent limitations).

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred, and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under Part II.I of this permit, “Twenty-four Hour Notice of Noncompliance Reporting;” and

   d. The permittee complied with any remedial measures required under Part III.D of this permit, "Duty to Mitigate.”

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

J. Changes in Discharge of Toxic Substances

Notification shall be provided to the Department as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:

   a. One hundred micrograms per liter (100 µg/L);

   b. Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

   c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

d. The level established by the Department in accordance with 40 CFR 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. Five hundred micrograms per liter (500 µg/L);

   b. One milligram per liter (1 mg/L) for antimony;

   c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Department in accordance with 40 CFR 122.44(f).

IV. GENERAL REQUIREMENTS

A. Planned Changes

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of pollutant discharged. This notification applies to pollutants which are not subject to effluent limitations in the permit.

B. Anticipated Noncompliance

The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application must be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for revoking, modifying and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

F. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information with a narrative explanation of the circumstances of the omission or incorrect submittal and why they weren't supplied earlier.

G. Signatory Requirements

All applications, reports or information submitted to the Department or the EPA shall be signed and certified.

1. All permit applications shall be signed as follows:

    a. For a corporation: by a responsible corporate officer;

    b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Department shall be signed by a person described above or by a duly authorized representative of that person. A person is considered a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Department; and

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or an individual occupying a named position.)

3. Changes to authorization. If an authorization under Part IV.G.2 of this permit is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.G.2 of this permit must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports

The Montana Water Quality Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $25,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public

inspection at the offices of the Department. As required by the Clean Water Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

K. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges.

L. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers

This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Department at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them;
3. The Department does not notify the existing permittee and the proposed new permittee of an intent to revoke or modify and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part IV.M.2 of this permit; and
4. Required annual and application fees have been paid.

N. Fees

The permittee is required to submit payment of an annual fee as set forth in ARM 17.30.201. If the permittee fails to pay the annual fee within 90 days after the due date for the payment, the Department may:

1. Impose an additional assessment computed at the rate established under ARM 17.30.201; and,
2. Suspend the processing of the application for a permit or authorization or, if the nonpayment involves an annual permit fee, suspend the permit, certificate or authorization for which the fee is required. The Department may lift suspension at any time up to one year after the suspension occurs if the holder has paid all outstanding fees, including all penalties, assessments and interest imposed under this sub-section. Suspensions are limited to one year, after which the permit will be terminated.

O. Reopener Provisions

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary), or other appropriate requirements if one or more of the following events occurs:

1. Water Quality Standards: The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.

2. Water Quality Standards are Exceeded: If it is found that water quality standards or trigger values in the receiving stream are exceeded either for parameters included in the permit or others, the department may modify the effluent limits or water management plan.

3. TMDL or Wasteload Allocation: TMDL requirements or a wasteload allocation is developed and approved by the Department and/or EPA for incorporation in this permit.

4. Water Quality Management Plan: A revision to the current water quality management plan is approved and adopted which calls for different effluent limitations than contained in this permit.

5. Toxic Pollutants: A toxic standard or prohibition is established under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit.

6. Toxicity Limitation: Change in the whole effluent protocol, or any other conditions related to the control of toxicants have taken place, or if one or more of the following events have occurred:

   a. Toxicity was detected late in the life of the permit near or past the deadline for compliance.

   b. The TRE/TIE results indicated that compliance with the toxic limits will require an implementation schedule past the date for compliance.

   c. The TRE/TIE results indicated that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits.

   d. Following the implementation of numerical controls on toxicants, a modified whole effluent protocol is needed to compensate for those toxicants that are controlled numerically.

   e. The TRE/TIE revealed other unique conditions or characteristics which, in the opinion of the Department, justify the incorporation of unanticipated special conditions in the permit.

V. DEFINITIONS

1. **"Act"** means the Montana Water Quality Act, Title 75, chapter 5, MCA.

2. **"Administrator"** means the administrator of the United States Environmental Protection Agency.

3. **"Acute Toxicity"** occurs when 50 percent or more mortality is observed for either species (See Part I.C of this permit) at any effluent concentration. Mortality in the control must simultaneously be 10 percent or less for the effluent results to be considered valid.

4. **"Arithmetic Mean" or "Arithmetic Average"** for any set of related values means the summation of the individual values divided by the number of individual values.

5. **"Average Monthly Limitation"** means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

6. **"Bypass"** means the intentional diversion of waste streams from any portion of a treatment facility.

7. **"Chronic Toxicity"** means when the survival, growth, or reproduction, as applicable, for either test species, at the effluent dilution(s) designated in this permit (see Part I.C.), is significantly less (at the 95 percent confidence level) than that observed for the control specimens.

8. **"Composite samples"** means a sample composed of four or more discrete aliquots (samples). The aggregate sample will reflect the average quality of the water or wastewater in the compositing or sample period. Composite sample may be composed of constant volume aliquots collected at regular intervals (simple composite) or flow proportioned.

9. **"Daily Discharge"** means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

10. **"Daily Maximum Limit"** means the maximum allowable discharge of a pollutant during a calendar day. Expressed as units of mass, the daily discharge is cumulative mass discharged over the course of the day. Expressed as a concentration, it is the arithmetic average of all measurements taken that day.

11. **"Department"** means the Montana Department of Environmental Quality (DEQ). Established by 2-15-3501, MCA.

12. **"Director"** means the Director of the Montana Department of Environmental Quality.

13. **"Discharge"** means the injection, deposit, dumping, spilling, leaking, placing, or failing to remove any pollutant so that it or any constituent thereof may enter into state waters, including ground water.

14. **"EPA"** means the United States Environmental Protection Agency.

15. **"Federal Clean Water Act"** means the federal legislation at 33 USC 1251, *et seq*.

16. **"Grab Sample"** means a sample which is taken from a waste stream on a one-time basis without consideration of flow rate of the effluent or without consideration for time.

17. **"Instantaneous Maximum Limit"** means the maximum allowable concentration of a pollutant determined from the analysis of any discrete or composite sample collected, independent of the flow rate and the duration of the sampling event.

18. **"Instantaneous Measurement"**, for monitoring requirements, means a single reading, observation, or measurement.

19. **"Minimum Level"** (ML) of quantitation means the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration point for the analyte, as determined by the procedure set forth at 40 CFR 136. In most cases the ML is equivalent to the Required Reporting Value (RRV) unless otherwise specified in the permit.

19. **"Mixing zone"** means a limited area of a surface water body or aquifer where initial dilution of a discharge takes place and where certain water quality standards may be exceeded.

20. **"Nondegradation"** means the prevention of a significant change in water quality that lowers the quality of high-quality water for one or more parameters. Also, the prohibition of any increase in discharge that exceeds the limits established under or determined from a permit or approval issued by the Department prior to April 29, 1993.

21. **"Regional Administrator"** means the administrator of Region VIII of EPA, which has jurisdiction over federal water pollution control activities in the state of Montana.

22. **"Severe property damage"** means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

23. **"TIE"** means a toxicity identification evaluation.

24. **"TMDL"** means the total maximum daily load limitation of a parameter, representing the estimated assimilative capacity for a water body before other designated uses are adversely affected. Mathematically, it is the sum of wasteload allocations for point sources, load allocations for non-point and natural background sources, and a margin of safety.

25. **"TRE"** means a toxicity reduction evaluation.

26. **"TSS"** means the pollutant parameter total suspended solids.

27. **"Upset"** means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.