

**UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY**
REGION 8

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FILED
EPA REGION VIII
HEARING CLERK

Docket No. RCRA-08-2013-0001

IN THE MATTER OF:

**Jore Corporation
34837 Innovation Drive
Ronan, MT 59864**

Respondent.

**ADMINISTRATIVE ORDER
PURSUANT TO
SECTION 7003 OF RCRA**

I. INTRODUCTION

- A. This Administrative Order on Consent (AOC) is entered into voluntarily by the United States Environmental Protection Agency Region 8 (EPA) and Respondent, Jore Corporation (Respondent) and is issued pursuant to authority granted to the Administrator of the EPA under section 7003 of the Resource Conservation and Recovery Act, as amended 42 U.S.C. § 6901, 6973 (Section 7003).
- B. The Administrator has delegated the authority to issue orders under Section 7003 to the Regional Administrators of the EPA by Delegations 8-22-A and 8-22-C (April 20, 1994). In EPA Region 8 this authority was further redelegated to the Assistant Regional Administrator, Office of Enforcement, Compliance and Environmental Justice by Delegations 8-22-A and 8-22-C (November 20, 2000).
- C. The mutual objectives of the EPA and Respondent in entering into this AOC are to identify, investigate, remedy, and/or prevent potential endangerments to human health and/or the environment from Respondent's handling of certain solid waste at Respondent's manufacturing facility located at 34837 Innovation Drive in Ronan, Montana (Facility), and to ensure that the work ordered by EPA hereunder is designed and implemented to protect human health and/or the environment.
- D. This AOC thus provides for the performance by Respondent of characterization and clean-up activities specified in Section VIII (Work to Be Performed), including any additional work that may be required under Section VIII E (Additional Work) of this AOC.
- E. Respondent's participation in this AOC shall not constitute or be construed as an admission of liability. Respondent neither admits nor denies the factual allegations and legal conclusions set forth in this AOC (Sections V and VI, Findings of Fact and Conclusions of Law).

F. The EPA and Respondent acknowledge that this AOC has been negotiated by the parties in good faith and that this AOC is fair, reasonable, and in the public interest.

II. JURISDICTION

A. As more fully described below, the EPA has determined that Respondent has contributed or is contributing to the past or present handling, storage, treatment, transportation or disposal of solid waste in a manner that may present an imminent and substantial endangerment to health or the environment.

B. The EPA notified the Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation (Tribes) of this action pursuant to Section 7003(c) of RCRA, 42 U.S.C. Section § 6973(c), on November 30, 2012.

C. The EPA notified the State of Montana of this action pursuant to Section 7003(a) of RCRA, 42 U.S.C. § 6973(a) on July 19, 2013.

D. Respondent agrees to undertake and complete all actions required by the terms and conditions of this AOC. Respondent consents to and agrees not to contest the authority or jurisdiction of the undersigned to issue or enforce this AOC, and agrees not to contest the validity of this AOC, or its terms or conditions, in any action by EPA or the United States to enforce this AOC.

III. PARTIES BOUND

A. This Order shall apply to and be binding upon Respondent, its employees, agents, successors and assigns.

B. Respondent shall provide a copy of this Order to all contractors, subcontractors, laboratories and consultants retained to conduct or monitor any portion of the work performed pursuant to this Order within two (2) calendar days of the date of Respondent's receipt of this order, or date of retention, and shall condition all such contracts on compliance with the relevant terms of this Order.

C. Respondent shall give notice to the EPA thirty (30) or more days prior to transfer of ownership or operation of Jore Corporation or the Facility.

IV. DEFINITIONS

Unless otherwise expressly provided herein, terms used in this AOC that are defined in RCRA shall have the meaning assigned to them therein. Whenever the terms listed below are used in this AOC the following definitions apply:

“Acceptable” shall mean that the quality of submittals or completed work is sufficient to warrant EPA review to determine whether the submittal or work meets the terms and conditions of this

AOC. Acceptability of submittals or work, however, does not necessarily imply that they will be approvable. Approval by the EPA of submittals or work, however, establishes that those submittals were prepared, or work was completed, in a manner acceptable to the EPA.

“AOC” shall mean this Administrative Order on Consent, any amendments thereto, and any documents incorporated by reference into this AOC.

“Administrative Record” shall mean the administrative record compiled by the EPA in support of the EPA’s issuance of this Order. The Administrative Record is maintained at the EPA Region 8 offices located at 1595 Wynkoop Street, Denver, CO. The Administrative Record may be updated after issuance of this AOC as the EPA determines is necessary.

“CEI” shall mean the RCRA compliance evaluation inspection conducted by an EPA inspector at the Facility on or about August 30, 2012.

“Data Quality Objectives” shall mean those qualitative and quantitative statements derived from the outputs of a scientific and legally defensible data collection planning process.

“Day” shall mean a calendar day unless expressly stated otherwise.

“Effective Date” shall be the date on which the EPA signs this AOC following the public comment period held pursuant to Section XXIV (Public Comment on this AOC).

“Facility” shall mean all properties and structures owned by Jore Corporation located at 34837 Innovation Drive in Ronan, Montana, in Lake County, and adjacent properties to which releases of hazardous waste, solid waste, or hazardous constituents have migrated.

“RCRA” shall mean the Resource Conservation and Recovery Act (also known as the Solid Waste Disposal Act), as amended, 42 U.S.C. § 6901, *et seq.*

“Record” shall include all documents, reports, data, and other information, both in paper and electronic form, generated or produced during implementation of this AOC.

“SPCC Plan” shall mean Spill Prevention Control and Countermeasures Plan as required by the Oil Pollution Act and which is necessary for RCRA facilities with a storage capacity of greater than 1320 gallons of used oil.

“Tribes” shall mean the Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation.

“Work” shall mean all the activities and requirements specified in this AOC including, but not limited to, Section VIII (Work to Be Performed).

V. FINDINGS OF FACT

- A. The EPA conducted a RCRA compliance evaluation inspection (CEI) at the Facility on August 30, 2012.
- B. At the time of the CEI, Jore had notified that it was operating as a conditionally exempt small quantity generator of hazardous waste. The inspector noted the following items on the Notice of Inspection (NOI) form: failure to make timely hazardous waste determinations, failure to respond to releases of oil to soils and water, no SPCC Plan while storing greater than 1320 gallons of oil.
- C. A ditch and pond system for storm water collection was installed in 2000 and 2001. It was lined with 30 MIL PVC liner selected by the design engineer to resist a variety of chemicals. Each storm drainage to the ponds or collection ditch passes through one of nine 1500-gallon separator tanks. In addition, eleven catch basins overflow into the collection ditch. The collection ditch, referred to by the facility as the swale (Swale), is 1362.5 uniform feet in length and has a total capacity of 163,075 gallons.
- D. The facility manufactures drill bits and power tool accessories, using mineral oil coolant for their cutting machines. The bulk of the oil is recycled for reuse through filter systems equipped with paper filters. Once spent, the oil-soaked filter papers were placed into an open-top roll-off (Roll-off).
- E. During the CEI, the EPA RCRA inspector observed releases of what appeared to be used oil emanating from the bottom of the Roll-off. Oil had leaked from the Roll-off and had flowed both over the pavement and onto the bank soils of the collection ditch and into the sediment and rocks in the collection ditch. There was also evidence of overflow from a manhole.
- F. The inspector observed numerous drums and containers with unknown contents on the exterior of the process building, including 21 drums on the northwest corner of the process building for which a waste determination was needed. There were another 15 or more drums on the northeast corner for which the contents needed to be determined. There were also numerous drums that had been cut open and were empty or contained small amounts of rainwater.
- G. In a September 6, 2012, email to the EPA, Jore explained that the water and oil collected in the sumps come from oil mist from air exchangers on the roof and water runoff from the roof.
- H. The collection ditch flows into a large pond used by Jore for containment of storm water drainage. The first pond, which has a volume of 776,620 gallons, flows into a second pond, also used for containment, that has a volume of 609,962 gallons.
- I. During the CEI, the EPA RCRA inspector observed waterfowl landing on the first of the two containment ponds.

J. The inspector was told that a portion of the land adjacent to the second pond is leased for cattle grazing. In a follow-up email, dated September 10, 2012, the facility stated: "I am confident that cattle have not been allowed to graze in the area around the first pond. The second pond is fenced off from the rest of the pasture as well, but I cannot say with certainty they have not been allowed to graze in that area in the past."

K. An unsigned copy of the lease between Jore Corporation and Hughes Ranch, LLC (tenant) for the 2012 grazing season was submitted by email on March 29, 2013.

L. As requested at the close-out of the CEI and in several emails, the facility performed waste determinations for the 55-gallon drums of unknown or questionable contents and were disposing of them. In an email dated December 11, 2012, Jore provided RCRA hazardous waste characterization information and the disposal status of the drums observed at the Facility during the CEI. Of the 100 drums for which waste characterization was performed subsequent to the inspection, 3 were determined to be corrosive hazardous waste (with a pH of less than 2).

M. In a March 20, 2013, email, the facility provided a copy of the hazardous waste manifest documenting disposal of the three drums of corrosive hazardous waste at US Ecology Nevada.

N. In a November 9, 2012, email, Jore provided the analytical results collected from samples collected on October 9, 2012, taken at three locations: the inlet to the containment ditch by the dumpster, the inlet to the first pond, and the inlet to the second pond. Results of the sampling are provided below:

Location	Matrix	Constituent	Result
J1-SW	Aqueous	C19-C36 Aliphatics	85,700 ug/L
		C11-C22 Aromatics	3,480 ug/L
		Total Extractable HC	90,300 ug/L
		Naphthalene	0.26 ug/L
		Phenanthrene	0.22 ug/L
J2-SW	Aqueous	C19-36 Aliphatics	3,150 ug/L
		C11-C22 Aromatics	221 ug/L
		Total Extractable HC	3,400 ug/L
		Naphthalene	0.24 ug/L
J3-SW	Aqueous	Total Extractable HC (screen analysis)	340 ug/L
J1-Sed	Sediment	C9-C18 Aliphatics	2,260 mg/kg-dry
		C19-C36 Aliphatics	317,000 mg/kg-dry
		C11-C22 Aromatics	21,400 mg/kg-dry
		Total Extractable HC	344,000 mg/kg-dry

J3-Sed	Sediment	C19-C36 Aliphatics	850 mg/kg-dry
		C11-C22 Aromatics	217 mg/kg-dry
		Total Extractable HC	1150 mg/kg-dry

O. In an email dated March 29, 2013, the facility clarified that the sediment sample J2 was not analyzed because there was no fine material, and the sediment turned out to be algae.

P. In an email to the EPA dated September 6, 2012, Jore wrote that the ground water level varies between 48 and 61 inches.

Q. According to the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases, September 2009, a copy of which is included as Attachment A to this AOC, the following risk-based screening levels (RBSLs) for petroleum release sites are appropriate. For a commercial site with a depth to groundwater of less than 10 feet, the RBSLs are as follows:

	Surface Soil (0-2 feet)	Subsurface Soil (> 2 feet)	Groundwater
C9-C18 Aliphatics	1000 mg/kg	2000 mg/kg	1000 ug/l
C19-C36 Aliphatics	100,000 mg/kg	100,000 mg/kg	1000 ug/l
C11-C22 Aromatics	400 mg/kg	400 mg/kg	1000 ug/l
Naphthalene	9 mg/kg	9 mg/kg	100 ug/l
EPH Screen, Fractionate	200 mg/kg	200 mg/kg	1000 ug/l

VI. CONCLUSIONS OF LAW

A. Based on the Findings of Fact set forth above and other information in the Administrative Record supporting this AOC, the EPA has determined that:

B. Respondent is a "person" within the meaning of section 1004(15) of RCRA, 42 U.S.C. § 6903(15).

C. Wastes handled by Jore at the Facility are "solid waste[s]" as defined in section 1004(27) of RCRA, 42 U.S.C. § 6903(27).

D. Respondent has contributed and/or is contributing to the handling, storage, treatment, transportation or disposal of solid waste at the Facility within the meaning of section 7003 of the Act, 42 U.S.C. § 6973.

E. Based upon evidence received, the EPA has determined that Respondent's handling of solid waste and hazardous waste may present an imminent and substantial endangerment to health or the environment within the meaning of Section 7003 of the Act.

F. The EPA takes this action pursuant to Section 7003 having determined that the issuance of this AOC is necessary to protect human health or the environment.

VII. ORDER ON CONSENT

Based upon the Administrative Record and the Findings of Fact (Section V) and Conclusions of Law (Section VI) set forth above, and in consideration of the promises set forth herein, the following is hereby agreed to and ordered by the EPA. Respondent shall comply with all provisions of this AOC, including, but not limited to, all appendices to this AOC and all documents incorporated by reference into this AOC.

VIII. WORK TO BE PERFORMED

Respondent has agreed to perform the following work:

A. Designation of Project Coordinator

Respondent shall designate a Project Coordinator responsible for administration of all Respondent's actions required by this AOC. Within fifteen (15) days of the effective date of this AOC, Respondent shall submit the designated Project Coordinator's name, address, and telephone number in writing to the EPA. To the greatest extent possible, the Project Coordinator shall be present on-site or readily available during site work. The EPA has designated Linda Jacobson of the Office of Enforcement, Compliance and Environmental Justice as its Project Coordinator. Respondent shall direct all submissions required by the Consent Order to both the Tribes and to the EPA. Submissions to the EPA shall be directed to:

Linda Jacobson, 8ENF-RC
US EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129
Telephone: (303) 312-6503
email: jacobson.linda@epa.gov
Fax: (303) 312-6953

Submissions to the Tribes shall be directed to:

Mr. Mike Durglo
Environmental Director
Confederated Salish and Kootenai Tribes
P.O. Box 278
Polson, MT. 59860-0278

B. Sampling and Analysis Work Plan

1. Within forty-five (45) days of the effective date of this AOC, Respondent shall submit a Sampling and Analysis Work Plan (Work Plan) for EPA approval.

2. The Work Plan shall be designed so that Respondent will determine the nature and extent of any environmental contamination from releases of solid waste, hazardous waste, or hazardous constituents, if any, at the Facility and beyond the Facility boundaries. The Work Plan shall document the procedures Respondent shall use to conduct those activities necessary to: characterize the source(s) of contamination; characterize the potential pathways of contaminant migration; define the degree and extent of contamination; and identify actual or potential human and/or ecological receptors. A specific schedule for implementation of all activities shall be included in the Work Plan.

3. The Work Plan shall include characterization of the following and specify the rationale for and definition of the number, location and depth of the samples, and the parameters for analysis:

(A) A sufficient number of soil and groundwater samples to establish background quality for the EPA-approved list of constituents proposed in the Work Plan ;

(B) Co-located samples of sediment and liquids (if present) in the collection ditch, catch basins, and ponds to determine the magnitude and extent of past releases;

(C) Collection of soil samples beneath liner at areas where the liner in the collection ditch and ponds has been breached by plant or animal intrusion, and contamination has been detected in the sediment and liquid;

(D) Collection of representative soils in the banks of the collection ditch and ponds and at the pond outlets;

(E) The initial phase of the Work Plan shall consist of a GeoProbe system of sampling to characterize the groundwater even through potential "secondary" source areas. The results of the Geo Probe system sampling will be presented to EPA with recommendations as to whether installations of groundwater wells are warranted to determine groundwater flow direction(s), identify aquifer depth, and impacts to groundwater from past releases, if any. In addition, the groundwater sampling and analysis section shall identify all well specifications and construction and the procedures to be used in making the above-well placement determinations (e.g., well design, well construction, the use of "Push Probe" technology to aid in the placement of wells, iterative sampling concepts, geophysical investigative methods, groundwater modeling, etc.).

(F) Identification of human and ecological receptors, including well usage and well construction for all non-Facility wells within 2 miles of the Facility property boundary, and identification of endangered or threatened species, migratory bird usage of ponds and ditches including any past mortalities observed by Respondent's personnel. Non-Facility well usage and construction will be assessed by use of permits and recorded well logs, as supplemented by interviews with well owners should a well log or permit not be available for a specific well. Copies of such permits, well logs, and interview notes will be included in the Sampling and Analysis Report.

(G) As part of the Work Plan, Respondent shall include a Quality Assurance Project Plan (QAPP) for EPA review and approval. The QAPP shall address quality assurance, quality control, and chain of custody procedures for all sampling, monitoring and analytical activities.

(H) Analytical methods must be those specified in the most recent version of Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, U.S. EPA Publication No. SW-846, Final Update III, promulgated on June 13, 1997 (*See* 62 Federal Register 32452), Methods for Chemical Analysis of Water and Wastes, EPA Report 600/4-79-020, March 1983, or alternate methods approved by the EPA that will perform equal to or better than SW-846 methods under conditions expected during the investigation

4. Concurrent with the submission of the Work Plan, Respondent shall submit for EPA's information, but not approval, a Health and Safety Plan (HASP) for the work to be performed under this AOC.

5. Upon receipt of EPA approval of the Work Plan, or approval with modifications, Respondent shall implement the EPA-approved Work Plan in accordance with the terms and schedules contained therein.

6. Progress made in completing the requirements of the Work Plan shall be detailed in quarterly progress reports (Progress Reports) which shall include, at a minimum, the following information: activities conducted during the previous quarter; summary of problems encountered during the previous quarter and how the problems were or are being addressed; changes in work; and projected work for the next quarter. The first quarterly report will be due on the tenth day of the first January, April, July, or October after the AOC becomes effective.

C. Sampling and Analysis Report

1. Within forty-five (45) days of completion of the implementation of the Work Plan, Respondent shall submit to the EPA for review and approval a Sampling and Analysis Report, in accordance with the requirements in the EPA-approved Work Plan.

2. If the EPA determines that additional characterization work is necessary, the EPA will inform Respondent of such additional requirements, and Respondent shall conduct such characterization according to EPA directions and within a timeframe proposed by Respondent for EPA's approval.

D. Corrective Measures

Within thirty (30) days of receipt of EPA's written determination that the releases have been adequately assessed, Respondent shall submit a Corrective Measures Work Plan (CMWP) based upon the findings of the Sampling and Analysis Report. The CMWP shall, at a minimum:

1. Present the recommendations of the Sampling and Analysis Report;
2. Specify the corrective measures proposed by Respondent to address the releases to soils, sediment and groundwater, basing these recommendations on risks posed to identified receptors. At a minimum, proposed measures shall include: (a) removal of stained soils, sediment, and vegetation, unless Respondent successfully demonstrates to EPA that no unacceptable risks to receptors are posed by certain stained sediment or vegetation, or that receptors will be adequately protected in both the short term and long term by alternative remedial measures proposed by Respondent regarding certain stained soils, sediment or vegetation, and (b) further removal of source areas as necessary to prevent further releases to and from impacted areas; and
3. Include a plan that describes operation, maintenance, inspection practices for the stormwater collection system including the lined ditches and ponds. Inspections should include assessment of the liner integrity, repair or replacement of the liner as necessary, schedule for monitoring release response and overall system maintenance and record keeping.

E. Additional Work

1. The EPA may determine, or Respondent may propose, that certain tasks are necessary in addition to or in lieu of the tasks included in any EPA-approved Work Plan when such additional work is necessary to meet the objectives set forth in paragraph I.C. above. The EPA will specify, in writing, the basis for its determination that any additional work is necessary.
2. Within five (5) days after the receipt of such determination, Respondent shall have the opportunity to meet or confer with the EPA to discuss any additional work. The EPA may modify or withdraw its request for additional work after such conference.
3. If the EPA determines that Respondent must conduct additional work Respondent shall submit for EPA approval a work plan for any additional work within ten (10) days of Respondent's receipt of the EPA's determination that any additional work is necessary, or according to an alternative schedule established by the EPA (Additional Work Plan). The EPA shall review the Additional Work Plan pursuant to Section IX below.
4. Upon EPA approval of an Additional Work Plan, Respondent shall implement the Additional Work Plan in accordance with the schedule and provisions contained therein. The Additional Work Plan shall be incorporated by reference into this AOC upon approval by the EPA.

IX. AGENCY REVIEW AND APPROVAL OF DELIVERABLES

- A. The EPA may reject any submittal which the EPA determines is not Acceptable. Submittal of a document not Acceptable is a violation of this AOC unless such document is resubmitted prior to the due date for such submittal, or other due date agreed to by the EPA, and the EPA determines that the submittal is Acceptable.

B. The EPA will provide Respondent with its written approval, conditional approval, approval with modification, disapproval with comments and/or modifications, or notice of intent to draft and approve, for any acceptable work plan, report (except progress reports), specification or schedule submitted pursuant to or required by this AOC.

C. Prior to written approval, no submittal, except progress reports, shall be construed as approved and final. Oral advice, suggestions, or comments given by the EPA will not constitute an official approval, nor shall any oral approval or oral assurance of approval be considered binding on either party, except as otherwise expressly provided for in the imminent threat provisions below.

D. Respondent shall revise any submittal in accordance with the EPA's written comments, and in accordance with the due date specified by the EPA. Revised submittals are subject to EPA approval, approval with conditions, rejection as not acceptable, disapproval with comments and/or modifications, or notice of intent to draft and approve.

E. Any report, work plan, specification or schedule approved by the EPA, including those drafted by the EPA, shall be automatically incorporated into this AOC upon EPA approval.

X. DOCUMENT CERTIFICATION AND CONFIDENTIALITY CLAIM

A. Any notice, report, certification, data presentation, or other document submitted by Respondent pursuant to this Order which discusses, describes, demonstrates, or supports any finding or makes any representation concerning Respondent's compliance or noncompliance with any requirement of this Order shall be certified by a duly authorized representative of Respondent. A person is a "duly authorized representative" only if: the authorization is made in writing; the authorization specifies either an individual or position having responsibility for overall operation of the Facility or Respondent (a duly authorized representative thus may be either a named individual or any individual occupying a named position); and the written authorization is submitted to the EPA Project Manager.

B. The certification shall be in the following form:

I certify that the information contained in or accompanying this [type of submission] is true, accurate, and complete. As to [the/those identified portion(s)] of this [type of submission] for which I cannot personally verify [its/their] accuracy, I certify under penalty of law that this [type of submission] and all attachments were prepared in accordance with procedures 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, or the immediate supervisor of such person(s), 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 fines and imprisonment for knowing violations.

Signature :

Name : *Mich Cheff*
Title : *President*
Date: *7-24-2013*

C. Respondent may assert a claim of business confidentiality covering part or all of the information submitted to the EPA pursuant to the terms of this AOC under 40 C.F.R. Part 2 in the manner described at 40 C.F.R. §2.203(b) and substantiated with the information described at 40 C.F.R. § 2.204(e)(4). Information the EPA determines is confidential will be given the protection specified in 40 C.F.R. Part 2. If no such claim or substantiation accompanies the information when it is submitted to the EPA, it may be made available to the public by the EPA or the Tribes without further notice to Respondent. Respondent agrees not to assert confidentiality claims with respect to any data related to Facility conditions, sampling, monitoring or the Work performed pursuant to this AOC.

D. Respondent may assert that certain documents, records and other information are privileged under any privilege recognized by federal law. If Respondent asserts such a privilege in lieu of providing documents to the EPA, Respondent shall provide the EPA with the following: the title of the document, record, or information; the date of the document, record, or information; the author's name and title; the name and title of each addressee and recipient; a description of the contents; and the privilege asserted by Respondent. No documents, reports or other information created or generated pursuant to the requirements of this AOC shall be withheld on the grounds that they are privileged.

E. All data, information, and records created or maintained relating to any solid or hazardous Waste handled by Respondent at the Facility shall be made available to the EPA upon request unless Respondent asserts a claim that such documents are legally privileged from disclosure pursuant to the paragraph immediately above. Respondent shall have the burden of demonstrating to the EPA such privilege exists at the time the privilege is asserted.

F. No claim of privilege shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Facility that are the subject of this AOC.

XI. SAMPLING, ACCESS AND DATA AVAILABILITY

A. All results of sampling, testing, modeling or other data generated (including raw data if requested) by Respondent, or on Respondent's behalf, during implementation of this AOC shall be validated by Respondent and submitted to the EPA within 30 days of Respondent's receipt of the data. Respondent shall tabulate data chronologically by media. The EPA will make available

to Respondent data generated by the EPA for the purposes of oversight of the Work unless it is exempt from disclosure by any federal or state law or regulation.

B. Respondent shall orally notify the EPA at least twenty (20) days prior to conducting field sampling. At the EPA's request, Respondent shall allow split or duplicate samples to be taken by the EPA or the EPA's representative.

C. Respondent shall provide access to the Site at reasonable times to the EPA, the EPA's contractors and oversight officials, and the Tribes. Respondent also shall provide access at reasonable times to the EPA, the EPA's contractors and oversight officials, and the Tribes, to all records and documentation in its possession or control, including those records and documents in the possession or control of Respondent's contractors and employees, related to the conditions at the Site and the actions conducted pursuant to this AOC. Respondent shall use its best efforts to gain access to areas owned by or in the possession of someone other than Respondent, as necessary to implement this AOC. Such access shall be provided to the EPA, its contractors and oversight officials, and the Tribes. The EPA, its contractors and oversight officials shall notify Respondent of their presence on the Site by presenting their credentials. All parties with access to the Site under this paragraph shall comply with all approved health and safety plans and regulations.

D. Pursuant to this Section, any denial of access to the EPA, the EPA's contractors and oversight officials, and the Tribes, at reasonable times, to any portion of the Facility where such access is related to implementation or oversight of implementation of this AOC, is a violation of this AOC and subject to the stipulated penalty provisions of this AOC.

E. Where action under this AOC is to be performed in areas owned by, or in possession of, someone other than Respondent, Respondent shall use its best efforts to obtain all necessary access agreements as quickly as practicable, but in all events, within forty-five (45) days of approval of any work plan for which access is necessary or appropriate. Any such access agreement shall provide for access by the EPA, the EPA's contractors and oversight officials, and the Tribes to move freely in order to conduct actions that the EPA determines to be necessary.

F. The access agreement shall specify that Respondent is not the EPA's representative with respect to any liabilities associated with activities to be performed.

G. Respondent shall provide the EPA's Project Coordinator with fully executed copies of each access agreement entered into by Respondent relating to compliance with this AOC.

H. Respondent shall notify the EPA immediately, if after using its best efforts, Respondent is unable to obtain necessary access agreements within the time required. Best efforts, as used in this paragraph shall include, at a minimum, a certified letter from Respondent to the present owner of such property requesting access agreements to permit Respondent, the EPA, the EPA's contractors and oversight officials, and the Tribes to enter such property, and the offer of payment of reasonable sums of money in consideration of granting access. Respondent shall, within 10 days of its receipt of a denial of access, submit in writing, a description of its efforts to

obtain access. The EPA may, at its discretion, assist Respondent in obtaining access. In the event the EPA obtains access, Respondent shall undertake the Work on such property, and Respondent shall reimburse the EPA for all costs and attorney fees incurred by the United States in obtaining such access.

I. Nothing in this AOC shall be construed to limit the EPA's right of access, entry, inspection, and information gathering pursuant to applicable law, including but not limited to, RCRA and CERCLA.

XII. RECORD RETENTION

A. Respondent shall preserve all documents and information, including raw data, relating to the Work performed under this AOC or relating to any solid waste or hazardous waste found at the Facility addressed by this AOC, for 5 years following completion of the Work required by this AOC.

B. Respondent shall acquire and retain copies of all documents that relate to implementation of this AOC that are in the possession of its employees, agents, accountants, contractors or attorneys.

C. Respondent shall make available to the EPA all employees and persons, including contractors, who engage in activities under this AOC and ensure their cooperation with the EPA with respect to this AOC upon reasonable request of the EPA.

D. After the 5-year retention period and ninety (90) days before any document or information is destroyed, Respondent shall notify the EPA that such documents and information are available to the EPA for inspection, and upon request, shall provide the originals or copies (at no cost to the EPA) of such documents and information to the EPA. Notification shall be in writing and shall reference the effective date, caption, and docket number of this AOC and shall be addressed to Director, Technical Enforcement Program. In addition, Respondent shall provide documents and information retained under this Section at any time before expiration of the retention period at the written request of the EPA.

E. All documents pertaining to implementation of this AOC shall be stored by Respondent in a centralized location at the Facility, or an alternative location mutually approved by Respondent and the EPA, to promote easy access by the EPA or its representatives.

XIII. COMPLIANCE WITH OTHER LAWS

Respondent shall perform all actions required pursuant to this AOC in accordance with all applicable local, Tribal, and Federal laws and regulations. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations in a timely manner so as not to delay the Work required by this AOC.

XIV. DISPUTE RESOLUTION

A. Respondent shall raise any disputes concerning the Work required under this AOC to the EPA Project Manager (excluding any decision document(s) issued by the EPA), in writing, within seven (7) days after receiving written notice from the EPA regarding any aspect of the Work required under this AOC that Respondent disputes. The EPA and Respondent shall expeditiously and informally attempt to resolve any disagreements.

B. The EPA and Respondent Project Coordinators shall first confer in an effort to resolve the dispute. If the Project Coordinators are unable to informally resolve the dispute within three (3) days of the first conference, Respondent shall notify the EPA, within five (5) days, in writing, of its objections. Written objections shall identify Respondent's objections, state the basis for those objections, and provide all data, analyses and information relied upon by Respondent.

C. The EPA and Respondent then have an additional fourteen (14) days from the EPA's receipt of the objections to reach agreement. If an agreement is not reached within this period, Respondent may request in writing, within five (5) days, a determination resolving the dispute by the EPA's Assistant Regional Administrator for the Office of Enforcement, Compliance and Environmental Justice (ARA for ECEJ). The request should provide all information that Respondent believes is relevant to the dispute, in particular, any information that was considered during the prior dispute resolution steps, but not included in the submittal in paragraph B above.

D. If such request is timely submitted, the ARA for ECEJ shall issue a determination in writing. The decision of the ARA for ECEJ shall be incorporated into and become an enforceable part of this AOC and shall no longer be subject to dispute pursuant to this AOC. Respondent shall proceed in accordance with the ARA for ECEJ's decision regarding the matter in dispute, regardless of whether or not Respondent agrees with the decision.

E. If Respondent does not agree to perform or does not actually perform the Work in accordance with the EPA's decision, the EPA reserves the right in its sole discretion to conduct the Work itself, seek reimbursement from Respondent, seek enforcement of this AOC, seek stipulated penalties, and/or any other appropriate relief. Respondent agrees that any disputes arising under this AOC are not subject to judicial review until such time as the EPA seeks to enforce this AOC.

F. If the EPA and Respondent reach agreement on the dispute at any stage, the agreement shall be set forth in writing and shall, upon signature of both parties, be incorporated into and become an enforceable part of this AOC.

G. The existence of a dispute and the EPA's consideration of matters placed in dispute shall not excuse, toll, or suspend any compliance obligation or deadline required pursuant to this AOC during the pendency of the dispute resolution process except as agreed by the EPA in writing. The invocation of dispute resolution does not stay the accrual of stipulated penalties under this AOC.

XV. PENALTIES

A. Unless there has been a written modification of a compliance date by the EPA, or excusable delay as defined below in Section XVI (Force Majeure), in the event that Respondent fails to comply with any requirement set forth in this AOC, Respondent shall pay stipulated penalties, as set forth below, upon receipt of a written demand by the EPA.

B. Compliance by Respondent shall include commencement or completion, as deemed appropriate by the EPA, of any activity, plan, study or report required by this AOC, and in the manner required by this Consent Order and within the specified time schedules in and approved under this AOC. Stipulated penalties shall accrue as follows:

Period of Failure to Comply	Penalty Per Violation Per Day
1st day through 14th day	\$250
15th day through 29th	\$500
30th day and each day after that	\$1000

C. All stipulated penalties shall begin to accrue the first day that a violation occurs, or the first day after the date that complete performance is due, and shall continue to accrue through the final day of violation. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this AOC.

D. All stipulated penalties owed to the EPA under this section shall be due within thirty (30) calendar days of receipt of a demand for payment, unless Respondent invokes the dispute resolution procedures herein. Such demand for payment shall describe the noncompliance and shall indicate the amount of stipulated penalties due.

E. All stipulated penalty payments shall be made by certified check, cashier's check, or wire transfer. Checks shall be payable to the Treasurer of the United States of America and shall be remitted to:

United States Environmental Protection Agency
Fines and Penalties Cincinnati Finance Center
P.O. Box 979077
St. Louis, MO 63197-9000

Wire transfer payments shall be made to the following:

Federal Reserve Bank of New York
ABA: 021030004
Account Number: 68010727
SWIFT address: FRNYUS33
33 Liberty Street
New York NY 10045
Field Tag 4200 of the Fedwire message should read:
"D 68010727 Environmental Protection Agency"

F. All payments shall reference the Respondent's name and address, and the EPA Docket Number of this AOC. Copies of the transmittal of payment shall be sent simultaneously to the EPA Project Coordinator at the address in Section VIII. A and to the EPA Regional Hearing Clerk, U.S. EPA Region 8, 1595 Wynkoop Street, Denver, Colorado 80202-1129.

G. Respondent may dispute the EPA's demand for payment of stipulated penalties for any alleged violation of this AOC by invoking the dispute resolution procedures. Stipulated penalties shall continue to accrue, but are not required to be paid, for any alleged noncompliance which is the subject of dispute resolution during the period of such dispute resolution. To the extent that Respondent does not prevail upon resolution of the dispute, within twenty-one (21) calendar days of receipt of the EPA's written decision, Respondent shall remit its payment of the stipulated penalty as set forth in paragraph B above. .

H. The assessment of stipulated penalties set forth in this section shall not preclude the EPA from pursuing any other remedies or sanctions which may be available to the EPA by reason of Respondent's failure to comply with any of the requirements of this AOC.

I. The EPA in its sole discretion may reduce or waive stipulated penalties.

XVI. FORCE MAJEURE

A. Respondent agrees to perform all requirements under this AOC within the time limits established under this AOC, unless the performance is delayed by a force majeure. For purposes of this AOC, a force majeure is defined as any event arising from the causes beyond the control of Respondent, or any entity controlled by Respondent or Respondent's contractors, which delays or prevents performance of any obligation under this AOC despite Respondent's best efforts to fulfill the obligation. Force majeure does not include financial inability to complete the Work, increased cost of performance, changes in Respondent's business or economic circumstances, or inability to attain media cleanup standards.

B. The requirement that the Respondent exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event: as it is occurring, and following the potential force majeure event such that the delay is minimized to the greatest extent possible.

C. If any event occurs or has occurred that may delay the performance of any obligation under this AOC, whether or not caused by a force majeure event, Respondent shall orally notify the EPA within forty-eight (48) hours of when Respondent knew or should have known that the event might cause a delay. Such notice shall: identify the event causing the delay, or anticipated to cause delay, and the anticipated duration of the delay; provide Respondent's rationale for attributing such delay to a force majeure event; state the measures taken, or to be taken, to prevent or minimize the delay; estimate the timetable for implementation of those measures; and state whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health or the environment. Respondent shall undertake best efforts to avoid and minimize the delay. Failure to comply with the notice provision of this paragraph and to undertake best efforts to avoid and minimize the delay shall waive any claim of force majeure by Respondent. Respondent shall be deemed to have notice of any circumstances of which its contractors had or should have had notice.

D. If the EPA determines that a delay in performance or anticipated delay in fulfilling a requirement of this AOC is or was attributable to a force majeure, then the time period for performance of that requirement will be extended as deemed necessary by EPA. If EPA determines that the delay or anticipated delay has been or will be caused by a force majeure, then EPA will notify Respondent, in writing, of the length of the extension, if any, for performance of such obligations affected by the force majeure. Any such extensions shall not alter Respondent's obligation to perform or complete other tasks required by this AOC which are not directly affected by the force majeure.

E. If EPA disagrees with Respondent's assertion of a force majeure, then Respondent may elect to invoke the dispute resolution provision, and shall follow the procedures set forth in Section XVIII (Dispute Resolution). In any such proceeding, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that Respondent's best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of this section. If Respondent satisfies this burden, then EPA will extend the time for performance as EPA determines is necessary.

XVII. RESERVATION OF RIGHTS

A. Notwithstanding any other provisions of this AOC, the United States retains all of its authority to take, direct, or order any and all actions necessary to protect public health or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants, or contaminants, or hazardous or solid waste or constituents of such waste, on, at, or from the Facility, including but not limited to, the right to bring enforcement actions under RCRA, and any other applicable statutes or regulations.

B. The EPA reserves all of its statutory and regulatory powers, authorities, rights, and remedies, both legal and equitable, which may pertain to Respondent's failure to comply with any of the requirements of this AOC, including without limitation the assessment of penalties under Section 7003(b) of RCRA.

C. This AOC shall not be construed as a covenant not to sue, release, waiver, or limitation of any rights, remedies, powers, claims, and/or authorities, civil or criminal, which the EPA has under RCRA, or any other statutory, regulatory, or common law authority of the United States.

D. This AOC is not intended to be nor shall it be construed to be a permit. Respondent acknowledges and agrees that the EPA's approval of Work pursuant to this AOC does not constitute a warranty or representation that such Work will achieve the required cleanup or performance standards. Compliance by Respondent with the terms of this AOC shall not relieve Respondent of its obligations to comply with RCRA or any other applicable local, Tribal, State, or Federal laws and regulations.

E. Notwithstanding any other provision of this AOC, Respondent expressly agrees that no action or decision by the EPA pursuant to this AOC, including without limitation, decisions of the ARA of ECEJ, or any authorized representative of the EPA, shall constitute final agency action giving rise to any right of judicial review prior to the EPA's initiation of a judicial action to enforce this AOC.

F. Respondent agrees not to contest the validity or terms of this AOC, or the procedures underlying or relating to it in any action brought by the United States, including the EPA, to enforce its terms or seek penalties for its violation.

G. Respondent retains its right to assert claims against any third parties with respect to Work, or any other matter addressed by this AOC.

XVIII. OTHER CLAIMS

A. The United States and the EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent in implementation, or violation, of this AOC.

B. The United States and the EPA will not be deemed a party to any contract, agreement or other arrangement entered into by Respondent or its officers, directors, employees, agents, successors, assigns, heirs, trustees, receivers, contractors, or consultants in carrying out actions pursuant to this AOC.

C. Respondent waives all claims against the United States relating to or arising out of conduct of this AOC, including, but not limited to, contribution and counterclaims.

D. Respondent shall bear its own litigation costs and attorney fees.

E. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive or other appropriate relief relating to the Facility, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defense contending that the claims raised by

the United States in the subsequent proceeding were, or should have been, raised in the present matter.

XIX. INSURANCE

A. Prior to commencing Work, Respondent shall secure, and shall maintain in force until the EPA notifies Respondent that it has completed all activities required by this AOC, comprehensive general liability insurance and automobile insurance with limits of at least \$1 million dollars per occurrence with an annual aggregate of at least \$2 million dollars, exclusive of legal defense costs naming the EPA as an additional insured. Prior to commencement of the Work under this AOC, and annually thereafter on the anniversary of the Effective Date of this AOC, Respondent shall provide the EPA with certificates of such insurance and a copy of each insurance policy.

B. If Respondent demonstrates by evidence satisfactory to the EPA that its contractors and subcontractors maintain insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then, upon written approval by the EPA, Respondent need provide only that portion of the insurance described above which is not maintained by the contractors and subcontractors.

C. For the duration of this AOC, Respondent shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of employer's liability insurance and worker's compensation insurance for all persons performing Work on behalf of Respondent.

D. At least seven (7) days prior to commencing Work, Respondent shall certify to the EPA that their contractors and subcontractors have obtained the required insurance.

XX. COST ESTIMATES AND FINANCIAL ASSURANCE

A. Based on information provided to the EPA by Jore, the EPA has concluded that Jore has adequate funds on hand to fund all of the Work the EPA presently expects to be necessary under this AOC. Thus, at this time, no formal cost estimates or financial assurance for the Work is being required by the EPA. Respondent understands and agrees that the EPA may require Respondent to obtain financial assurance for the remaining work if the EPA becomes aware of any change in Respondent's financial status.

B. If Respondent determines it may become unable to fund some or all of the then-remaining Work, Respondent shall inform the EPA of such change in financial condition within two (2) days of such determination. Respondent understands and agrees that it will be in violation of this reporting requirement even when Respondent should have made such a determination (and reported), but did not.

XXI. INDEMNIFICATION

Respondent agrees to indemnify, save and hold harmless the United States, its officials, agents, contractors, employees, and representatives from any and all claims or causes of action: arising from, or on account of, acts or omissions of Respondent, Respondent's directors, officers, employees, agents, successors, assigns, heirs, trustees, receivers, contractors, or consultants in carrying out actions pursuant to this AOC; and for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any persons for performance of Work, including claims on account of construction delays.

XXII. MODIFICATION OF THIS AOC

A. Except for modification of Work, this AOC may only be modified by the mutual agreement of the EPA and Respondent. Any agreed modifications shall be in writing, be signed by both parties, have as their effective date the date on which they are signed by the EPA, and be incorporated into this AOC.

B. No informal advice, guidance, suggestion, or comment by the EPA regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of its obligation to obtain such formal approval as required by this AOC, and to comply with all requirements of this AOC, unless it is formally modified. Any deliverables, plans, technical memoranda, reports, specifications, schedules and attachments required by this AOC are, upon approval by the EPA, incorporated into and enforceable under this AOC.

C. If at any time during the implementation of the Work, Respondent identifies a need for a compliance date modification or revision of the Work Plan, Respondent shall submit a memorandum documenting the need for the modification or revision to the EPA Project Coordinator. The EPA in its discretion will determine if the modification or revision is warranted and may provide written approval or disapproval. Any approved modified compliance date or Work Plan modification is incorporated by reference into this AOC.

XXIII. TERMINATION AND SATISFACTION

The provisions of this AOC shall be deemed terminated and satisfied by Respondent upon written notice from the EPA that Respondent has demonstrated that all of the terms of this AOC, including any additional work as may be performed pursuant to Section VIII E (Additional Work) and any stipulated penalties demanded by EPA under Section XV (Penalties), have been addressed to the satisfaction of the EPA. Termination of this AOC shall not terminate Respondent's obligation to comply with: Section XI (Sampling, Access, and Data Availability); Section XII (Record Retention); Section XVII (Reservation of Rights); and Section XXI (Indemnification) of this AOC.

XXVII. SIGNATORY AUTHORITY

The undersigned representative of Respondent certifies that it is fully authorized to enter into the terms and conditions of this AOC and to bind the party it represents to this document.

Agreed this 24 day of July, 2013

By: Mick Cheff
Signature

Mick Cheff
Print Name

President
Title

34837 Innovation Dr Ronan MT 59864
Company Address

It is so ORDERED and Agreed this 1st day of August, 2013.

By: Kelcey Land For
Kelcey Land, Director
RCRA/CERCLA Technical Enforcement Program

By: James Eppers
James Eppers Supervisory Attorney
Legal Enforcement Program

EFFECTIVE DATE: _____

Attachment 1
to
EPA Docket No. RCRA-08-2013-0001

Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases

**Montana Department of
Environmental Quality**

September 2009

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Definitions and Acronyms

ARM - Administrative Rules of Montana.

BTEX - Benzene, toluene, ethylbenzene, and xylenes

Carcinogen - A compound that the EPA has determined causes cancer based on the weight of peer-reviewed scientific evidence. Some carcinogens may also have non-carcinogenic effects.

Chemicals of concern (COCs) - Specific petroleum compounds that are identified for evaluation in a RBCA evaluation or a risk assessment.

Circular DEQ-7 - The Montana Numerical Water Quality Standards, applicable to state surface water and groundwater, adopted by rule and published by DEQ.

Closure of a petroleum release (or closure review) - A process used to determine a release can be categorized as "resolved." Administrative Rules of Montana 17.56.607 discusses requirements for releases from petroleum storage tanks (PSTs).

COC - See chemicals of concern.

Commercial/industrial property - Property used as a place of business with employees present regularly on a typical five days on, two days off schedule with no one living on the property.

Corrective action - Actions at a petroleum release that may include, but are not limited to, investigation, site assessment, emergency response, abatement, underground storage tank removal, cleanup, operation and maintenance of equipment, monitoring, reclamation, and termination of the corrective action. Also known as remedial action.

DEQ - The Montana Department of Environmental Quality.

DEQ-7 - See Circular DEQ-7.

Dibromoethane, 1,2 (also known as Ethylene dibromide - EDB) - gasoline additive that was used until the late 1980s when leaded gasoline was phased out. 1,2 dibromoethane also was widely used as an agricultural fumigant until it was banned in 1983. EDB may still be found in some leaded aviation gasoline.

DCA 1,2 - See dichloroethane, 1,2

Dichloroethane, 1,2 (1,2 DCA) - leaded gasoline additive that was used until the late 1980s when leaded gasoline was phased out. 1,2 DCA is still used as an industrial solvent and it may still be found in some leaded aviation gasoline.

Diesel range organics (DRO) - Non-target compounds found in diesel. DRO is also the analytical method used to determine the concentrations of these non-target compounds (DEQ has replaced the DRO analysis with EPH).

DRO - See diesel range organics.

EDB - See ethylene dibromide or 1,2 dibromoethane

EPA - The United States Environmental Protection Agency.

EPH - See extractable petroleum hydrocarbons.

Ethylene dibromide (EDB) - see Dibromoethane, 1,2

Excavation/construction scenario - An exposure scenario based on the limited exposure of individuals to subsurface soils during an excavation to install piping, utilities, other underground features, shrubs, or trees.

Exposure - The contact of a receptor with a COC.

Exposure pathway - The route a chemical or physical agent takes from a source to an exposed receptor. An exposure pathway describes a unique mechanism by which an individual or population is exposed to chemicals of concern at or originating from a release. Each exposure pathway includes a source, an exposure point, and an exposure route. If the exposure point differs from the source, a transport/exposure medium (e.g., air) or media (in cases of transfer between media) will also be included.

Examples of complete exposure pathways include:

- Inhalation of vapors from impacted soils by a person on site.
- Impacted soils leaching into potable groundwater and being used by a nearby resident for drinking and bathing.
- Inhalation of vapors by a neighbor resulting from the migration of free product.
- Impacted groundwater discharging to wetlands or other surface water bodies.

Extractable petroleum hydrocarbons (EPH) - A group of petroleum hydrocarbons that includes the non-target petroleum fractions typically found in diesel and other heavier petroleum products. EPH is also the analytical method developed by the Massachusetts Department of Environmental Protection to determine the fractional composition of these non-target compounds.

Free (phase) product - Petroleum product floating on the groundwater or surface water, occupying soil pore space, or on the ground surface. Also, petroleum products or other substances present as non-aqueous phase liquids.

Gasoline range organics (GRO) - Non-target compounds found in gasoline. GRO is also the analytical method used to determine the concentrations of these non-target compounds (DEQ has replaced the GRO analysis with VPH).

GRO - See gasoline range organics.

Hazard index (HI) - The sum of more than one hazard quotient for multiple substances and/or multiple exposure pathways.

Hazard quotient - The ratio of a single substance exposure level over a specified time period to a reference dose for that substance derived from a similar exposure period.

Impacted groundwater - Groundwater containing contaminants in concentrations that approach or exceed DEQ-7 human health standards, narrative standards, or RBSLs for non-target compounds.

Lead scavengers - compounds such as 1,2 DCA and EDB added to leaded gasoline to help volatilize or scavenge tetraethyl lead so it would not accumulate in the engine.

MBTEXN - Methyl tertiary-butyl ether, benzene, toluene, ethylbenzene, xylenes, and naphthalene.

MCA - Montana Code Annotated.

Methyl tertiary-butyl ether (MTBE) - A synthetic chemical added to most commercial gasolines as an anti-knock additive or oxygenate.

MNA - See monitored natural attenuation.

Monitored natural attenuation (MNA) - A scientific protocol for documenting monitoring requirements necessary to verify that natural processes are attenuating the transport of petroleum hydrocarbons in the environment.

MTBE - See methyl tertiary-butyl ether.

Non-carcinogen - A compound that the EPA has determined to have toxic effects, but has not determined to be a carcinogen. Some carcinogens may also have non-carcinogenic effects.

Oxygenate - a compound that is added to gasoline to reduce carbon monoxide emissions during the combustion of the fuel.

PAHs - See polycyclic aromatic hydrocarbons.

Petroleum product - Gasoline, crude oil (except for crude oil at production facilities subject to regulation under Title 82 MCA), fuel oil, diesel oil or fuel, lubricating oil, oil sludge or refuse, and any other petroleum-related product or waste or fraction of the product or waste that is liquid at standard conditions of temperature and pressure (60 degrees F and 14.7 pounds per square inch absolute) (§75-10-701, MCA).

Petroleum release - A release of petroleum product into the environment, with "release" defined below (§75-10-701, MCA).

Petroleum storage tank (PST) - a tank that contains or contained petroleum or petroleum products and that is: an underground storage tank (UST); a storage tank that is situated in an underground area, such as a basement, cellar, mine, drift, shaft, or tunnel; an aboveground storage tank (AST) with a capacity less than 30,000 gallons; including aboveground or underground pipes associated with these tanks. The definition of PST excludes pipelines regulated by the Natural Gas Pipeline Safety Act of 1968 (49 U.S.C. 1671, et seq.), the Hazardous Liquid Pipeline Safety Act of 1979 (49 U.S.C. 2001, et seq.), and comparable state laws, if the facility is intrastate.

Polycyclic aromatic hydrocarbons (PAHs) - A group of petroleum hydrocarbons that includes several semivolatile compounds typically found in petroleum products, especially petroleum products that are heavier than diesel. (Also referred to as polynuclear aromatic hydrocarbons or PNAs.)

RBCA - See risk-based corrective action.

RBSL - See risk-based screening level.

Reasonably anticipated future uses - Reasonably anticipated future uses as defined in §75-10-701(18), MCA, means likely future land or resource uses that take into consideration:

- local land and resource use regulations, ordinances, restrictions, or covenants;
- historical and anticipated uses of the facility;
- patterns of development in the immediate area; and
- relevant indications of anticipated land use from the owner of the facility and local planning officials.

Receptor - Any person, plant, or animal that is or could potentially be adversely affected by a petroleum release.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of a hazardous or deleterious substance directly into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous or deleterious substance), but excludes releases confined to the indoor workplace environment, the use of pesticides as defined in §80-8-102(30), MCA, when they are applied in accordance with approved federal and state labels, and the use of commercial fertilizers, as defined in §80-10-101(2), MCA, when applied as part of accepted agricultural practice (§75-10-701, MCA).

Residential property - Any property used as a place of residence. Residential properties also used for businesses are considered residential. Residential properties that include other uses not defined here are evaluated on a case-by-case basis.

Resolved petroleum release - A classification indicating no further corrective action is required to address a petroleum release because all remediation requirements for the release have been completed. Administrative Rules of Montana 17.56.607 discusses requirements for releases from petroleum storage tanks (PSTs).

Responsible party (RP) - An owner, operator, generator, transporter, or other person responsible for cleanup of a petroleum release.

Risk-based corrective action (RBCA) - A decision-making process based on the protection of public health, safety and welfare, and the environment, which results in the consistent assessment, remediation and/or closure of petroleum releases.

Risk-based screening level (RBSL) - A chemical concentration considered acceptable for a given exposure scenario based on estimated risk to potential receptors.

RP - See responsible party.

Screening levels - See risk-based screening level.

Tier 1 - The simplest level of RBCA for petroleum releases in Montana. In Tier 1 RBCA, petroleum contaminant levels are compared to pre-determined RBSLs for COCs to determine whether additional investigation and/or cleanup is necessary. It involves situations where the petroleum contaminant is confined to soil and/or is present in the groundwater in concentrations below DEQ-7 human health standards or groundwater RBSLs. Activities that may be conducted to achieve Tier 1 RBSLs include limited over-excavation or some other remedial procedure. Deeper vertical sampling (soil borings or test pits) may produce less contaminated samples that can also be utilized in the Tier 1 process. The Tier 1 process may not be applicable to sites where site-specific cleanup levels have already been chosen or will be identified through a permit or order.

Vapor Intrusion (VI) - Vapor intrusion is the migration of volatile chemicals from the subsurface into overlying or subterranean structures. Volatile chemicals in buried wastes and/or contaminated groundwater can emit vapors that may migrate through subsurface soils and into air spaces of overlying structures. In some cases, the vapors may accumulate in dwellings or occupied buildings to levels that may pose near-term safety hazards, acute health effects or aesthetic problems. In most cases, however, the chemical concentrations are low, or depending on site-specific conditions, vapors may not be present at detectable concentrations.

Volatile petroleum hydrocarbons (VPH) - A group of petroleum hydrocarbons that includes the non-target petroleum fractions typically found in gasoline and other lighter petroleum products. VPH is also the analytical method developed by the Massachusetts Department of Environmental Protection to determine the fractional composition of these non-target compounds.

VPH - See volatile petroleum hydrocarbons.

Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases Executive Summary of 2009 Changes

It is the Montana Department of Environmental Quality's (DEQ's) policy to conduct periodic reviews of its Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases to determine if changes to methods and toxicity information warrant updating the guidance. In 2008, the U.S. Environmental Protection Agency (EPA) released its Regional Screening Levels tables (EPA, September 2008) that represent a consensus throughout the EPA regions regarding toxicity data and methods for calculating screening levels based upon protection of human health. These tables are updated periodically by the EPA and the current version is dated April 2009; however, none of the information upon which DEQ relied changed between 2008 and 2009. In January 2009, EPA released its Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment (EPA, January 2009). DEQ has determined that it is appropriate to change its risk-based screening levels to more closely follow the EPA's approach. The following lists changes made to the October 22, 2007 version of the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases.

- Because of the variability of human olfactory senses as well as the variability in the composition of petroleum products, DEQ has determined that definitive and quantitative guidelines and standards on when a petroleum odor constitutes a nuisance condition and significant risk to public welfare are generally not appropriate. Therefore, DEQ removed the beneficial use risk-based screening levels (RBSLs) for soils and has replaced them with text regarding a qualitative evaluation. Taste and odor thresholds for drinking water are more quantifiable, therefore, DEQ has retained beneficial use RBSLs for groundwater.
- DEQ updated the ethylbenzene and MTBE toxicity data to that presented in EPA, September 2008.
- DEQ changed the method for evaluating inhalation exposure to the current EPA approach presented in Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment (EPA, January 2009). The approach involves the use of reference concentrations (RfCs) and inhalation unit risks (IURs) in the equations without adjusting for body weight and inhalation rate.
- DEQ updated the particulate emission factor to that used in the EPA Regional Screening Levels User's Guide and Tables (EPA, September 2008).
- DEQ added inhalation exposure to the polynuclear aromatic hydrocarbon (PAH) exposures using the IURs provided in EPA, September 2008.
- DEQ evaluated naphthalene using both the noncarcinogenic toxicity data and the carcinogenic IUR provided in EPA, September 2008 and chose the most conservative of the two concentrations for each scenario.
- DEQ changed the PAH calculation to the mutagenic mode of action method based upon current EPA guidance and included in the EPA, September 2008 documents.
- DEQ removed any inhalation route calculations made by extrapolating oral toxicity based upon the EPA, January 2009 guidance.

- DEQ increased the commercial skin adherence factor to that provided in EPA, September 2008.
- DEQ changed the volatilization factors for the target analytes to those included in EPA, September 2008.
- DEQ removed dermal exposure for volatile contaminants per EPA, September 2008.
- DEQ removed the saturation concentrations from the Master Table because petroleum compounds are mixtures and these concentrations are not necessarily indicative of free product, therefore, DEQ did not ever use these concentrations for decision-making.
- DEQ determined that it is still appropriate to use a 75-year lifetime for carcinogenicity, instead of changing to 70 years to be consistent with EPA, September 2008, because the slope factors and IURs for the target analytes are not adjusted for a 70-year lifetime and the EPA 1997 Exposure Factors Handbook indicates that 75 years is appropriate.
- DEQ recalculated soil leaching RBSLs for petroleum fractions based upon new groundwater RBSLs.
- DEQ added screening levels for Resource Conservation and Recovery Act (RCRA) metals.
- DEQ updated and revised language throughout the text of the document to make it more understandable.

One final thing to note regarding the 2009 changes to the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases is that the RBSLs for soil and water are not designed to be protective of the vapor intrusion (VI) pathway. If volatile compounds are present in the vicinity of inhabitable structures, then the VI pathway should be evaluated either qualitatively or quantitatively. The DEQ is developing VI guidance for Montana, but until that guidance document is completed, currently available VI guidance documents should be used to assess and evaluate VI risks. Additional information is provided in the text.

TIER 1 RISK-BASED CORRECTIVE ACTION EVALUATION PROCESS

Overview of Risk-Based Corrective Action

This document describes the Montana Department of Environmental Quality's (DEQ) Tier 1 risk-based corrective action (RBCA) evaluation process. It provides a description of the concepts and terms that must be understood to use RBCA for petroleum releases in Montana, and is not intended to address other chemical (non-petroleum) releases. This document is applicable to all petroleum releases addressed by DEQ's LUST Brownfields Section, Petroleum Technical Section, Site Response Section, and Enforcement Division and those petroleum releases addressed by DEQ's Remediation Division under the Water Quality Act. In addition, this guidance may be used as a screening tool for DEQ's state and federal Superfund sites and it may be possible to apply Tier 1 to new releases at hazardous waste sites that are covered by existing permits or orders. For hydrocarbon compounds not specifically addressed in this document, a site-specific approach may be developed in consultation with DEQ. The appropriate regulating agency or Bureau should be contacted to determine whether Tier 1 is appropriate.

RBCA Focuses on Risk Evaluation

The goal of RBCA is to identify risks to public health, safety and welfare, and to the environment so they can be reduced. RBCA uses environmental risk analysis, which incorporates elements of toxicology, hydrogeology, chemistry, and engineering to assess the existing and potential risks from a petroleum release. This information is used to develop contaminant concentration levels determined to be acceptable in the State of Montana. The risk-based screening levels (RBSLs) developed within RBCA can be used as cleanup levels at all sites in Montana without the need to perform site-specific leaching models or risk analysis for each release and exposure scenario.

DEQ's Tier 1 site evaluation process consists of assessing site conditions and maximum contaminant concentrations, and choosing the appropriate Tier 1 RBSLs to determine whether further remedial action is needed to close the release. Tier 1 RBSLs denote contaminant concentrations that represent acceptable risks to human health and the environment. When petroleum contamination at concentrations exceeding RBSLs is not present then the release can be considered for closure without the need to perform site-specific risk analysis.

Chemicals of Concern

Typical petroleum products such as fuels and lubricants contain a large number of chemical constituents that may be harmful to the public health, safety and welfare, and to the environment. Risk analysis focuses on the presence of chemicals of concern (COCs) at contaminated sites or facilities. DEQ has identified several common petroleum constituents as COCs generally

applicable to petroleum releases. This list includes methyl tertiary-butyl ether (MTBE), benzene, toluene, ethylbenzene, xylenes, naphthalene, lead scavengers (1,2 DCA and EDB), oxygenates, volatile petroleum hydrocarbons (VPH)¹, extractable petroleum hydrocarbons (EPH)¹, and polycyclic aromatic hydrocarbons (PAHs). Soil and water samples from petroleum release sites are analyzed for these COCs during a Tier 1 evaluation. Other COCs may be included based on site-specific activities. Any additional COCs will be identified by the appropriate regulating agency or Bureau and evaluated outside the Tier 1 process.

Exposure Pathways

COCs affect receptors via exposure pathways. A complete exposure pathway includes a contaminant source, an exposure route, and an exposure point. Sources of petroleum contamination include above ground storage tanks (ASTs) and underground storage tanks (USTs), piping, and surface spills, including spills from trucks or other transport containers. Petroleum-contaminated soil, such as that remaining beneath a UST or pipe, can also be a contaminant source that contributes to an on-going release to adjacent soil and groundwater. An exposure route can be any avenue COCs might follow from petroleum sources to receptors. Contaminants can spread through the soil, surface water, groundwater, and air, and can accumulate in vegetation, animals, and other organisms. COCs are spread by many processes, including gravity, advection, dispersion, diffusion and volatilization. Exposure pathways can include natural or man-made processes and media, and can be direct or indirect. Human receptors are typically exposed to COCs at exposure points through ingestion, inhalation, or direct (dermal) contact.

An example of a common exposure pathway is gasoline releasing from a leaking UST, flowing downward through the soil under gravity until it reaches the water table, and then flowing with the groundwater until it reaches a water well, where the water is extracted and used for drinking. This is just one example.

Remedial Actions Under RBCA

The nature and extent of contamination at petroleum releases are generally characterized through remedial investigations. During these investigations, responsible parties (RPs) and their consultants identify which contaminants are present at a release, and determine their concentrations, and horizontal and vertical distribution. Other site conditions, such as geology, hydrogeology (including determination of site-specific depth to groundwater), local land use, and potential receptors are also documented. This information is evaluated to determine RBCA target cleanup levels for each release (described in more detail below). These target cleanup levels are set to ensure that any COC concentrations that might remain will not pose unacceptable risks to public health, safety and welfare, and the environment.

1. "VPH" and "EPH" are also the names of analytical methods developed by the Massachusetts Department of Environmental Protection to determine the concentrations of these non-target compounds. These methods break total petroleum hydrocarbons (TPH) into "fractions" that can be used in risk calculations. DEQ uses these methods in place of GRO (gasoline range organics) and DRO (diesel range organics) analytical methods.

RBCA cleanup goals can be met by removing contaminated material from the release until COC concentrations meet Tier 1 RBSLs. However, Tier 1 cleanup levels may also be reached by using combinations of other methods that reduce the potential for exposure. Acceptable methods might include *in situ* treatment technologies, source control or treatment, engineered controls that reduce or restrict migration, or enhancement technologies that promote biodegradation.

Removing or reducing contamination to levels below the RBSLs does not always ensure that contamination has not already leached or migrated downward to the water table. The RBSLs listed in this document, among other purposes, are intended to identify conservative threshold conditions where contamination may leach to groundwater. If soil contamination concentrations are reduced below RBSLs, then leaching should not occur in the future. However, if contamination exceeded RBSLs in the past, then the leaching process may have already taken place. This has been particularly evidenced in porous soils and at locations where releases have been present for long periods of time. Therefore, achieving RBSLs does not preclude the need to investigate groundwater to determine whether it has already been contaminated. In some cases contamination may have leached downward and formed a smear zone of contamination within the soil between the seasonal high and low water levels of an aquifer. These smear zones then act as a secondary source of groundwater contamination. In determining whether a groundwater investigation is necessary many factors including the volume and age of the release, permeability of the soil, the depth to groundwater, maximum soil contaminant concentrations originally present, and estimated mass of contamination removed or destroyed, as well as other site-specific parameters, must be evaluated.

Tier 1 Data Collection and Evaluation

The RBCA process is broken into tiers or stages. The lowest level of complexity of RBCA is Tier 1 and the subject of this document. Tier 1 is appropriate for initial evaluation of contaminated soil or simple releases that can be cleaned up easily with minimal information. In the Tier 1 process, RPs or their consultants follow guidelines to complete forms such as the 24-Hour Release Report and 30-Day Release Report that provide DEQ with the information necessary to determine what corrective action is necessary, and whether a release can be evaluated for closure without further action.

More complicated releases require more extensive investigation, data collection, and analysis to fully assess the risk and address the contamination. Under Montana's RBCA program, these will typically include releases where surface water or groundwater are contaminated at concentrations above groundwater RBSLs (including DEQ-7 human health standards), or releases with extensive soil contamination that cannot practically be dealt with under Tier 1. An example of the latter situation would be a release with gasoline-contaminated soil, where a threat exists for vapor migration into nearby structures or dwellings. RBCA Tiers 2 and 3 are generally intended for use at more complex releases to develop site-specific cleanup goals. DEQ has not yet developed Tiers 2 or 3. In addition, Tier 1 may not be appropriate for releases where site-specific cleanup levels have been established under the authority of a permit or order. The

appropriate regulating agency or Bureau must be consulted to determine whether Tier 1 may be applied at these releases.

Documenting Site Conditions

For releases associated with USTs and petroleum storage tanks (PSTs), site conditions are documented on the 24-Hour Release Report and 30-Day Release Report forms published by DEQ. Blank copies of these reports have been included in Appendix A as examples of the type of information DEQ will require. DEQ staff complete the 24-Hour Release Report form over the telephone when an RP or other party reports the discovery of a release. The 30-Day Release Report form, provided by DEQ after a release is reported, is completed by the RP within 30 days of the release notification. The DEQ Enforcement Division uses a Complaint/Spill Report to document initial information about a release (see Appendix B). This form is typically completed by DEQ staff. Other regulating agencies or Bureaus have their own reporting requirements. For releases that are not associated with PSTs or USTs, the appropriate regulating agency or Bureau should be contacted to determine reporting requirements.

DEQ uses the information and laboratory analytical data provided by the RP to determine whether a release qualifies for closure under Tier 1. Some site conditions, such as when petroleum contaminants are present in the groundwater at concentrations exceeding DEQ-7 human health standards or groundwater RBSLs, when petroleum vapors are detected in basements, or when a petroleum plume is moving off site, automatically disqualify a release from closure under Tier 1. In such cases, DEQ will require that more information be gathered to develop release cleanup and management strategies, and target cleanup levels. Such releases generally require more comprehensive investigations to determine the complete extent and magnitude of the contamination.

Soil Sampling Requirements

An adequate number of soil samples must be collected from any area of confirmed or suspected contamination. For RBCA analysis, soil samples must be collected from worst-case areas, such as beneath leaking USTs and PSTs, surface spills or other likely sources of petroleum contamination. The appropriate regulating agency or Bureau should be contacted to determine the appropriate sampling requirements for the site. Although decisions should be made on a site-specific basis, Appendix F provides guidance on the general sampling requirements of the DEQ Hazardous Waste Site Cleanup Bureau. Samples associated with UST and PST sites must be submitted to DEQ-approved laboratories for analysis according to the laboratory methodologies specified in Table A (see page 5). The EPH and VPH analytical methods, developed by the Massachusetts Department of Environmental Protection, will be used for all RBCA Tier 1 evaluations in Montana. Soil sample locations and other pertinent site history data must be recorded and submitted to DEQ. All analytical results and associated laboratory documentation including chromatograms, quality control/quality assurance data and chain of custody forms must be submitted to DEQ as part of the standard reporting process for any phase of site assessment or remediation.

Table A outlines the analytical methods DEQ requires for individual petroleum products in soil. VPH analysis is required for petroleum products that typically contain light range hydrocarbons to determine the concentrations of MTBE, BTEX, naphthalene (MBTEXN) and light end aliphatic and aromatic hydrocarbon fractions in the soil. EPH analysis is required in conjunction with VPH for most of the petroleum product types excluding gasoline and aviation gas and mineral/dielectric oils. DEQ uses a two-step screening technique to evaluate soils at sites where the EPH analysis is required to reduce the analytical costs for the EPH analysis. The first step in the screening technique is similar to the diesel range organics (DRO) analysis and generates a total extractable hydrocarbon (TEH) concentration. If the initial screening result is 200 parts per million (ppm) or less, no additional EPH analysis is required. However, if the TEH concentration is greater than 200 ppm then the EPH fractionation step is required. PAH analysis will be required on a site-specific basis if heavy hydrocarbons, refinery wastes or unknown oils/sources are present.

Table A- Testing Procedures for Soils

Petroleum Product	VPH	EPH Screen	EPH Fractionation	EPH for PAHs	RCRA Metals	EPA Method 8260B	Oxygenates & Lead Scavengers
Gasoline/Aviation Gasoline	R						SS
Diesel (#1 & #2)	R	R	X				
#1 - #2 Heating Oils	R	R	X				
#3 - #6 Fuel Oils		R	X	SS			
Used/Waste Oil	R	R	X	SS	R	R	SS
Kerosene, Jet Fuel (Jet-A, JP-4, JP-5, JP-8, etc.)	R	R	X				
Mineral/Dielectric Oils		R	X				
Heavier Wastes		R	X	SS			
Crude Oil	R	R	X	SS			
Unknown Oils/Sources	R	R	X	SS	R	R	SS

R- required analysis

X - analysis to be run if the EPH screen concentration is >200 ppm TEH

SS- Site specific determination.

Groundwater Sampling Requirements

At some sites it may be necessary to investigate groundwater quality to verify that contaminant concentrations are below RBSLs and DEQ-7 human health standards. Groundwater samples must also be collected from worst-case areas. Appendix F provides guidance on the general sampling requirements of the DEQ Hazardous Waste Site Cleanup Bureau. MBTEXN and other lighter range hydrocarbons are commonly detected at gasoline and diesel release sites at concentrations that exceed human health standards. The VPH Method includes MBTEXN

compounds but the EPH Method does not. MBTEXN compounds are often present in the heavier petroleum products and may represent significant health risks when present in the environment. Consequently, VPH analysis is required in addition to the EPH Method at all diesel #1, diesel #2, kerosene, jet fuel, and waste oil release sites to determine MBTEXN concentrations. Table B outlines the analytical methods DEQ requires for individual petroleum products in groundwater.

Table B - Testing Procedures for Groundwater

Petroleum Product	VPH	EPH Screen	EPH Fractionation	EPA Method 8270C for PAHs	EPA Method 8260B	Oxygenates & Lead Scavengers
Gasoline/Aviation Gasoline	R					SS
Diesel (#1 & #2)	R	R	SS	SS		
#1 - #2 Heating Oils	R	R	SS	SS		
#3 - #6 Fuel Oils		R	SS	SS		
Used/Waste Oil	R	R	SS	SS	R	SS
Kerosene, Jet Fuels (Jet-A, JP-4, JP-5, JP-8, etc.)	R	R	SS	SS		
Mineral/Dielectric Oils		R	SS	SS		
Heavier Wastes		R	SS	SS		
Crude Oil	R	R	SS	SS		
Unknown Oils/Sources	R	R	SS	SS	R	SS

R - required analysis

SS - Site-Specific determination.

EPH fractionation may be required if the EPH screen concentration is >1000 ppb TEH.

To reduce analytical costs, DEQ uses the EPH screening technique. The EPH screen approach is similar to that described above for soils and generates a TEH concentration. If the initial screening result is 1000 parts per billion (ppb) TEH or less, EPH fractionation is not required. VPH analysis is also required initially for some contaminants. If the TEH concentration exceeds 1000 ppb, fractionation may be required. More than one sampling event may be required to verify this. PAH analysis using EPA Method 8270 will be required for refinery wastes and other heavy hydrocarbons regardless of the screening concentration.

At targeted sites, including facilities that have used or currently use aviation fuel and facilities that may have had releases of leaded gasoline, the DEQ has initiated sampling for the lead scavengers 1,2 DCA (1,2 dichloroethane) and EDB (also known as 1,2 dibromoethane). Lead scavengers were added to leaded gasoline worldwide, from the 1920's through the 1980's to reduce engine fouling caused by the tetra ethyl lead that was added to gasoline as an anti-

knocking compound. Lead scavengers may still be present in off-road fuels such as racing gasoline and leaded aviation gasoline.

EPH Screen vs TEH

The initial groundwater samples must be submitted for the EPH screen and fractionation analysis if the EPH screen concentration is greater than 1000 ppb to establish a means of comparing the EPH screen concentration and the post-fractionation TEH concentration. There can be significant differences between the EPH screen and the post-fractionation TEH concentration for the same sample because they are derived by two distinct analytical methods. The EPH screen method is very similar to the former diesel range organic (DRO) method whereas the EPH fractionation step is an additional step in the Massachusetts Method that is not included in a DRO analysis.

The EPH Screen concentration is a summation of all of the compounds that are extracted from the sample and show up on the chromatogram regardless of elution time. These compounds may include naturally occurring organics, intermediate metabolites (hydrocarbon breakdown products) and petroleum hydrocarbons.

The post-fractionation TEH concentration is a summation of the compounds that show up on the chromatograms after the sample has been run through a silica gel cartridge and rinsed with hexane and methylene chloride. The silica gel removes polar petroleum hydrocarbons such as intermediate metabolites and naturally occurring organics so the compounds that pass through the cartridge should be the regulated petroleum hydrocarbons.

The difference between the EPH screen and post-fractionation TEH concentration may have little bearing on a site until the contamination is at a concentration where the site may be considered for closure. For example, a worst-case monitoring well yields an EPH screen concentration of 1500 ppb, (exceeding the beneficial use criteria of 1000 ppb), and a post-fractionation TEH concentration of 600 ppb. Can this site be considered for closure? Yes, if there are no fraction RBSL or DEQ-7 exceedances, and the contamination will not affect current or potential beneficial use of the groundwater. The DEQ will regulate the post-fractionation TEH concentration because it applies to regulated compounds (aliphatic and aromatic fractions) but will also take into account the EPH screen concentration to ensure that current and future beneficial use of groundwater at the site and adjacent properties is protected.

VPH/EPH Sampling Protocol

A number of questions should be addressed when collecting soil and groundwater samples for analysis including: holding time, preservation method, and what type of and how many sample containers to use for collecting Volatile Petroleum Hydrocarbons (VPH) or Extractable Petroleum Hydrocarbons (EPH) samples. Table C contains some useful information to assist in planning and conducting soil and water sampling.

Table C – VPH/EPH Sampling and Preservation Protocol

Parameter	Analytical Method	Sample Container/ Preservation	Holding Time
Soil Samples			
VPH	Massachusetts Method VPH	for samples not methanol preserved 1 – 4 oz. glass jar, cool to 4° C, or preweighed jar or vials with methanol plus 1 – 4 oz. glass jar without methanol for moisture analysis, cool to 4° C	7 days to lab preservation and extraction 28 days from extraction
EPH Screen	Massachusetts Method EPH	1 – 4 oz. glass jar, cool to 4° C	7 days to lab preservation/extraction
EPH Fractionation with or without PAH's	Massachusetts Method EPH	1 – 4 oz. glass jar, cool to 4° C	7 days to lab preservation/extraction
Volatiles Organics	EPA Method 8260B	1 – 4 oz. glass jar, cool to 4° C	14 days to extraction
RCRA Metals	Method SW 3050A	50 gram plastic or glass jar, no preservation	6 months
Oxygenates	EPA Method 8260B	125 ml glass jar, cool to 4° C	14 days to extraction
Lead Scavengers EDB 1,2 DCA	EPA Method 8011 EPA Method 8260B	125 ml glass jar, cool to 4° C	14 days to extraction
Aqueous Samples			
VPH	Massachusetts Method VPH	3 – 40 ml. vials, acidify with HCl to pH <2, cool to 4° C	14 days to analysis
EPH Screen	Massachusetts Method EPH	2 – 1 liter amber glass bottles, acidify with H ₂ SO ₄ to pH <2, cool to 4° C	14 days to extraction
EPH	Massachusetts Method EPH	2 – 1 liter amber glass bottles, acidify with H ₂ SO ₄ or HCl, cool to 4° C	14 days to extraction
Volatile Organics	EPA Method 524.2	3 – 40 ml vials, acidify with HCl to pH <2, cool to 4° C. Remove chlorine with Ascorbic Acid.	14 days to analysis
Volatile Organics	EPA Method 8260B	2 – 40 ml vials, acidify with HCl to pH <2, cool to 4° C	14 days to analysis
PAHs (Semivolatile Organics)	EPA Method 8270C	2- 1liter amber glass bottles, do not acidify , cool to 4° C. Remove chlorine with ~4 drops of 10% Sodium Thiosulfate (Na ₂ S ₂ O ₃)	7 days to extraction
Lead Scavengers EDB 1,2 DCA	EPA Method 8011 EPA Method 8260B	3 – 40 ml vials, acidify with HCl to pH <2, cool to 4° C. Remove chlorine with ~4 drops of 10% Sodium Thiosulfate (Na ₂ S ₂ O ₃)	14 days to analysis
Oxygenates	EPA Method 8260B	2 – 40 ml. Vials, acidify with HCl to pH <2, or raise pH to >11 with trisodium phosphate (TSP) for ethers and alcohols, cool to 4° C	14 days to analysis

Soil Sample Collection and Preservation

The sampling protocols for VPH and EPH vary in a few respects from GRO/DRO sampling previously required by DEQ. They are as follows:

There are two DEQ approved methods for collecting soil samples for VPH analysis: with methanol preservation and without methanol preservation. The DEQ is not routinely requiring that soil samples for RBCA analysis be methanol-preserved in the field at this time but may be required on a site specific basis. The VPH Method includes field methanol preservation. This requires a total of three containers for each sample: two 40-ml glass vials containing preweighed amounts of methanol and one four-ounce jar for a moisture analysis. For samples that are not methanol preserved in the field, to ensure that significant loss of volatiles does not occur, the samples must be placed on ice immediately upon collection and methanol preserved by a laboratory within seven (7) days of sampling.

Soil samples collected for EPH analysis must be placed on ice immediately upon collection to ensure that significant loss of contaminants does not occur; the samples must be placed on ice immediately upon collection and methanol preserved and extracted by a laboratory within seven (7) days of sampling.

Laboratory Moisture Data Reporting for Soil Samples

All soil data must be reported on a dry-weight basis. Moisture percentage must also be determined and reported on the laboratory data reports.

Aqueous Sample Preservation

The VPH Method recommends the use of three (3) 40 milliliter (ml) vials. The samples are to be preserved by adding hydrochloric acid (HCl) and reducing the pH to 2 or less, and placed on ice immediately. Chilled, preserved samples must be analyzed by a laboratory within 14 days of sampling.

The EPH Method recommends 5 milliliters of 1:1 HCl, or suitable acid, as a preservative. Sulfuric acid (H₂SO₄) is a suitable acid. EPH samples must also be placed on ice immediately after sampling and preservation. The samples must be extracted by a laboratory within 14 days.

Trisodium Phosphate (TSP) is used as an alternative to acid preservation for fuel oxygenates. It prevents the biological degradation of the target analytes and does not cause hydrolysis of ethers to alcohols.

At sites where drinking water supplies, either water supply lines or domestic or public water supply wells, are threatened by petroleum contamination, the DEQ may require a volatile organic compound (VOC) analysis by EPA Method 524.2 of the water inside the well or pipelines. HCl is used as a preservative. If the water system is chlorinated, ascorbic acid needs to be added to prevent the formation of chlorination by-products. If the supply is not chlorinated then just HCl is used for preserving the sample.

Odors as a Significant Risk to Public Welfare/Nuisance Condition

The existence of a nuisance condition shall be considered in a characterization of risks to public welfare. Given the low odor recognition thresholds of many petroleum constituents (and breakdown products), the presence of odors at petroleum-contaminated sites can constitute a nuisance condition.

Because of the variability of human olfactory senses as well as the variability in the composition of petroleum products, definitive and quantitative guidelines and standards on when a petroleum odor constitutes a nuisance condition and significant risk to public welfare are generally not appropriate. In the context of petroleum-contaminated sites; however, the following rules of thumb are suggested for when an odor condition would generally NOT be considered a nuisance condition:

- 1) Odors observed in the subsurface during excavation or boring advancement would generally not be considered a nuisance condition, as long as such odors are not detectable in ambient or indoor air, and as long as there are no plans to excavate or disturb such areas.
- 2) Odors observed in the breathing zone of the ambient air, or indoor air of an impacted structure, would generally not be considered a nuisance condition, if such odors do not persist for more than 3 months.
- 3) Odors observed in the breathing zone of the ambient air would generally not be considered a nuisance condition if they are discernable less than 10 days a year.
- 4) Odors observed in the ambient air or indoor air of an impacted structure would generally not be considered a nuisance condition if the occupants of such a structure do not believe such odors significantly affect or degrade their quality of life.

Many compounds may pose an unacceptable inhalation health risk at concentrations below levels that can be detected by odors. The presence of odors within structures should always be evaluated for vapor intrusion risks as discussed in the Vapor Intrusion to Indoor Air section of this document.

Vapor Intrusion to Indoor Air

Vapor intrusion (VI) sampling is an assessment as to whether or not the vapor intrusion exposure pathway is complete and, if so, whether it poses an unacceptable risk to human health. A complete pathway means that humans are exposed to vapors originating from site contamination: either from volatilization from impacted soil, impacted groundwater, or both. **The RBSLs for soil and water are not designed to be protective of the vapor intrusion (VI) pathway. If volatile compounds are present in the vicinity of inhabitable structures, then the VI pathway should be evaluated either qualitatively or quantitatively.** The DEQ is developing VI guidance for Montana, but until that guidance document is completed currently available VI guidance documents should be used to assess and evaluate VI risks. The DEQ will approve specific evaluation procedures on a site-by-site basis. The EPA has recommended using the vapor intrusion guidance developed by the Interstate Technology & Regulatory Council (ITRC). The ITRC Vapor Intrusion Team—composed of representatives from 19 state environmental agencies, 12 environmental companies, and 4 federal agencies (including EPA)—developed an ITRC Technical and Regulatory Guidance document, *Vapor Intrusion Pathway: A Practical Guide* (VI-1, 2007), and a companion document, *Vapor Intrusion Pathway: Investigative Approaches for Typical Scenarios* (VI-1A, 2007). The states of New York, New Jersey, Massachusetts, and California also have vapor intrusion guidance that contains useful information.

Using Tier 1 Look-Up Tables

The Tier 1 Evaluation

The Tier 1 RBSL lookup tables contain target cleanup levels for surface soil, subsurface soil, and groundwater (see Tables 1, 2, and 3, respectively). These tables are arranged in categories that reflect different site conditions. To determine the appropriate RBSLs, the RP (or their consultant) and DEQ staff match the values in the categories of the tables that correspond with the conditions present at the site.

For the purposes of Tier 1 evaluation, contaminated soil is classified either as “surface soil” lying two feet or less below the ground surface, or as “subsurface soil,” buried more than two feet below ground surface. Tier 1 RBSLs for contaminated soil are divided into three categories depending on the distance to groundwater beneath that contaminated soil: 1) soil less than ten feet above groundwater, 2) soil between ten and twenty feet above groundwater, and 3) soil greater than twenty feet above groundwater. The distance to water is determined using the depth to the water table measured from the location where the soil sample is taken to the highest level seasonal conditions in a well screened in the uppermost zone of saturation within 500 feet of the release. Nearby water supply wells may not be appropriate in some case to determine the depth to the uppermost saturated zone (first water) as they may be completed in a deeper zone. If the soil sample is collected below an UST at a depth of 10 feet below ground surface, and the water table is 25 feet below the ground surface, the depth to the groundwater is 15 feet. In

determining which Tier 1 table is appropriate for your situation you must know three depths: 1) the depth the sample was taken below the ground surface, 2) the depth the water table is below the ground surface and 3) known distance to groundwater below contaminated soil (which is calculated by subtracting 1 from 2). When contamination is present both at both surface and subsurface depths, samples must be collected from highest concentration in each depth zone and compared to the appropriate Tier-1 tables.

DEQ and the RP must also consider the current and reasonably anticipated future use of sites with contaminated surface soil. The site may be designated commercial or residential by taking into account past, current, and potential future uses of the site, zoning, and other relevant factors. Residential sites are those where someone resides or may reside in the future at the site and commercial sites are those without residents used only for commercial/industrial purposes. This determination is only relevant for petroleum-contaminated surface soil. When site conditions are not well defined, DEQ uses the most conservative soil RBSLs, corresponding to the shallowest depth to groundwater below contaminated soil with residential use.

If RCRA metals are analyzed, concentrations must be compared to the following screening levels.

Table D – RCRA Metals Screening Levels

Metal	Screening Level	units
Arsenic	40 ^a	mg/kg
Barium	820 ^b	mg/kg
Cadmium	3.8 ^b	mg/kg
Chromium	280 ^c	mg/kg
Lead	400 ^c	mg/kg
Elemental Mercury	1.0 ^b	mg/kg
Selenium	2.6 ^b	mg/kg
Silver	8.9 ^d	mg/kg

a: Based on Montana DEQ Remediation Division Action Level for Arsenic in Surface Soil (April 2005).

b: Based on the EPA 2008 maximum contaminant level-based protection of groundwater soil screening level (multiplied by 10).

c: Based on the EPA Regional Screening Level for residential soil (EPA, April 2009).

d: Based on the following formula:

$(\text{DEQ-7 human health standard}) / (\text{tapwater screening level}) * (\text{Risk-based soil screening level}) * 10$

If these screening levels are exceeded, further evaluation is required. DEQ should be contacted to determine what evaluation is appropriate.

Under Petroleum Storage Tank rules, ARM 17.56.506, a release is confirmed when any soil sample collected from a site is measured at levels exceeding levels published in Table 1 of this document. **It is important to note that this law also requires persons conducting subsurface investigations, as well as many other parties, to report the release to DEQ. Failure to report a confirmed release in the specified time period may result in enforcement actions against persons failing to report.**

To be considered for closure under Tier 1, soil and groundwater samples from a site must not contain COC concentrations that exceed the appropriate Tier 1 RBSLs. DEQ issues a “No Further Corrective Action Letter” when Tier 1 RBSLs and closure criteria are satisfied and it is clear from other information that no further cleanup action is necessary.

Should COC concentrations exceed the values in the appropriate Tier 1 RBSL Lookup Table(s), the release is not ready to be resolved under the Tier 1 process. However, it may be possible to remediate a release to Tier 1 RBSLs by removing more contaminated material (e.g., through further excavation or *in situ* remedial techniques), then resampling and following the Tier 1 evaluation process again. Releases that cannot be resolved under the Tier 1 evaluation process, including those with COCs in groundwater above the DEQ-7 human health standards or Tier 1 RBSLs (Table 3), will require further remedial action before they can be resolved.

Summary of Tier 1 Procedures

Procedures for evaluating a release using RBCA Tier 1 are summarized as follows:

- Based on field screening results, initiate site assessment and appropriate interim corrective action (including soil removal or free product abatement activities in the source area).
- Determine if a petroleum release is confirmed.² At UST and PST sites petroleum releases are confirmed when pre- or post excavation soil analytical results exceed the RBSLs in the first numeric column of the Tier 1 Surface Soil RBSL Table (Table 1).
- Upon receipt of confirmation of a petroleum release, the RP, and certain other parties, must notify the appropriate DEQ Bureau of the release within the time specified in law. If the release is from a UST or an PST use the information in the 24-hour Release Report (see Appendix A). Timeframe and reporting requirements for releases from USTs and PSTs is described in ARM 17.56.501 through 506.
- Based on the sample depth and distance to groundwater, find the appropriate RBSL value in the Tier 1 tables.
 - If the post-excavation sample depth is two feet or less, the sample represents surface soil and the Tier 1 Surface Soil RBSLs (Table 1) apply.
 - When samples represents surface soil, the appropriate land use must be determined.
 - If anyone lives at the site or may live at the site in the future, residential RBSLs apply to surface soil.
 - If the site is used as a place of business with employees present regularly and no one lives at the site, commercial RBSLs apply to surface soil.
 - If the post-excavation sample depth is greater than two feet, the sample represents subsurface soil and the Tier 1 Subsurface Soil RBSLs (Table 2) apply.
 - For both types of soil, if groundwater at the site is less than ten feet below the sample location, the first set of RBSLs apply (left hand column(s)).

2. Different program regulations may have different reporting requirements. In addition to RBSL exceedances, Montana Petroleum Storage Tank (PST) regulations also require reporting of all PST-related releases of 25 gallons or greater or any size UST-related release that is not remediated within 24 hours. (ARM 17.56.505).

- For both types of soil, if groundwater at the site is between ten and twenty feet below the sample location, the second set of RBSLs apply (middle column(s)).
- For both types of soil, if groundwater at the site is greater than twenty feet below the sample location, the third set of RBSLs apply (right hand column(s)).
- If worst-case soil sampling results are less than the appropriate RBSL value, the release may be evaluated for closure.
- If necessary and appropriate, conduct additional remediation or investigation.
- Following removal of additional soil or *in situ* remediation, compare soil confirmation sampling results with RBSLs on the Tier 1 Tables.
- If worst-case soil sampling results are less than the appropriate RBSL value, the release may be evaluated for closure.
- At any point in the process, if groundwater sampling results or site conditions indicate that groundwater is impacted, compare the site data to the Tier 1 groundwater RBSLs (Table 3) to evaluate groundwater sampling results. More than one sampling event may be required for a complete evaluation.
- If groundwater sampling results exceed the Tier 1 groundwater RBSLs (Table 3) the release cannot be resolved under the Tier 1 RBCA process, and a groundwater investigation must be completed.
- Within 30 days of a release from a UST or PST, the RP must submit a completed 30-Day Release Report form (Appendix A) to the DEQ Remediation Division. Other agencies or Bureaus may have other reporting requirements.
- If soil sampling results exceed RBSLs, complete initial site assessment and corrective action based on site conditions and according to a DEQ-approved corrective action plan.

Figure 1 on page 17 is a flowchart showing the RBCA Tier 1 process for a typical UST site addressed by the DEQ Petroleum Technical Section.

Development of Tier 1 Lookup Tables

DEQ calculated Tier 1 RBSLs for exposure pathways commonly associated with petroleum releases. RBSLs for surface soil were calculated for the soil leaching to groundwater pathway, and for the direct-contact pathway assuming residential and commercial land use. RBSLs for subsurface soil were calculated for the soil leaching to groundwater pathway, and for the direct contact pathway to account for exposure of receptors during any excavation/construction at a site. Additionally, RBSLs for non-target COC fractions in soil include beneficial use (aesthetic) considerations. For each of the three distance to groundwater categories in Tables 1 and 2, the RBSLs DEQ published reflect the lowest COC concentration calculated for any of the three Tier 1 exposure scenarios (i.e., for the soil leaching to groundwater pathway, through direct contact, or based on beneficial use considerations). Appendix C is a comprehensive soil RBSL table presenting the RBSLs calculated for direct contact, leaching to groundwater, and beneficial use considerations.

Tier 1 RBSLs for groundwater in Table 3 consist of DEQ-7 human health standards for the individual (target) COCs. For the non-target petroleum fractions, direct contact RBSLs were

calculated using the fraction-surrogate approach and compared to beneficial use criteria, and the lowest target value for each fraction was used in Table 3.

Derivation of RBSLs

Tier 1 RBSLs were calculated using chemical fate and transport models, exposure models, and data characterizing the mobility, toxicity, and aesthetics of petroleum compounds. The contaminant transport models simulate chemical movement from a release source to underlying groundwater, and incorporate conservative assumptions regarding soil type, the rate of water infiltration, and the behavior of the COCs. Contaminant transport modeling results were used to calculate soil target levels protective of groundwater RBSLs (including DEQ-7 human health standards). Exposure modeling was performed to characterize potential risk from direct contact with contaminated soil, including ingestion, inhalation, and dermal contact exposure routes, and contact with groundwater, including ingestion and inhalation.

Refined petroleum products are typically mixtures of organic chemicals, many of which do not have DEQ-7 human health standards. The Groundwater RBSL Table (Table 3) includes DEQ-7 human health standards for target COCs for which standards were available.

RBSLs for the non-target ranges of petroleum hydrocarbons were developed using a fraction-surrogate approach because DEQ-7 human health standards were not available. These petroleum constituents are divided into fractions (e.g., C5-C8 aliphatics) based on chemical behavior and toxicity. RBSLs were calculated using a chemical representative ("surrogate") for each fraction. Groundwater RBSLs were developed for each petroleum fraction based on the toxicity and aesthetic qualities of each surrogate chemical. Toxicity values were combined with exposure parameters used to estimate ingestion and inhalation exposure to the COCs in groundwater to develop RBSLs based solely on risk to human health. These parameters were similar to those used to develop DEQ-7 human health standards. Information about taste and odor thresholds for these COCs in groundwater was obtained from other states and used to develop RBSLs based on protection of the beneficial use of the groundwater. DEQ also considered the lowest reasonably achievable practical quantitation limit in setting RBSLs for the petroleum fractions.

Soil RBSLs were calculated for each petroleum fraction using the chemical fate and transport model used for the target compounds. These soil RBSLs are designed to be protective of groundwater below releases, so that contaminants leaching from contaminated soil will not cause groundwater to exceed groundwater RBSLs. Ceiling concentrations were also developed to assure that total concentrations of all non-target COCs do not interfere with the beneficial uses of the soil or groundwater.

Conservative, generic estimates of physical, chemical, and exposure parameters were used to develop the Tier 1 RBSLs. These generic estimates produce RBSLs with built-in safety margins, to compensate for the limited site-specific information typically available at Tier 1. The conservative Tier 1 RBSLs were created using several generic "worst-case" assumptions for model parameters.

Models Used to Generate Tier 1 RBSLs

DEQ staff calculated Tier 1 RBSLs for the soil leaching to groundwater pathway using the “VS2DT Solute Transport in Variably Saturated Porous Media” model (United States Geological Survey), combined with the “Hydrologic Evaluation of Landfill Performance” (HELP) model, which was used to estimate water infiltration rates. Direct contact RBSLs were calculated using equations developed by the United States Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection. The specific assumptions used in DEQ’s Tier 1 soil leaching to groundwater models are discussed in Appendix D. The assumptions used in the direct contact modeling, including those associated with the fraction-surrogate approach, are discussed in Appendix E. Information regarding the beneficial use criteria is also provided in Appendix E. Since Tier 1 RBSLs are intended for use at a variety of releases throughout the state, the assumptions of Tier 1 provide for a wide margin of safety, and are therefore conservative.

Figure 1 --- RBCA Tier 1 Decision Tree

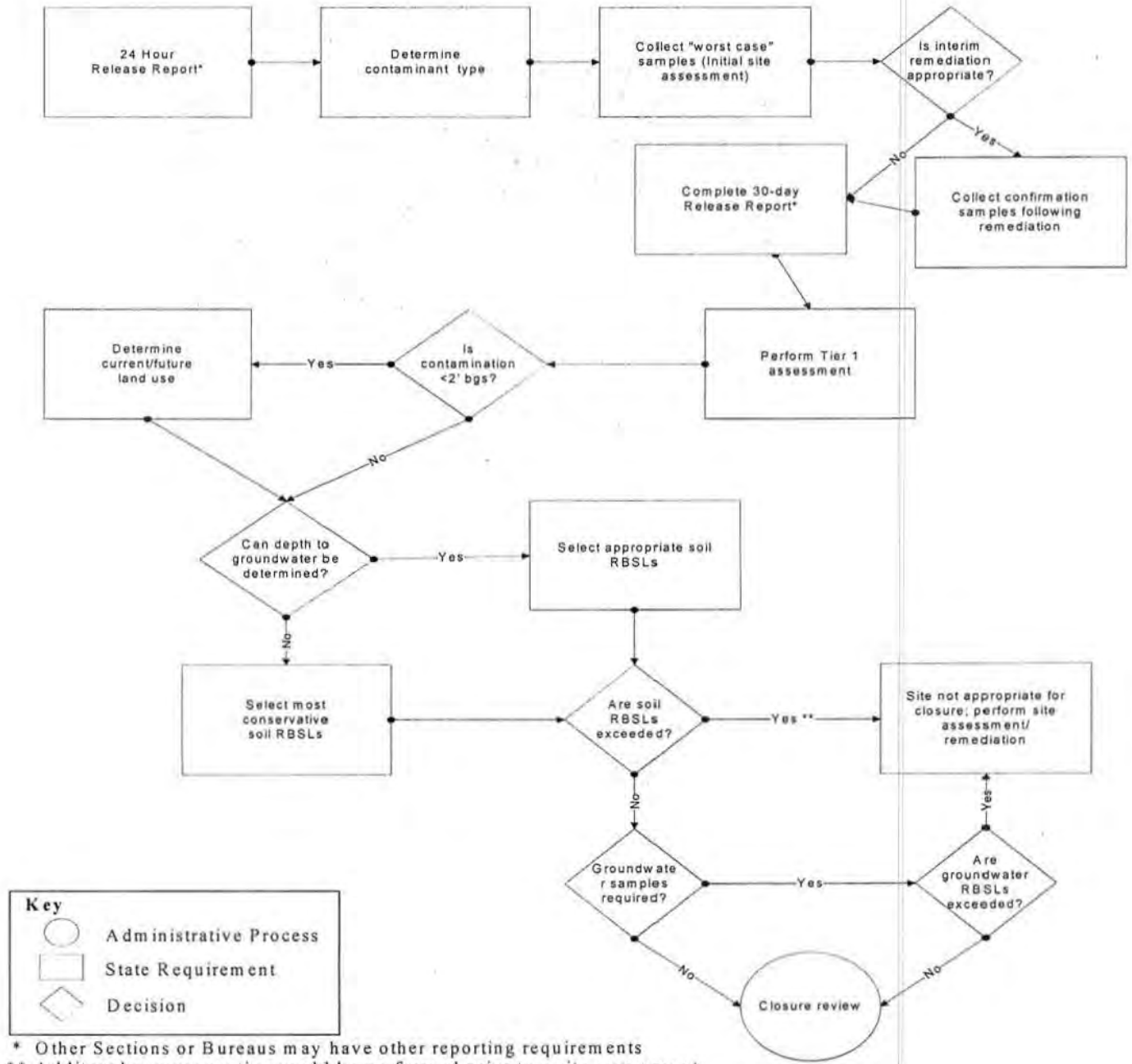


TABLE 1
TIER 1 SURFACE SOIL (0-2 ft) RBSLs (mg/kg)
(includes default RBSLs)

This table applies to contaminated surface soil from 0-2 feet below ground surface. Distance to water is from the sample depth to the water table. For VPH compounds at UST sites, default RBSLs (bold) are used to determine if a release has occurred at a site. Default RBSLs apply to the entire soil column and always apply in the absence of adequate information. For EPH compounds, the 200 ppm EPH screen concentration is used to determine if additional analysis (fractionation) is needed.

Distance to groundwater	< 10 feet to groundwater			10-20 feet to groundwater			> 20 feet to groundwater		
	E	Residential RBSL (mg/kg)	B Commercial RBSL (mg/kg)	E	Residential RBSL (mg/kg)	B Commercial RBSL (mg/kg)	E	Residential RBSL (mg/kg)	B Commercial RBSL (mg/kg)
For Gasoline and Light Hydrocarbons measured using the Massachusetts Method for Volatile Petroleum Hydrocarbons (VPH)									
C5-C8 Aliphatics	n	60	200	I	60	300	dc	60	300
C9-C12 Aliphatics	n	100	700	dc	100	700	dc	100	700
C9-C10 Aromatics	n	100	100	I	100	500	I	100	700
MTBE	e	0.08*	0.08*	I	0.2	0.2	I	0.3	0.3
Benzene	e	0.04**	0.04**	I	0.1	0.1	I	0.2	0.2
Toluene	n	10	10	I	40	40	I	60	60
Ethylbenzene	e	6	10	I	6	30	dc	6	30
Xylenes	n	70	200	I	70	300	dc	70	300
Naphthalene	e	4	9	I	4	20	dc	4	20
Lead Scavengers									
1,2-Dibromoethane (EDB)	e	0.00002	0.00002	I	0.00004	0.00004	I	0.0001	0.0001
1,2-Dichloroethane (DCA)	e	0.01	0.01	I	0.03	0.03	I	0.04	0.04
For Diesel and Heavy Hydrocarbons measured using the Massachusetts Method for Extractable Petroleum Hydrocarbons (EPH)									
EPH Screen, Fractionate		200	200		200	200		200	200
C9-C18 Aliphatics	n	200	1,000	dc	200	1,000	dc	200	1,000
C19-C36 Aliphatics	n	20,000	100,000	dc	20,000	100,000	dc	20,000	100,000
C11-C22 Aromatics	n	400	400	I	500	1,000	I	500	2,000
Acenaphthene	n	200	200	I	400	800	I	400	1,000
Anthracene	n	2,000	4,000	I	2,000	10,000	I	2,000	20,000
Benz(a)anthracene	e	0.2	2	dc	0.2	2	dc	0.2	2
Benzo(a)pyrene	e	0.02***	0.2	dc	0.02***	0.2	dc	0.02***	0.2
Benzo(b)fluoranthene	e	0.2	2	dc	0.2	2	dc	0.2	2
Benzo(k)fluoranthene	e	2	20	dc	2	20	dc	2	20
Chrysene	e	20	200	dc	20	200	dc	20	200
Dibenzo(a,h)anthracene	e	0.02***	0.2	dc	0.02***	0.2	dc	0.02***	0.2
Fluoranthene	n	300	500	I	300	2,000	I	300	2,000
Fluorene	n	300	600	I	300	2,000	I	300	2,000
Indeno(1,2,3-cd)pyrene	e	0.2	2	dc	0.2	2	dc	0.2	2
Naphthalene	n	4	9	I	4	20	dc	4	20
Pyrene	n	200	2,000	dc	200	2,000	dc	200	2,000

Notes:

E = Effect is either: n = non-carcinogenic and direct contact RBSLs are based on a hazard quotient of 0.125 for a total hazard index which does not exceed 1, or
e = carcinogenic and direct contact RBSLs are based on a cancer risk of 1×10^{-6} for a total cancer risk which does not exceed 1×10^{-5} .

B = Basis is the most conservative of: I = leaching from soil to groundwater;
dc = residential direct contact including ingestion, inhalation, and dermal; or
bu = adversely affects beneficial uses (foul odor or taste).

If the leaching pathway is not the most conservative basis, residential or commercial RBSLs apply to surface soil.

* = The best achievable practical quantitation limit (0.20) is greater than the RBSL; therefore, if the compound is detected, additional evaluation may be necessary.

** = The best achievable practical quantitation limit (0.05) is greater than the RBSL; therefore, if the compound is detected, additional evaluation may be necessary.

*** = The best achievable practical quantitation limit (0.33) is greater than the RBSL; therefore, if the compound is detected, additional evaluation may be necessary.

For information regarding odor considerations, please refer to the Odors as a Significant Risk to Public Welfare/Nuisance Condition Section of the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases.

The RBSLs for soil and water are not designed to be protective of the vapor intrusion (VI) pathway. Please refer to the Vapor Intrusion Indoor Air Section of the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases.

TABLE 2
TIER 1 SUBSURFACE SOIL (>2 ft) RBSLs (mg/kg)

This table applies to contaminated subsurface soil (>2 feet below the ground surface). Distance to water is from the sample depth to the water table. For VPH compounds at UST sites, default RBSLs, provided in bold on Table 1, are used to determine if a release has occurred at a site. Default RBSLs apply to the entire soil column and always apply in the absence of adequate information. For EPH compounds the 200 ppm screen concentration is used to determine if additional analysis (fractionation) of the soil sample is needed.

Distance to groundwater Chemical units (mg/kg = ppm)	E	< 10 feet to ground water		10-20 feet to ground water		> 20 feet to ground water	
		>2 ft Excavation RBSL (mg/kg)	B	>2 ft Excavation RBSL (mg/kg)	B	>2 ft Excavation RBSL (mg/kg)	B
For Gasoline and Light Hydrocarbons measured using the Massachusetts Method for Volatile Petroleum Hydrocarbons (VPH)							
C5-C8 Aliphatics	n	200	l	500	dc	500	dc
C9-C12 Aliphatics	n	1,000	dc	1,000	dc	1,000	dc
C9-C10 Aromatics	n	100	l	500	l	700	l
MTBE	c	0.08*	l	0.2	l	0.3	l
Benzene	c	0.04**	l	0.1	l	0.2	l
Toluene	n	10	l	40	l	60	l
Ethylbenzene	c	10	l	40	l	60	l
Xylenes	n	200	l	600	dc	600	dc
Naphthalene	n	9	l	30	l	50	l
Lead Scavengers							
1,2-Dibromoethane (EDB)	c	0.00002	l	0.00004	l	0.0001	l
1,2-Dichloroethane (DCA)	c	0.01	l	0.03	l	0.04	l
For Diesel and Heavy Hydrocarbons measured using the Massachusetts Method for Extractable Petroleum Hydrocarbons (EPH)							
EPH Screen, Fractionate		200		200		200	
C9-C18 Aliphatics	n	2,000	dc	2,000	dc	2,000	dc
C19-C36 Aliphatics	n	100,000	dc	100,000	dc	100,000	dc
C11-C22 Aromatics	n	400	l	1,000	l	2,000	l
Acenaphthene	n	200	l	800	l	1,000	l
Anthracene	n	4,000	l	10,000	l	20,000	dc
Benz(a)anthracene	c	10	l	50	l	50	dc
Benzo(a)pyrene	c	4	l	5	dc	5	dc
Benzo(b)fluoranthene	c	50	l	50	dc	50	dc
Benzo(k)fluoranthene	c	500	l	500	dc	500	dc
Chrysene	c	2,000	l	5,000	l	5,000	dc
Dibenzo(a,h)anthracene	c	5	dc	5	dc	5	dc
Fluoranthene	n	500	l	2,000	l	2,000	dc
Fluorene	n	600	l	2,000	l	2,000	dc
Indeno(1,2,3-cd)pyrene	c	50	dc	50	dc	50	dc
Naphthalene	n	9	l	30	l	50	l
Pyrene	n	2,000	dc	2,000	dc	2,000	dc

Notes:

E = Effect is either:
 n = non-carcinogenic and direct contact RBSLs are based on a hazard quotient of 0.125 for a total hazard index which does not exceed 1, or
 c = carcinogenic and direct contact RBSLs are based on a cancer risk of 1×10^{-6} for a total cancer risk which does not exceed 1×10^{-5} .

B = Basis is the most conservative of:

- l = leaching from soil to groundwater;
- dc = residential direct contact including ingestion, inhalation, and dermal; or
- bu = adversely affects beneficial uses (foul odor or taste).

If the leaching pathway is not the most conservative basis, excavation RBSLs apply to subsurface soil.

* = The best achievable practical quantitation limit (0.20) is greater than the RBSL, therefore, if the compound is detected, additional evaluation may be necessary.

** = The best achievable practical quantitation limit (0.05) is greater than the RBSL, therefore, if the compound is detected, additional evaluation may be necessary.

For information regarding odor considerations, please refer to the Odors as a Significant Risk to Public Welfare/Nuisance Condition Section of the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases.

The RBSLs for soil and water are not designed to be protective of the vapor intrusion (VI) pathway. Please refer to the Vapor Intrusion to Indoor Air Section of the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases.

**TABLE 3
TIER 1 GROUNDWATER RBSLs AND STANDARDS**

This table applies to groundwater and consists of DEQ-7 Human Health Standards (HHSs), where available. For compounds without DEQ-7 HHSs, DEQ has developed RBSLs and included them in the table. For EPH compounds, a total extractable hydrocarbon (TEH) concentration of 1,000 µg/L is used to determine if additional analysis (fractionation) is needed. Surface water impacts require a minimum of a Tier 2 evaluation.

Chemical	Effect	Basis	Groundwater Standard or RBSL (µg/l)
For Gasoline and Light Hydrocarbons measured using the Massachusetts Method for Volatile Petroleum Hydrocarbons (VPH)			
TPH ceiling for gasoline and light hydrocarbons			1,000
C5-C8 Aliphatics	n	rb	700
C9-C12 Aliphatics	n	rb	1,000
C9-C10 Aromatics	n	rb	1,000
MTBE	n	hhs	30
Benzene	c	hhs	5
Toluene	n	hhs	1,000
Ethylbenzene	n	hhs	700
Xylenes	n	hhs	10,000
Naphthalene	n	hhs	100
Lead Scavengers			
Ethylene dibromide (EDB)	c	hhs	0.004
1,2, Dichloroethane (DCA)	c	hhs	4
For Diesel and Heavy Hydrocarbons measured using the Massachusetts Method for Extractable Petroleum Hydrocarbons (EPH)			
EPH / TEH Screen fractionation required			1,000
TEH ceiling for diesel and heavy hydrocarbons			1,000
C9-C18 Aliphatics	n	rb	1,000
C19-C36 Aliphatics	n	bu	1,000
C11-C22 Aromatics	n	rb	1,000
Acenaphthene	n	hhs	670
Anthracene	n	hhs	2,100
Benz(a)anthracene	c	hhs	0.5
Benzo(a)pyrene	c	hhs	0.05*
Benzo(b)fluoranthene	c	hhs	0.5
Benzo(k)fluoranthene	c	hhs	5
Chrysene	c	hhs	50
Dibenzo(a,h)anthracene	c	hhs	0.05*
Fluoranthene	n	hhs	130
Fluorene	n	hhs	1,100
Indeno(1,2,3-cd)pyrene	c	hhs	0.5
Naphthalene	n	hhs	100
Pyrene	n	hhs	830

Notes:

Effect is either:

n = non-carcinogenic and direct contact RBSLs are based on a hazard quotient of 1, or
c = carcinogenic and direct contact RBSLs are based on a cancer risk 1×10^{-6} .

Basis is:

rb = risk-based screening level;
hhs = DEQ-7 Human Health Standard; or
bu = adversely affects beneficial uses (foul taste or odor).

* = The best achievable practical quantitation limit (0.1 µg/L) may be greater than the human health standard; therefore, if the compound is detected, additional evaluation may be necessary.

DEQ's RBCA policy includes a ceiling concentration of 1,000 µg/l total purgeable hydrocarbons (TPH) for the Gasoline and Light Hydrocarbons and 1,000 µg/l total extractable petroleum hydrocarbons (TEH) for Diesel and Heavy Hydrocarbons.

The RBSLs for soil and water are not designed to be protective of the vapor intrusion (VI) pathway. Please refer to the Vapor Intrusion to Indoor Air Section of the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases.

CERTIFICATE OF SERVICE

The undersigned certifies that the original of the attached **ADMINISTRATIVE ORDER PURSUANT TO SECTION 7003 OF RCRA** in the matter **JORE COPORATION; DOCKET NO.: RCRA-08-2013-0001** was filed with the Regional Hearing Clerk on August 1, 2013.

Further, the undersigned certifies that a true and correct copy of the document was delivered to, Chuck Figur, Senior Enforcement Attorney, U. S. EPA – Region 8, 1595 Wynkoop Street, Denver, CO 80202-1129. True and correct copy of the aforementioned document was sent and placed in the United States mail certified/return receipt on September 24, 2013 to:

Mick Cheff, President
Jore Corporation
34837 Innovation Drive
Ronan, MT 59864

September 24, 2013



Tina Artemis
Paralegal/Regional Hearing Clerk

