Fill in this information to identify the case:

Name of Debtor & Case Number:

- ☐ Whittaker, Clark & Daniels, Inc. (Case No. 23-13575)
- ☐ Brilliant National Services, Inc. (Case No. 23-13576)
- ☑ Soco West, Inc. (Case No. 23-13578)
- ☐ L. A. Terminals, Inc. (Case No. 23-13581)

United States Bankruptcy Court for the District of New Jersey

Official Form 410

Proof of Claim

04/22

Read the instructions before filling out this form. This form is for making a claim for payment in a bankruptcy case. Do not use this form to make a request for payment of an administrative expense. Make such a request according to 11 U.S.C. § 503.

Filers must leave out or redact information that is entitled to privacy on this form or on any attached documents. Attach redacted copies of any documents that support the claim, such as promissory notes, purchase orders, invoices, itemized statements of running accounts, contracts, judgments, mortgages, and security agreements. **Do not send original documents;** they may be destroyed after scanning. If the documents are not available, explain in an attachment.

A person who files a fraudulent claim could be fined up to $500,000, imprisoned for up to 5 years, or both. 18 U.S.C. §§ 152, 157, and 3571.

Fill in all the information about the claim as of the date the case was filed. That date is on the notice of bankruptcy (Form 309) **that you received.**

Part 1: Identify the Claim

1. **Who is the current creditor?**

   Montana Natural Resource Damage Program and Montana Department of Environmental Quality
   Name of the current creditor (the person or entity to be paid for this claim)

   Other names the creditor used with the debtor

2. **Has this claim been acquired from someone else?**

   ☑ No
   ☐ Yes. From whom? _____

3. **Where should notices and payments to the creditor be sent?**
   Federal Rule of Bankruptcy Procedure (FRBP) 2002(g)

Where should notices to the creditor be sent?	**Where should payments to the creditor be sent?** (if different)
Montana Natural Resource Damage Program Name	Name
P.O. Box 201425 Number Street	Number Street
Helena MT 59620-1425 City State ZIP Code	City State ZIP Code
Contact phone 406-444-0205	Contact phone
Contact email nrdp@mt.gov	Contact email

Uniform claim identifier for electronic payments in chapter 13 (if you use one):

_ _

4. **Does this claim amend one already filed?**

   ☑ No
   ☐ Yes. Claim number on court claims registry (if known) _____ Filed on _____ MM / DD / YYYY

5. **Do you know if anyone else has filed a proof of claim for this claim?**

   ☑ No
   ☐ Yes. Who made the earlier filing? _____

Part 2: Give Information About the Claim as of the Date the Case Was Filed

6. **Do you have any number you use to identify the debtor?**

☑ No
☐ Yes. Last 4 digits of the debtor's account or any number you use to identify the debtor: ____ ____ ____ ____

7. **How much is the claim?** $ 11,167,773 . **Does this amount include interest or other charges?**

☑ No
☐ Yes. Attach statement itemizing interest, fees, expenses, or other charges required by Bankruptcy Rule 3001(c)(2)(A).

8. **What is the basis of the claim?**

Examples: Goods sold, money loaned, lease, services performed, personal injury or wrongful death, or credit card.

Attach redacted copies of any documents supporting the claim required by Bankruptcy Rule 3001(c).

Limit disclosing information that is entitled to privacy, such as health care information.

see attached

9. **Is all or part of the claim secured?**

☑ No
☐ Yes. The claim is secured by a lien on property.

Nature of property:

☐ Real estate. If the claim is secured by the debtor's principal residence, file a *Mortgage Proof of Claim Attachment* (Official Form 410-A) with this *Proof of Claim.*
☐ Motor vehicle
☐ Other. Describe: _____

Basis for perfection: _____

Attach redacted copies of documents, if any, that show evidence of perfection of a security interest (for example, a mortgage, lien, certificate of title, financing statement, or other document that shows the lien has been filed or recorded.)

Value of property: $_____

Amount of the claim that is secured: $_____

Amount of the claim that is unsecured: $11,167,773 (The sum of the secured and unsecured amounts should match the amount in line 7.)

Amount necessary to cure any default as of the date of the petition: $_____

Annual Interest Rate (when case was filed)_____%

☐ Fixed
☐ Variable

10. **Is this claim based on a lease?**

☑ No
☐ Yes. **Amount necessary to cure any default as of the date of the petition.** $_____

11. **Is this claim subject to a right of setoff?**

☑ No
☐ Yes. Identify the property: _____

12. **Is all or part of the claim entitled to priority under 11 U.S.C. § 507(a)?**

A claim may be partly priority and partly nonpriority. For example, in some categories, the law limits the amount entitled to priority.

☑ No

☐ Yes. *Check one:*

	Amount entitled to priority
☐ Domestic support obligations (including alimony and child support) under 11 U.S.C. § 507(a)(1)(A) or (a)(1)(B).	$_____
☐ Up to $3,350* of deposits toward purchase, lease, or rental of property or services for personal, family, or household use. 11 U.S.C. § 507(a)(7).	$_____
☐ Wages, salaries, or commissions (up to $15,150*) earned within 180 days before the bankruptcy petition is filed or the debtor's business ends, whichever is earlier. 11 U.S.C. § 507(a)(4).	$_____
☐ Taxes or penalties owed to governmental units. 11 U.S.C. § 507(a)(8).	$_____
☐ Contributions to an employee benefit plan. 11 U.S.C. § 507(a)(5).	$_____
☐ Other. Specify subsection of 11 U.S.C. § 507(a)(__) that applies.	$_____

* Amounts are subject to adjustment on 4/01/25 and every 3 years after that for cases begun on or after the date of adjustment.

Part 3: Sign Below

The person completing this proof of claim must sign and date it. FRBP 9011(b).

If you file this claim electronically, FRBP 5005(a)(2) authorizes courts to establish local rules specifying what a signature is.

A person who files a fraudulent claim could be fined up to $500,000, imprisoned for up to 5 years, or both. 18 U.S.C. §§ 152, 157, and 3571.

Check the appropriate box:

☑ I am the creditor.

☐ I am the creditor's attorney or authorized agent.

☐ I am the trustee, or the debtor, or their authorized agent. Bankruptcy Rule 3004.

☐ I am a guarantor, surety, endorser, or other codebtor. Bankruptcy Rule 3005.

I understand that an authorized signature on this *Proof of Claim* serves as an acknowledgment that when calculating the amount of the claim, the creditor gave the debtor credit for any payments received toward the debt.

I have examined the information in this *Proof of Claim* and have a reasonable belief that the information is true and correct.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on date 10/23/2023
MM / DD / YYYY

Douglas H. Martin
Signature

Print the name of the person who is completing and signing this claim:

Name: Douglas H. Martin
First name Middle name Last name

Title: Interim Program Director

Company: Montana Natural Resource Damage Program
Identify the corporate servicer as the company if the authorized agent is a servicer.

Address: P.O. Box 201425
Number Street

Helena, MT 59602-1425
City State ZIP Code

Contact phone: 406-444-0205

Email: nrdp@mt.gov

ATTACHMENT TO
THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY'S AND MONTANA NATURAL RESOURCE DAMAGES PROGRAM'S
PROOF OF CLAIM

In re:

NAME OF CREDITOR: **MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY AND THE MONTANA NATURAL RESOURCE DAMAGE PROGRAM**

ADDRESS OF CREDITOR: **c/o Jessica Wilkerson**
PO Box 200901
Helena, MT 59620

c/o Katherine Hausrath
PO Box 201425
Helena, MT 59620-1425

DESCRIPTION OF CLAIMS

The Montana Department of Environmental Quality ("DEQ") and the Montana Natural Resource Damage Program ("NRDP"), acting on behalf of the Governor as the natural resource trustee, assert various claims against SOCO West, Inc. ("Debtor") arising out of Debtor's compliance obligations owed to Montana related to their current ownership of land contaminated by hazardous or deleterious substances and their natural resource damages at the Lockwood Solvent Ground Water Plume Superfund Site (the "Site"), as explained below.

General Description of Facility and/or Background of Claim

1. Debtor is the successor of Brenntag West, Inc. and Dyce Chemical, which operated a chemical repackaging and distribution plant at the Site in Lockwood, Montana, a suburb of Billings, Montana.

2. The Site was listed on the National Priorities List ("NPL") in December 2000. The Site includes a 580-acre area where contaminated groundwater spread from former industrial facilities. The Site is divided into Operable Unit 1 and Operable Unit 2. Debtor owns part of the property the Site is located on known as Operable Unit 2 ("OU2"). First Five-Year Review Report for LSGPS Site Yellowstone County,

Montana, United States Environmental Protection Agency, July 6, 2022 ("Five-year Review"), at 1.

3. The Site owned by Debtor is a former industrial facility that stored, repackaged, and sold chlorinated solvents from 1972 to the 1990s. Operations at this facility released chlorinated solvents that contaminated groundwater. *Id*.

4. Chlorinated solvents at the Site include tetrachloroethene ("PCE"), trichloroethene ("TCE"), cis-1,2-dichloroethene ("DCE"), and chloroethene (also known as vinyl chloride), which are hazardous substances and hazardous or deleterious substances that threaten human health and environment. 40 C.F.R. § 302.4; Mont. Code Ann. § 75-10-701(8).

5. Since 2005, the United States Environmental Protection Agency ("EPA") and DEQ have been working with the Debtor on remedial design and action. As of October 23, 2023, remedial action has been partially implemented.

6. EPA, DEQ, and Debtor entered into a Consent Decree in 2011 that required, among other things, that Debtor provide a performance guarantee for the estimated cost of performing the remedial Work. Debtor elected to create a trust fund benefiting EPA that is valued at just over $7 million as of 2023. *United States & Montana v. SOCO West, Inc.*, CV-11-88-BLG-RFC (Dist. Ct. Mont. 2011).

7. The final remedy for the contaminated groundwater needs to be re-examined and the cost will likely greatly exceed current financial assurance available for remediation costs. In addition, financial assurance does not account for operations and maintenance costs.

8. Current data estimates the OU2-contaminated groundwater plume extends to the Yellowstone River. LSGPS OU2 2019 Annual Groundwater Monitoring Report, March 31, 2020, at 3.

9. In 2018, as part of the selected remedy, the Montana Department of Natural Resources and Conservation adopted the Controlled Groundwater Area to restrict the development of any new water supply wells.

10. On April 26, 2023, Whittaker, Clark, and Daniels Inc. and several affiliates, including Debtor, filed a motion for Chapter 11 bankruptcy in New Jersey. *Whittaker, Clark & Daniels, Inc, et al.,* (Dist. N.J. 2023), no. 3-13575 (MBK).

11. NRDP has conducted an evaluation of the natural resource damages related to the groundwater plume associated with OU2 to quantify the injury to the groundwater and assess the magnitude and duration of the injury.

12. This Proof of Claim addresses OU2 of the Site.

Basis of Debtor's Liability

13. **Under CERCLA**: The remedial action at the Site has been conducted pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") as amended, 42 U.S.C. §§ 9601, *et seq*.

14. The 2011 Consent Decree determined Debtor is liable under CERCLA for OU2, including the contaminated soil on property owned by Debtor and a groundwater plume emanating from that property. *SOCO West* 8.

15. Hazardous substances present at the Site are harmful to human health and the environment and are hazardous substances under CERCLA. 40 C.F.R. § 302.4.

16. Debtor is obligated to perform further response actions for OU2 if the EPA determines it, in consultation with DEQ. *SOCO West* at 19, 49.

17. Debtor owes compliance obligations to DEQ related to its current ownership of land and its operation of a "facility" where contamination by hazardous or deleterious substances has come to be located.

18. Debtor is liable under § 107 of CERCLA, 42 U.S.C. § 9607, and Mont. Code Ann. § 75-10-715, for the costs of remediating contamination related to the chemical packaging and distribution plant.

19. The EPA may need to undertake the remaining cleanup of the contamination using monies from the "Superfund." If EPA has to use the Superfund, the State of Montana would be responsible for paying ten percent (10%) of the costs of implementing remedy at the Site pursuant to § 104 of CERCLA, 42 U.S.C. § 9604(c)(3)(c). If this becomes a Superfund-lead cleanup, in addition, the State of Montana would be responsible for paying for all operation and maintenance expenses after the site has been remediated. DEQ, on behalf of the State of Montana, is entitled to recover from Debtor, as the Potentially Responsible Party ("PRP"), all expenses it incurs in remediating the contamination or in operation and maintenance, according to Section 107(a) of CERCLA, 42 U.S.C. §.9607.

20. **Under CECRA:** Remedial action is being conducted at the Site pursuant to CERCLA. The State of Montana also has the authority to pursue remedy and restoration under CECRA. Mont. Code Ann. §§ 75-10-715 (1), (2)(a), and (2)(b). Debtor is a potentially liable person under CECRA as "a person who owns or operates a facility where a hazardous or deleterious substance was disposed of" and "a person who at the time of disposal of a hazardous or deleterious substance owned or operated a facility where the hazardous or deleterious substance was disposed of." Mont. Code Ann. § 75-10-715(1)(a) & (b).

21. As a potentially liable person, Debtor is liable for, "damages for injury to, destruction of, or loss of natural resources caused by the release or threatened release, including the reasonable technical and legal costs of assessing and enforcing a claim for

the injury, destruction, or loss resulting from the release[.]" Mont. Code Ann. § 75-10-715(2)(b).

22. Natural resources are defined as, "land, fish, wildlife, biota, air, surface water, ground water, drinking water supplies, and any other resources within the state of Montana owned, managed, held in trust, or otherwise controlled by or appertaining to the state of Montana or a political subdivision of the state." Mont. Code Ann. § 75-10-701(12).

23. The injury to the State's natural resources at the Site is the residual measurable adverse effects to the natural resources remaining following clean-up at OU2, as well as the interim loss of use caused by the injury until the Site returns to baseline.

24. Natural resources, as defined in Mont. Code Ann. § 75-10-701(12), under the trusteeship of the Governor of the State of Montana that have been injured as a result of the Site, include groundwater and the natural resource services provided by these resources. Due to the remaining groundwater contamination plume, these injuries to natural resources continue to occur.

Natural Resource Damages

25. NRDP seeks all costs for damages for injury to, destruction of, or loss of natural resources caused by the release or threatened release, including the reasonable past and future technical and legal costs of assessing and enforcing a claim for the injury, destruction, or loss resulting from the release.

26. NRDP seeks damages equal to "the cost of implementing a project or projects that restore, replace, or acquire the equivalent of natural resource services lost pending restoration to baseline." 43 C.F.R. § 11.83(c).

27. NRDP seeks compensable damages arising from the interim loss of these natural resources. "Compensable value is the amount of money required to compensate the public for the loss in services provided by the injured resources between the time of the discharge or release and the time the resources are fully returned to their baseline conditions, or until the resources are replaced and/or equivalent natural resources are acquired." 43 C.F.R. § 11.83(c).

28. NRDP has relied upon an expert with a natural resource damage assessment consulting firm (IEC) to conduct a resource equivalency analysis (REA) to ensure that the public is compensated for past and expected future losses in natural resources and the services they provide through the provision of additional natural resources and equivalent services in the future (Exhibit A). REA is one of the accepted methods in the DOI NRDA regulations (43 CFR § 11.83(c)(2)). These "compensatory" services provided through restoration are in addition to remedial actions taken to restore the resource to its baseline condition, since simply restoring the resource after an extended time period will not make the public whole for losses that have occurred in the interim.

29. NRDP also seeks the past and future "reasonable technical and legal cost of assessing and enforcing a claim for the injury, destruction, or loss resulting from the release." § 75-10-715(2)(b), MCA, and "reasonable costs" pursuant to 43 CFR §§ 11.14(ee), 11.23, 11.30 & 11.60. NRDP also includes costs of implementing the restoration planning, including developing a restoration plan as required by section 111(i) of CERCLA, 42 U.S.C. § 9611(i), and State costs of implementation of restoration actions. These costs are estimated to be $150,000 based on current and anticipated future expenditures. NRDP also includes a federally-approved 6.76% for indirect costs. *See* Exhibit B. Accordingly, NRDP has calculated that the natural

resource damages claim is $1,737,773.00, which includes $1,477,738 as outlined in Exhibit A, plus costs of assessing, enforcing, and implementing the restoration of $150,000, plus indirect costs of 6.76%.

RESERVATION OF RIGHTS

30. Nothing in this Proof of Claim constitutes a waiver of any rights or an election of remedies by the State of Montana, DEQ, or NRDP. Nor does DEQ waive any right to enforce its regulatory and policy powers against other parties potentially responsible for compliance with its environmental statutes and regulations.

31. This Proof of Claim is without prejudice to any right under 11 U.S.C. § 553 to set off, against any obligations of the Debtor referred to in this Proof of Claim which can be reduced to money, debts owed (if any) to the Debtor by this or any other agency of the State of Montana.

32. DEQ and NRDP reserve the right to amend this Proof of Claim during the pendency of these bankruptcy proceedings or upon the discovery that Debtor has violated any environmental compliance statutes or regulations consistent with the preservation of rights.

33. DEQ reserves the right to enforce its rights under applicable state and federal statutes notwithstanding any provision of the Bankruptcy Code.

34. This Proof of Claim is filed based on current information available to NRDP and DEQ. NRDP and DEQ reserve the right to amend or supplement this Proof of Claim and to submit additional documentation supporting its claim.

35. NRDP reserves the right to amend this Proof of Claim to seek the costs of primary restoration in the event that EPA does not recover the full costs of the response action to remediate the groundwater at OU2 of the Site to meet state and federal groundwater cleanup requirements. Primary restoration includes, “actions undertaken to

return an injured resource to its baseline condition, as measured in terms of the injured resource's physical, chemical, or biological properties or the services it previously provided, when such actions are in addition to response actions completed or anticipated, and when such actions exceed the level of response actions determined appropriate to the site pursuant to the NCP." 43 C.F.R. § 11.14(ll).

36. DEQ and NRDP do not intend, in filing this proof of claim, to submit to the jurisdiction of this Court with respect to any matter other than for determination and allowance of this claim.

37. DEQ and NRDP reserve all rights to assert that the debts in this proof of claim are non-dischargeable environmental obligations of the Debtor and/or administrative expenses, including as necessary, through amending this Proof of Claim.

38. Nothing in this proof of claim constitutes a waiver of any rights of NRDP or an election of remedies concerning any of the sites and facilities referenced above, including without limitation any claims that may arise post-petition, post-confirmation, or after conversion of these cases or any of them to cases under any other chapter of the Bankruptcy Code.

39. DEQ and NRDP do not waive or relinquish any rights or contractual obligations held against other third parties for compliance with the Debtor's environmental obligations, including but not limited to, sureties, guarantors, and bonding companies.

40. Additional documentation in support of this Proof of Claim is available upon request.

STATEMENT OF CLAIM

1. **Unsecured, unliquidated, nonpriority of $11,167,773, which includes $9,430,000.00 for DEQ's claim and $1,737,773.00 for NRDP's claim.**

DATE DEBT WAS INCURRED

1. Ongoing obligations, which began pre-petition.

Exhibits:

Exhibit A, IEC Report

Exhibit B, Approved Indirect Rate for Montana Department of Justice

Exhibit A

IEc

Expert Report: Natural Resource Damages Associated with Groundwater Contamination at the Lockwood Solvent Groundwater Plume Site, Lockwood, Montana

In the case of *Whittaker, Clark & Daniels, Inc., et al.*, Bankruptcy (Case No. 23-13575 (MBK)), regarding Operable Unit 2, Soco West

October 20, 2023

INDUSTRIAL ECONOMICS, INCORPORATED

Prepared for:

Montana Natural Resource Damage Program
1720 9th Avenue
MT, Helena 59601

Prepared by:

Robert Unsworth, Principal

Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140

Table of Contents

Table of Tables

Table of Figures

CHAPTER 1 | Introduction and Background

1.1 Purpose

This expert report was prepared at the request of the Montana Natural Resource Damage Program. In it, I provide an opinion regarding monetary damages resulting from the release of chlorinated solvents to groundwater at the Lockwood Solvent Groundwater Plume Site (herein the "Lockwood Site" or "Site") near Billings, Montana.

Natural resources provide services and value to communities reliant on these resources. When natural resources are harmed – such as occurs when groundwater is contaminated – the public can experience a loss. Natural resource damage assessment is the process of quantifying the scale of loss and assigning a monetary value to that loss. For harmed groundwater, such assessments typically involve calculating the cost of replacing the injured resource (i.e., restoration actions that restore services). This is the approach I apply to establish damages at the Lockwood Site.

1.2 Summary of Opinion

The opinions contained in the report are based on my personal and professional knowledge. My conclusions are expressed to a reasonable degree of certainty and are consistent with standards of profession for natural resource damage assessments and peer-reviewed literature in environmental science and natural resource economics. In developing this opinion, I relied in part on information from the 2005 Montana Department of Environmental Quality (MTDEQ) and United States Environmental Protection Agency (USEPA) Record of Decision (ROD) for the Lockwood Site, the 2022 USEPA First Five-Year Review, and other USEPA Site documents. Staff at IEc provided me with technical and administrative support in completion of this work, all under my direction. I reserve the right to update my analysis, conclusions, and opinions if additional information is provided for my review.

My opinions are summarized below.

- The release of contaminants at the Lockwood Site has resulted in injury to groundwater, in the form of exceedance of State and Federal water quality standards.
- The presence of contaminants in groundwater at the Site has resulted in the diminishment of groundwater services valued by the public, in particular, harm to a source of potable water.
- State and Federal damage assessment statues and regulations allow for the recovery of damages due to injury to groundwater and the associated loss in groundwater services. Trustees for natural resources can establish the cost of replacing the injured groundwater resource as a monetary measure of natural resource damage.
- To establish this replacement cost, I apply a resource equivalency approach (REA). REA is the most widely applied approach for groundwater damage assessment, has been published on in the peer review literature, and is specifically called out as an acceptable damage assessment methodology in the United States (U.S.) Department of the Interior's regulations for the conduct of natural resource damage assessment.
- This approach involves balancing the volume of groundwater replacement against the volume of injured groundwater, thus making the public whole for the injured resource.
- Specifically, the REA approach involves estimating the present value volume of injured groundwater. In this case, I establish the stock volume of injured groundwater by calculating the volume of groundwater

exhibiting exceedances of standards as well as the volume of groundwater precluded from potable use by the Controlled Groundwater Area for this Site, which was established to protect public health and avoid further movement of contaminants in groundwater.

    - I establish the injured volume using Site-specific documents developed for the Site remedy. This includes both the geographic scope of injury as well as the thickness of the injured aquifer and its porosity.

- To establish the cost to replace this injured volume, I apply unit costs for domestic septic system replacement (either with a new, modern system, or through connection to a municipal sewage system). This is a common approach to groundwater protection, and an approach for which unit costs are easily developed.
- I apply the unit cost measures to the volume of injured groundwater to calculate the total cost of replacement of the injured groundwater.
- Total damages calculated using this approach are $1,477,738.

My conclusions may change if additional information is presented to me.

1.3 Qualifications

I am a Principal of Industrial Economics, Incorporated (IEc), an economics and environmental policy consultancy located in Cambridge, Massachusetts. I have been employed with IEc since 1985. I was hired as a full-time Associate with IEc in 1986, promoted to Senior Associate in 1990, elected to Principal in 1993, and served as COO and President from 2000-2011. Prior to joining IEc, I received a bachelor's degree in forestry from the State University of New York at Syracuse in 1984, and a Masters of Forest Science with a focus on environmental economics from Yale University in 1986.

My consulting practice focuses on applied natural resource and environmental economics. Specifically, I provide consulting services and expert support in the assessment of economic damages resulting from adverse changes in the environment, including environmental contamination, as well as the benefits associated with improvements in environmental conditions. I have served as an expert witness and have provided technical support on public and private claims for damages resulting from environmental contamination, forest fires, and Indian water rights claims, as well as interstate groundwater and surface water disputes. My clients have included the U.S. Department of Justice, the National Oceanic and Atmospheric Administration, the USEPA, the U.S. Department of Transportation, the U.S. Department of Energy, the U.S. Department of the Interior (DOI), numerous U.S. states and Indian Tribes, non-governmental organizations, private companies, and private attorneys. I have worked on several international matters, including submitting testimony on proper methods for monetization of environmental damage to the International Court of Justice in The Hague.

Over the past 38 years, I have worked on over 150 natural resource damage assessments throughout the U.S. and the Caribbean and have developed groundwater damage claims at over 30 sites in Colorado, Connecticut, Florida, Kansas, Maine, Massachusetts, Minnesota, Missouri, New Jersey, New Mexico, New York, Ohio, Pennsylvania, Puerto Rico, Rhode Island, Tennessee, Vermont, Washington State, and the U.S. Virgin Islands. This has included claims brought under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), state causes of action, relief sought by private parties under Tort law, as well as claims in the context of bankruptcy. I have played a lead role in the development of methodologies for groundwater damage assessment using resource equivalency approaches, presented on the topic of groundwater damage assessment, assisted states in the development of expedited groundwater damages approaches and models, authored several guidance documents on natural resource damage assessment for State and Federal agencies (including on groundwater assessment), and defended claims in the context of mediated settlement discussions. I have provided expert reports, affidavits, deposition, and trial testimony on several aspects of natural resource

damage assessment, including groundwater damage assessment and the application of equivalency methods. I have worked on matters involving private claims for damages to property value due to groundwater contamination, valued groundwater resources in the context of cost-benefit analyses of regulatory actions undertaken by DOI under the Endangered Species Act, and assessed economic issues in the context of interstate disagreements involving groundwater resources.

I have published in peer-reviewed journals on topics involving damage assessment and am frequently called upon to provide presentations on natural resource damage assessment at professional meetings. I was a member of the National Academy of Sciences, Transportation Research Board, Committee on Alternative Tanker Designs. I also have served as an expert peer reviewer on applied approaches to environmental damage and benefits assessment for the USEPA, DOI, and the U.S. Department of Justice; and I served on a review committee for the European Union regarding development of approaches for environmental liability assessment.

A partial list of the projects in which I have been involved is included in my Curriculum Vitae (Attachment A). This vita also lists peer reviewed published papers I have authored and testimony I have provided in the last four years.

1.4 Background Information

Below I describe the applicable state laws and regulations governing groundwater in Montana, which form the basis of a groundwater damages claim for this Site and provide a summary of the Site and associated groundwater contamination.

1.4.1 Applicable State Laws and Regulations Governing Groundwater in Montana

The State of Montana has passed laws and regulations for the protection of natural resources, including groundwater, for the benefit of its citizens. Under the Montana State Superfund Law, the Comprehensive Environmental Cleanup and Responsibility Act (CECRA; §§ 75-10-701, *et seq*., MCA), Montana can recover natural resource damages for harms caused by releases of hazardous or deleterious substances. Under CECRA, parties are liable for "damages for injury to, destruction of, or loss of natural resources caused by the release or threatened release, including the reasonable technical and legal costs of assessing and enforcing a claim for the injury, destruction, or loss resulting from the release[.]" (§ 75-10-715(2)(b), MCA). This report uses the term "hazardous substances," consistent with CERCLA; the contaminants discussed are all also "hazardous or deleterious substances" under CECRA, § 75-10-701(8), MCA.

In addition to Montana State Law, natural resource damage claims can also be brought under the Federal CERCLA statute, as implemented through DOI regulations for natural resource damage assessments at 43 Code of Federal Regulations (CFR) Part 11. Under these Federal NRDA regulations, natural resource trustees (in this case, the State of Montana) can pursue damages (i.e., monetary compensation) for natural resource injuries caused by the release of hazardous substances to the environment.

1.4.2 Groundwater Contamination at the Lockwood Solvent Groundwater Plume Site

The Lockwood Site is located in a suburb of Billings, Montana known as Lockwood. The primary contaminants of concern at the Site are chlorinated solvents, which includes tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and chloroethene (also known as vinyl chloride [VC]) (MTDEQ and USEPA 2005). PCE is a CERCLA hazardous substance that can break down to TCE, DCE, and VC as it degrades (USEPA 1999). These breakdown products can also be harmful to human health and the environment. The Lockwood Site is adjacent to the Yellowstone River and consists of two operable units (OU) spanning 580 acres (Figure 1). The OUs are centered around two former industrial facilities where contaminants originated (USEPA 2022). A brief description of each OU is provided below.

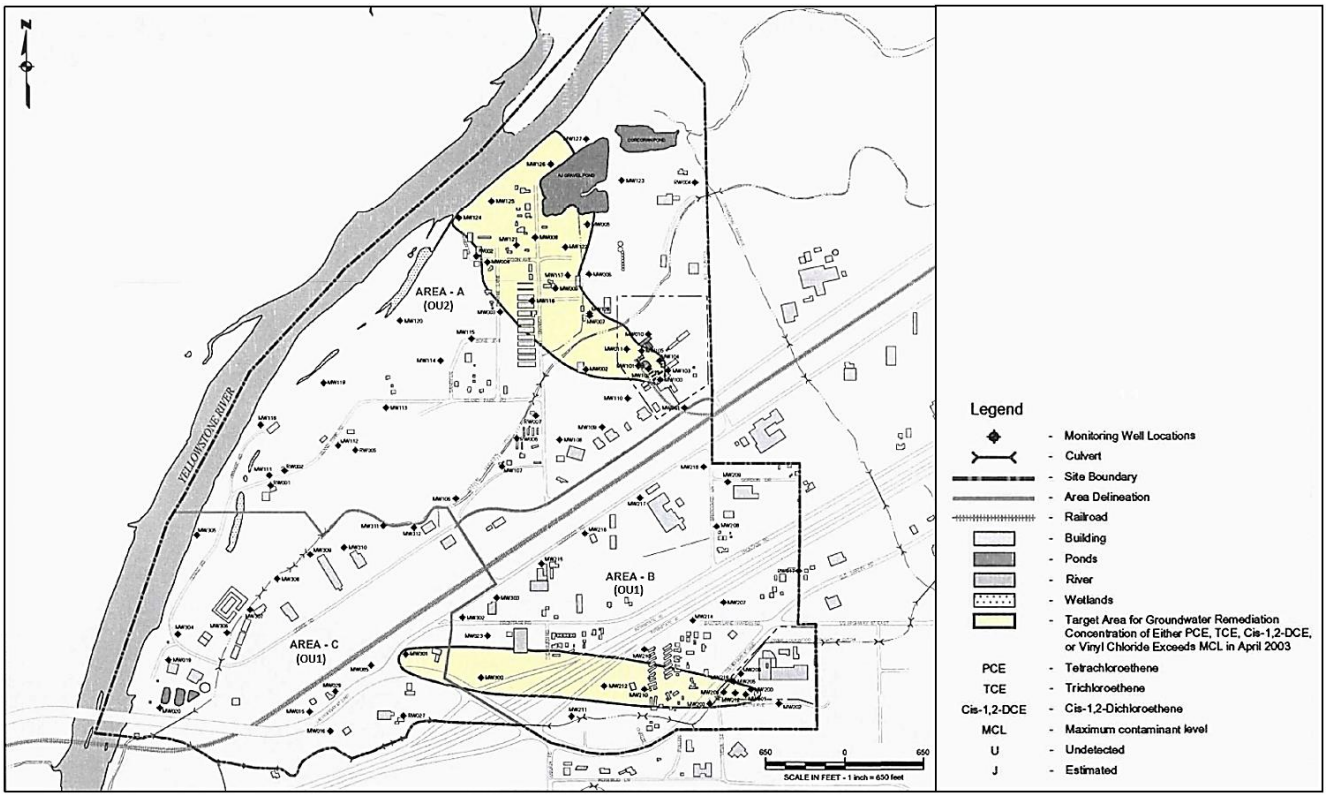
- **OU1** makes up the southern portion of the Lockwood Site and includes a groundwater plume primarily comprised of TCE (MTDEQ and USEPA 2005). The former Beall's Trailers of Montana, Inc. facility manufactured and reconditioned petroleum and asphalt tank trailers from 1978 to 1990 (USEPA 2022). A solution of dissolved TCE and steam was used to clean the trailers and the wastewater was discharged to a septic system and drain field.
- **OU2** makes up the northern portion of the Lockwood Site and includes a groundwater plume primarily comprised of PCE (MTDEQ and USEPA 2005). The former Brenntag West, Inc. facility (now Soco West), stored, repackaged, and sold chlorinated solvents in this area between 1972 and the 1990s (USEPA 2022). Facility operations resulted in releases of chlorinated solvents, such as PCE and possibly TCE, as well as petroleum products and other organic compounds to soil and groundwater (MTDEQ and USEPA 2005, USEPA 2022).

The Lockwood Water and Sewer District was founded in 1955 and groundwater wells were drilled to serve members of the district (USEPA 2011). However, residents in this area also utilize private wells and septic systems for their water supply and wastewater needs. Contamination was first documented in 1986 when the Lockwood Water and Sewer District found benzene and chlorinated solvents in their water supply wells (MTDEQ and USEPA 2005). MTDEQ began initial Site investigations and provided bottled water to ten residences that were using domestic water with contaminant levels in exceedance of State standards (USEPA 1999, MTDEQ and USEPA 2005). MTDEQ requested assistance from the USEPA on May 21, 1999 (USEPA 1999). As part of the USEPA's immediate action, bottled water was provided to six residences; however, this only addressed exposure via ingestion and not exposure via other household water uses (e.g., bathing, cleaning) (USEPA 1999, 2000). The water supply main was eventually extended to these residences and 14 households were connected to the municipal supply (USEPA 2000). Following this emergency action, the Lockwood Site was listed on the National Priorities List in December 2001 and remedial and feasibility study investigations were undertaken (USEPA 2022). A ROD for OU1 and OU2 was signed by MTDEQ and USEPA August 16, 2005 (MTDEQ and USEPA 2005, USEPA 2022). The selected remedy is currently underway and consists of soil vapor extraction, soil excavation, groundwater remediation, long-term groundwater monitoring, and related institutional controls (MTDEQ and USEPA 2005). One of the institutional controls consists of a 331-acre Controlled Groundwater Area that was adopted by the State of Montana in October 2018 to prevent contaminant migration and because groundwater within the area is no longer suited for domestic use (MTDEQ and USEPA 2005, MT DNRC 2018).

Based on the information presented in Site documents, I find that groundwater at the Lockwood Site has been injured (i.e., is contaminated above State [MTDEQ 2019] and Federal standards [MTDEQ and USEPA 2005]).[1] Given Site specific information, I am able to quantify the volume of injured water. From the enactment of CERCLA (December 1980) and in perpetuity, the public has experienced – and will continue to experience – a loss of natural resource services, including the use of the groundwater as a source of potable water supply. To calculate monetary damages associated with these lost services, I use a REA (i.e., replacement cost) approach, as described herein.

[1] Montana State and U.S. Federal standards for PCE, TCE, and DCE are 5 µg/L, 5 µg/L, and 70 µg/L, respectively. The Federal standard for vinyl chloride is 2 µg/L and the State standard is 0.2 µg/L.

Figure 1. Site Map



Modified from Figure 5 in MTDEQ and USEPA 2005 to enhance clarity. The groundwater plume arising from hazardous substance releases from Soco West (the plume that is the subject of this damage assessment) is in OU2, adjacent to the Yellowstone River.

CHAPTER 2 | Injury Quantification

2.1 Resource Equivalency Analysis

The basic premise of REA is that the public can be compensated for past and expected future losses in natural resources and the services they provide through the provision of additional natural resources and equivalent services in the future. REA is one of the accepted methods in the DOI NRDA regulations; in fact, resource equivalency methods are specifically called out as preferred by DOI (43 CFR § 11.83(c)(2)).[2] These "compensatory" services provided through restoration are in addition to remedial actions taken to restore the resource to its baseline condition, since simply restoring the resource after an extended time period will not make the public whole for losses that have occurred in the interim.[3] Damages calculated using REA are expressed in terms of the cost to complete natural resource replacement projects of an appropriate type, size, and location. REA explicitly accounts for the rate of time preference economists have shown people hold for goods and services; people prefer to consume goods and services in the present rather than delaying their use or consumption to a future date. To reflect this, losses that stretch over time can be expressed as a simple present value loss using standard discounting calculations.

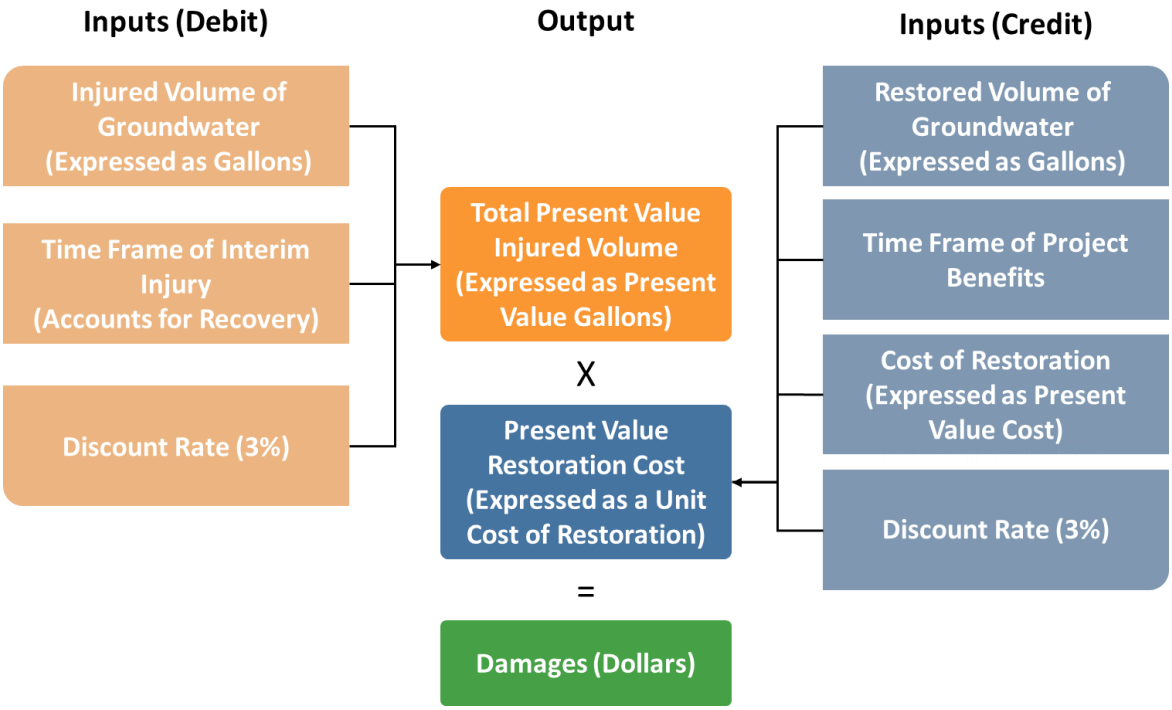
The two stages of conducting a REA for injured groundwater are to (1) quantify the present value volume of harmed or injured groundwater (i.e., the "debit"), and then (2) quantify the cost of compensatory restoration actions that restore or protect an equivalent present value volume of groundwater (i.e., the benefits or "credit"). Restoration actions should comprise projects to protect or enhance groundwater with characteristics similar to those of the injured groundwater (e.g., in terms of quality or yield) to ensure equivalency of services gained. Restoration actions could include measures to protect groundwater resources (e.g., removal of septic tanks that leak contaminants to groundwater), preservation of groundwater resources (e.g., land purchase), or groundwater enhancement measures (e.g., impervious surface removal, porous pavement installation, infiltration basin creation). These actions either protect or improve the groundwater resource, and thus replace injured groundwater. Damages are monetized as the cost of actions for which the benefits are of sufficient scale (i.e., credits) to replace the injured groundwater (i.e., debits). Relevant restoration options can depend on the magnitude of the injury and availability of restoration options, accounting for feasibility and cost-effectiveness (43 CFR §11.82(d)). Figure 2 provides a graphical representation of the key inputs to a groundwater REA, which are discussed in the following sections of this report.

REA has been widely used to assess compensatory damages due to groundwater contamination by natural resource Trustees. Ando et al. (2004) conducted an exhaustive review of "… how state agencies with NRD [Natural Resource Damage] programs have chosen to conduct NRDAs [Natural Resource Damage Assessments]." This review found that equivalency methods are the most frequently applied for groundwater cases of this scale and complexity (Ando et al. 2004). Lane et al. (2009) also highlight that resource equivalency methods are effective for scaling restoration alternatives because this approach scales benefits on a resource-to-resource basis (e.g., gallon of gained water compared to gallon of injured water). Further, REA has formed the basis of groundwater claims that have been successfully resolved at numerous sites throughout the U.S.

[2] Federal Register, Vol. 73, No. 192, pp. 57259-57268, 2 October 2008.

[3] "Baseline" reflects the condition or conditions that would have existed in the assessment area had the discharge of the hazardous substances under investigation not occurred 43 CFR § 11.14(e).

Figure 2. Overview of Resource Equivalency Analysis Approach for Injury to Groundwater



2.2 Quantification of Injury

Injury quantification for groundwater involves determining the magnitude and duration of harm to establish a basis for scaling and costing restoration (i.e., determining damages). Injury to groundwater has occurred at the Lockwood Site due to the presence of chlorinated solvents such as PCE, TCE, DCE, and VC above State and Federal groundwater quality standards. My analysis quantifies injury due to this contamination within OU2, the Soco West portion of the Site. While any level of contamination may impact the value the public holds for groundwater (i.e., even concentrations below promulgated standards), exceedances of State and Federal groundwater standards provide a clearly defined concentration outline of groundwater contamination that delineates the areal extent of the contaminant plume for use in this analysis (Figure 1) (MTDEQ and USEPA 2005). Further, as part of USEPA's selected remedy, a Controlled Groundwater Area was adopted by the State of Montana in October 2018 to prevent contaminant migration and because groundwater within the area is no longer suited for domestic use (MTDEQ and USEPA 2005, MT DNRC 2018). The portion of this area that falls within OU2 also represents a compensable loss under the DOI NRDA regulations (43 CFR § 11.10 *et seq.*).

Consistent with the DOI NRDA regulations, I also consider whether groundwater at the Lockwood Site would be potable in the absence of Site-related hazardous substance releases (i.e., the resource's "baseline" condition). Baseline means the condition or conditions that would have existed at the assessment area had the discharge of oil or release of the hazardous substance under investigation not occurred" 43 CFR § 11.14(e). Until 1986, when contaminants were detected in the Lockwood Water and Sewer District's groundwater wells, the shallow alluvial aquifer was used for domestic, irrigation, commercial, and non-domestic purposes (USEPA 2022). Further, residential use continued at some households until the water supply main was extended and the households connected to the municipal supply in August 2000 (USEPA 2022). Irrigation and commercial groundwater use (i.e., non-potable) continues to be used from the shallow alluvial aquifer through individual wells (USEPA 2022). However, the Lockwood Water and Sewer District now relies solely on surface water

from the Yellowstone River (USEPA 2022, Lockwood 2023). As such, local groundwater was potable prior to the detection of chlorinated solvent contamination and likely would have continued to be potable absent contamination from the Lockwood Site.[4]

My injury quantification analysis calculates a stock loss based on the first full year after CERCLA was enacted (1981) and the volume of the remaining groundwater in the Controlled Groundwater Area within OU2 once those controls were adopted in October 2018.[5] To calculate volume, I multiply the two-dimensional area of the contaminant plume and the Controlled Groundwater Area within OU2 (excluding the plume to avoid double counting) by the effective porosity of the plume-bearing geologic unit and the average thickness of the contaminated aquifer in the Soco West area.[6] Specifically, my analysis uses the following five standard steps in a REA, described in more detail in the following subsections. Further, my inputs and calculations are provided in Attachment B.

1. Determine the time period over which injury will be calculated.
2. Determine the areal extent of injury.
3. Determine porosity and thickness of the injured aquifer.
4. Calculate the volume of injured groundwater.
5. Calculate the present value volume of injured groundwater over the relevant time period.

For some of these inputs I rely on MTDEQ and USEPA's 2005 ROD, USEPA's First Five-Year Review of OU-2, and other Site remediation documents (MTDEQ and USEPA 2005, USEPA and MTDEQ 2018, USEPA 2022). For other inputs, I use published (e.g., discount rate) and public (e.g., measurement conversion factors) sources of information as well as my own calculations.

2.2.1 Determination of the Time Period over which Injury will be Calculated

For my injury quantification analysis, I first consider the time period that chlorinated solvents were and will be present in groundwater at the Lockwood Site over State and Federal groundwater standards, and the time period for which the Controlled Groundwater Area has and will continue to exist. I establish injury in the context of the baseline condition of the groundwater. As noted above, I consider baseline to be the conditions that would have existed had the contamination of the Site with hazardous substances not occurred. The shallow aquifer at the Site had been used as a source of potable water, reflecting a committed use of the resource. Thus, I consider the baseline condition to be a Site without Site-related contaminants that require controls on use of groundwater for potable purposes. As noted above, under baseline conditions, the Site would provide all baseline groundwater potable water services, including extractive use and non-use services (e.g., option values).

From 1972 and into the 1990s, Brenntag West, Inc. (now Soco West) had stored, repackaged, and sold chlorinated solvents (USEPA 2022). As noted above, no other source areas have been identified in OU2 (MTDEQ and USEPA 2005). Modeling conducted by MTDEQ and USEPA suggests that the plume reached the Yellowstone River by 1977 (MTDEQ and USEPA 2005). The same model indicated that the plume reached its maximum length and width by 1982 and that no significant changes in the dimensions of the plume had taken

[4] This conclusion is further supported by the fact that initial Site investigations by MTDEQ evaluated underground storage tanks and a petroleum pipeline in the vicinity, but the Beall Source Area in OU1 and the Brenntag Source Area (a.k.a. Soco West) in OU2 were identified as the only source of contaminants in the study area (MT DEQ and USEPA 2005).

[5] I adopt the first full year after adoption as the start date of this injury (i.e., 2019).

[6] Effective porosity is the portion of the aquifer that is made up of porous material that is capable of transmitting groundwater. As such, calculations of volume based on effective porosity reflects the amount of water that could be withdrawn from an aquifer.

place between then and the time of publication (MTDEQ and USEPA 2005). Because the model results suggest that the plume reached the Yellowstone River by 1977, I conclude that the plume was already present at the Site when CERCLA was enacted in December 1980. Additionally, as part of the selected remedy, the Controlled Groundwater Area was adopted in October 2018 that restricts the development of any new supply wells due to the contamination (MT DNRC 2018). Based on this information, a stock of groundwater was lost in 1981 (i.e., the plume the first full year after CERCLA was enacted) and an additional stock of water was lost in 2019 (the portion outside the plume but within the Controlled Groundwater Area that overlaps with OU2).[7]

The ROD indicates that the selected remedy is likely to be effective within 30 years once it has been implemented (MTDEQ and USEPA 2005). This suggests that the geographic extent of the plume may decrease over time and concentrations may eventually fall below State and Federal standards. However, the First Five-Year Review notes that the Controlled Groundwater Area is permanent (USEPA 2022). Thus, my damage calculations reflect permanent injury to the groundwater within OU2 that sits within the Controlled Groundwater Area.[8]

2.2.2 Determine the Areal Extent of Injury

I next determine the two-dimensional area of injured groundwater (i.e., the area of the plume and the area of the Controlled Groundwater Area within OU2). I determined these areas by digitizing the boundaries depicted in Site and State documents. Specifically, I utilized the plume footprint shown in Figure 1 for the extent of the plume since modeling had shown that no significant changes in the dimensions of the plume had taken place since 1982, when it reached its maximum length and width (MTDEQ and USEPA 2005). I digitized the OU2 boundary from USEPA and MTDEQ 2018 and the Controlled Groundwater Area from MT DNRC 2018 (Figure 3).

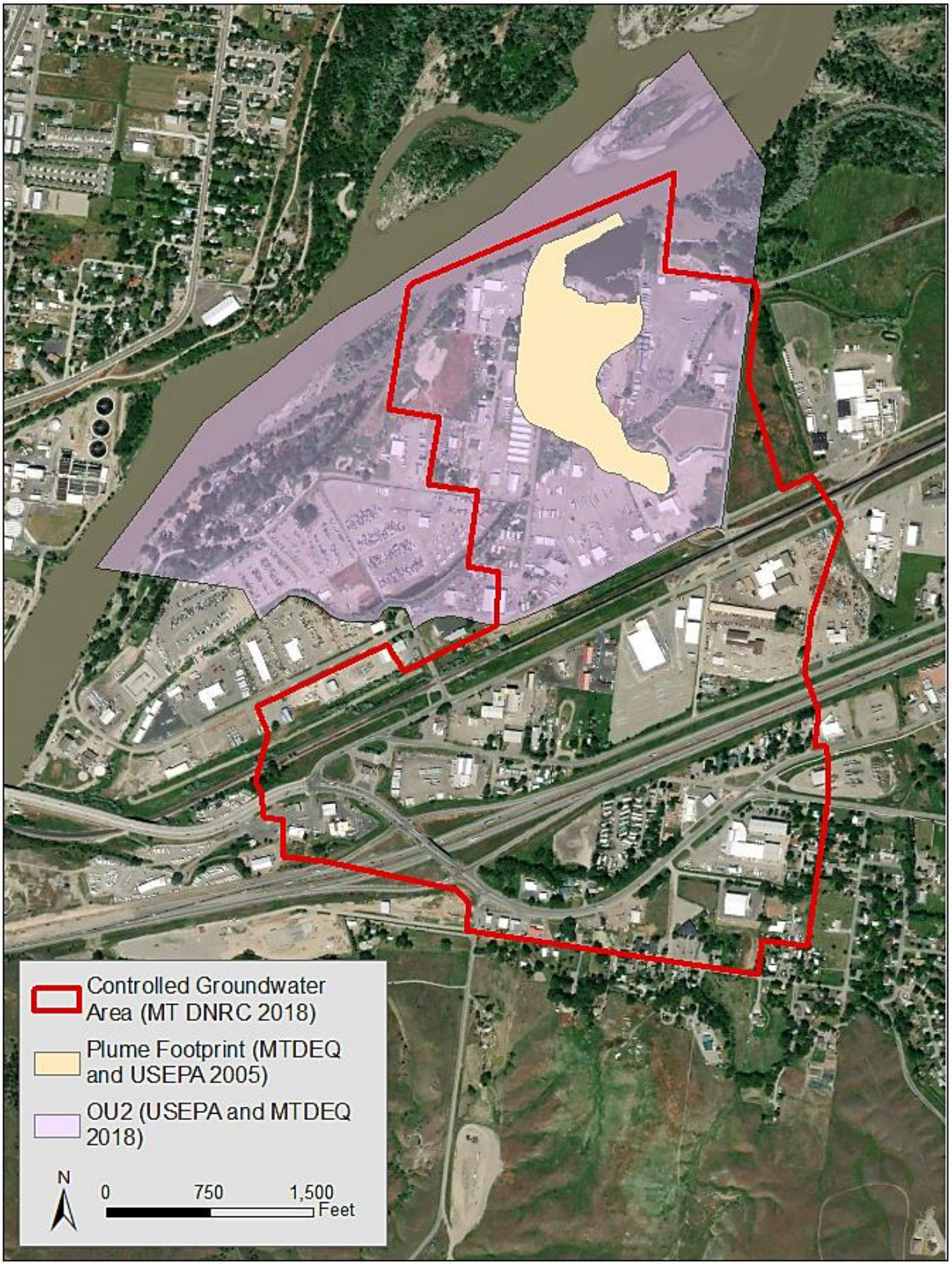
2.2.3 Determine Porosity and Thickness

The third step involves determination of porosity and thickness of the injured aquifer. MTDEQ and USEPA (2005) clearly described the nature and extent of contamination in the ROD, including the thickness of the contaminated aquifer in this area (the depth of contamination was based on the lower boundary of this alluvial aquifer) and the effective porosity of the aquifer. Thus, I use 22 feet as the thickness of the plume and 27 percent as the effective porosity of this geologic unit (MTDEQ and USEPA 2005).

[7] The volume lost in 1981 must be subtracted to avoid double counting.

[8] If we consider a 30-year injury period from 2023, the total present value quantity of injured groundwater would be about 76 percent of the value assuming a loss in perpetuity.

Figure 3. Boundaries of the Plume, OU2, and Controlled Groundwater Area



2.2.4 Calculate the Volume of Injured Groundwater

The fourth step in my injury quantification is to calculate the stock volume of injured groundwater using the porosity, thickness, areal extent of the plume, combined with the areal extent of the Controlled Groundwater Area (inside OU2, but outside of the plume) (as described in Section 2.2.2 and in Section 2.2.3). Specifically, these are the steps that I followed (numbers may not calculate exactly due to rounding; refer to Attachment B for calculations):

- Convert areas from acres to square feet.
    - *Plume*:
      Approximately 33 acres × 43,560 ft^2/acre = 1,433,886 ft^2
    - Controlled Groundwater Area (inside OU2, net of the plume area):
      Approximately 91 acres × 43,560 ft^2/acre = 3,974,779 ft^2
- Multiply the plume area in square feet by thickness and porosity.
    - *Plume*:
      1,433,886 ft^2 × 22 ft × 0.27 = 8,517,282 ft^3
    - *Controlled Groundwater Area* (inside OU2, but outside of the plume):
      3,974,779 ft^2 × 22 ft × 0.27 = 23,610,188 ft^3
- Convert the volume from cubic feet to acre-feet.
    - *Plume*:
      8,517,282 ft^3 × 0.000023 acre-foot/ft^3 = 196 acre-feet
    - *Controlled Groundwater Area* (inside OU2, but outside of the plume):
      23,610,188 ft^3 × 0.000023 acre-foot/ft^3 = 542 acre-feet

2.2.5 Calculate the Present Value Volume of Injured Groundwater

The fifth and final step of my injury quantification analysis is to calculate the past and future volumes of injured groundwater in present value terms.[9] I apply a real social discount rate of three percent to convert the lost stock volumes to year 2023 present values. This discount rate is widely accepted and applied in natural resource damage assessments (Horsch et al. 2023). Application of a discount rate accounts for differences in timing of injuries, converting all volumes to a common year. The present value (PV) of injured groundwater is calculated using the following formula:

$$PV\ Volume\ in\ Year\ N = Volume\ in\ Year\ N \times (1 + Discount\ Rate)^{(Current\ Year - Year\ N)}$$

For example, the 2023 present value of 1,000 injured gallons in 1990 is equal to 1,000 gallons × 1.03 (2023-1990), or 2,652 gallons in 2023. I calculate the present value volume of injured groundwater to be 1,287 acre-feet. This includes 677 acre-feet lost in 1981 and an additional 610 acre-feet lost in 2019 (Table 1).

[9] The public demonstrates a preference for consumption today (or in the past) over consumption in the future, and thus economists apply a real rate of social discount to place losses in the past and future into present value terms. Calculation of present values losses is standard practice in natural resource economics. In the context of a groundwater damage assessment, present value volumes of groundwater can be calculated to assist in balancing injury with restoration (i.e., losses that occur in the past will be compensated for with restoration benefits in the future). A three percent real rate of discount is commonly employed in regulatory analysis and damage assessment (Horsch et al. 2023).

Table 1. Injury Quantification: Present Value (2023) Volume of Injured Groundwater

Parameter	Value
Injury Inputs	
Discount Rate	3%
Analysis Year	2023
Thickness	22 feet
Effective Porosity	27%
Plume Area	
Start of Injury	1981
Area of Injury	33 acres
Controlled Groundwater Area	
Start of Injury	2019
Area of Injury	91 acres
End of Injury	Perpetuity
Injury Outputs	
Present Value Volume of Injured Groundwater, 1981	677 acre-feet
Present Value Volume of Injured Groundwater, 2019	610 acre-feet
Total Present Value Volume of Injured Groundwater	1,287 acre-feet

CHAPTER 3 | Damages Determination

3.1 Replacement Alternatives Considered in this Analysis

The goal of a NRDA is to restore, rehabilitate, replace, and/or acquire the equivalent of natural resources (typically referred to as "restoration") injured by the releases of hazardous substances.

In a replacement cost approach to groundwater damage assessment and restoration, damages are determined by the cost of a restoration action(s) that replaces the injured resource (Lane et al. 2009). With this approach, a variety of restoration actions exist that could compensate for groundwater losses. Montana has not declared a preference for a particular restoration action or set of actions for use in a groundwater damage assessment. To ensure that the restoration action(s) reasonable, appropriate, and consistent with State of Montana regulations and NRDA practice, I apply the following criteria:

- **Restoration should result, directly or indirectly, in the replacement of groundwater resources *in situ*.** This can be achieved through direct protection or replacement of *in situ* groundwater resources, or through programs that increase available groundwater resources (e.g., protecting aquifers from failed septic systems assures a potable supply into the future).
- **The replacement should be of the same quality and quantity as that which was injured.** Replaced groundwater should have the same or similar baseline characteristics as the groundwater that was injured. This can usually be accomplished by replacing groundwater in the vicinity (e.g., within the same watershed, county, and aquifer) of the site where groundwater was injured. Replacement in proximity to the site where groundwater injury occurred also increases the likelihood that the public will view the replacement option as appropriate.
- **The selected replacement option(s) should be something the public has previously undertaken, preferably within Montana.** This criterion addresses two objectives. First, by demonstrating that the restoration approach has been previously undertaken by or for the public, this criterion acts to ensure that the costs of the restoration action are not grossly disproportionate to the benefits (i.e., the public has demonstrated a willingness to pay for similar projects). Second, if the approach has been applied successfully in the past, this criterion provides information that indicates that the restoration option is technically feasible (i.e., it has been demonstrated to work).
- **Cost-effectiveness.** If two restoration options provide similar benefits, the more cost-effective restoration option should be selected.

MTDEQ has indicated that septic systems and other domestic on-site wastewater treatment systems are a groundwater quality management concern due to the pollutants that can originate from these systems (MTDEQ 2017). Constructing modern, conventional septic systems for dwellings that have no on-site treatment system or only a cesspool or substandard septic system can protect groundwater quality by preventing septic failure and the release of traditional pollutants (e.g., nutrients, bacteria). MTDEQ has also indicated that there are limited programs in place to ensure proper maintenance and operation of private septic systems, so the connection of households to municipal sewer lines could be viewed as a permanent solution for protecting the quality of groundwater in an area (MTDEQ 2017). These are commonly conducted projects in Montana (and even have been used at the Lockwood Site), and this restoration alternative has been used as part of natural resource restoration in NRDA analyses and settlements in New Mexico (for example, see ATFS Tie Treater and Chino, Cobre, and Tyrone mines settlements).

To calculate the cost of compensating the public for the present value volume of injured groundwater, in the next sections I present a description of the potential compensatory restoration actions, the expected benefit of each action to restore groundwater, and calculated costs of each alternative.

3.1.1 Septic System Replacement

I consider the septic needs of a two-bedroom house, which would require a 2,500 square foot drain field (National Tank Outlet 2021). Montana requires that septic system drain fields be located a minimum distance of 100 feet from drinking water wells (ARM 17.36.322, MTDEQ et al. 2022). I use this information to calculate an area beyond which contamination would be unlikely to occur should a septic system fail; the amount of water protected is equivalent to $\pi \times r^2$, where r is 135 feet (i.e., the 100-foot control zone plus half of the diagonal of the drain field). As such, 1.32 acres reflects the maximum benefit to groundwater of replacing older septic systems with modern alternatives. In calculating the benefits of this project, I use the same hydrogeological characteristics as those for the injured aquifer (i.e., in porosity and thickness). Therefore, a single septic replacement project could protect approximately 7.85 acre-feet of groundwater (i.e., 1.32 acres of benefit × 22 feet × 0.27 porosity). Costs of installing a septic system in Montana were used to determine the unit cost of this project type (Table 2). The unit-cost is calculated by dividing the total present value cost by the total acreage protected. Following this approach, I calculated a range of $880/acre-foot to $1,046/acre-foot, with an average of $963/acre-foot.

Table 2. Present Value Costs (2023$) of Septic System Replacement

Activity	Cost (2023$)[1]	Present Value Unit Cost (2023$/acre-foot)
Septic installation, low	$6,908	$880
Septic installation, high	$8,207	$1,046
Septic installation, average	$7,557	$963

Note: Numbers may not calculate exactly due to rounding.

[1] Costs obtained from ProMatcher 2023 for the State of Montana.

3.1.2 Connecting Households to Municipal Sewer

Connecting households to a municipal sewer system and abandoning the existing septic systems would make available the same volume of water as protected by a septic system replacement project (i.e., 7.85 acre-feet of groundwater). Much of the Lockwood area has seen rapid sewer system expansion, but immediate connection to the system is not required. Costs of connecting to the system are used to determine the unit cost of this project type (Table 3). Because costs were dated June 2022, I used the Producer Price Index to bring the costs into present value terms before determining the unit costs. Once in present value terms, the unit-cost is calculated by dividing the total present value cost of a municipal sewer connection by the total volume of groundwater protected. Following this approach, I calculated a range of $835/acre-foot to $1,068/acre-foot, with an average of $951/acre-foot. I include in this cost an incentive to compensate homeowners for three years of monthly user charges, since historically an incentive is required to get homeowners to abandon their septic systems and thus

incur the cost of wastewater disposal.[10] If sewer line extension had not been completed already, the unit costs for this project type would be much higher.

Table 3. Present Value Costs (2023$) of Connecting Households to Municipal Sewer

Activity	Cost (June 2022$)[1]	Cost (2023$)[2]	Present Value Unit Cost (2023$/acre-foot)
Low			
System development fee	$2,040	$1,867	$238
Sewer service permit fee	$60	$55	$7
Construction cost for service line and septic tank abandonment	$3,000	$2,746	$350
Monthly user charges	$2,057	$1,883	$240
Total costs	$5,100	$4,668	$835
High			
System development fee	$2,040	$1,867	$238
Sewer service permit fee	$60	$55	$7
Construction cost for service line and septic tank abandonment	$5,000	$4,576	$583
Monthly user charges	$2,057	$1,883	$240
Total costs	$7,100	$6,498	$1,068
Average total costs	$6,100	$5,583	$951

Note: Numbers may not calculate exactly due to rounding.

[1] Costs obtained from Lockwood 2022.

[2] Producer Price Index data for all commodities can be accessed here: https://fred.stlouisfed.org/series/PPIACO

3.2 Calculated Damages

To calculate damages, my analysis scales the present value unit costs for two restoration alternatives by the present value volume of injured groundwater (Table 4). Specifically, I take the average cost per unit of replacement groundwater for each project category ($963/acre-foot for septic replacement and $951/acre-foot for wastewater connection). Since I cannot determine in advance how much of each type of restoration may be implemented in and around Lockwood, I use an overall average cost in my calculations ($957/acre-foot). In projects such as this, it is standard practice to include a contingency for unexpected challenges. In my calculation of damages, I apply the 20 percent contingency, which is consistent with the value that USEPA applied in their action memoranda and Alternatives Analysis, and with work I have done on contingencies in damage assessment restoration planning (USEPA 1999, USEPA 2000, DOI 2022). Therefore, the unit cost with

[10] Such an incentive was needed at the Libby Groundwater Site to get well users to abandon their wells and connect to the municipal system.

contingency is approximately $1,148/acre-foot of groundwater replaced. Since these costs do not include administration or oversight and planning costs for the State of Montana, these costs are more likely to understate than overstate overall damages.

Table 4. Replacement Costs (2023$) for Each Restoration Alternative

Parameter	Value
Injury Quantification	
Total Present Value Volume of Injured Groundwater	1,287 acre-feet
Present Value Unit Costs per Acre-foot of Groundwater	
Septic System Replacement, Average	$963
Connecting Households to Municipal Sewer, Average	$951
Average Unit Cost	$957
Average Unit Cost with 20% Contingency	$1,148
Total Present Value Replacement Costs	
Total Present Value Replacement Cost with 20% Contingency	$1,477,738

Note: Numbers may not calculate exactly due to rounding.

3.3 Conclusions

I calculate the present value volume of injured groundwater to be 1,287 acre-feet. This includes 677 acre-feet made unavailable in 1981 and an additional 610 acre-feet made unavailable in 2019, with both of these quantities unavailable in perpetuity. To calculate the cost of an equivalent quantity of replacement groundwater, I considered two restoration alternatives commonly implemented in the context of groundwater damage assessment, both of which are intended to avoid the impacts of septic systems on groundwater use and quality. The average unit cost for these projects is approximately $1,148/acre-foot of replaced groundwater. Using this unit value for replacement cost, I calculate total replacement costs of $1,477,738 for injured groundwater in the Soco West portion of the Site (OU2).

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ROBERT E. UNSWORTH PRINCIPAL

Overview

Mr. Unsworth is a widely recognized expert in the fields of applied natural resource economics and environmental damage assessment. He is a Principal with Industrial Economics, Incorporated (IEc). From 2005 to 2011 he served as IEc's President, responsible for strategic planning, firm growth, and day-to-day firm operations.

Education

Yale University. Master of Forest Science (focus on natural resource and environmental economics), 1986

State University of New York, College of Environmental Science and Forestry. Bachelor of Science *magna cum laude* in Forestry (focus on forest economics), 1984

Summary of Experience

Mr. Unsworth is recognized as a leader in the fields of Environmental and Natural Resource Damage Assessment. He has served as an expert witness and has provided technical expertise on public and private claims for damages resulting from legacy environmental contamination, oil spills, forest fires, acts of war and cross boarder incursions, and interstate groundwater and surface water disputes. He has worked on over 100 assessments at sites throughout the U.S. and internationally, including playing a leading technical role in several of the most visible and complex environmental damage assessments conducted to-date. For example, he was a senior technical advisor to state and federal trustees following the *Deepwater Horizon* spill; has provided expert support in the development and presentation of claims leading to more than $1.4 billion in settlements for financial, economic, and environmental harms due to the California wildfires; and worked with State Attorneys General in development of the VW emissions defeat device claims, including the process used to allocate settlement funds to Tribal nations. Further reflecting his experience, he was asked by the Republic of Nicaragua to submit testimony on proper methods for monetization of environmental damage to the International Court of Justice in The Hague, in a matter involving harms resulting from a border dispute with Costa Rica. He recently assisted the Navajo Nation in obtaining a $10 million partial settlement for damages resulting from the Gold King Mine disaster and continues to serve as an expert for ongoing claims in that matter for both the Navajo Nation and individual Navajo farmers; was retained by the U.S. Department of the Interior to develop guidance on the use of economics in Tribal damage assessment; and is presently directing efforts to assess harms experienced by Pueblo communities due to releases of hazardous substances from the U.S. Department of Energy's Los Alamos National Laboratory site.

Mr. Unsworth has published on the topic of damage assessment, including the seminal paper on habitat equivalency analysis, which has become the most widely applied technique for resolving environmental damage claims. He has served on panels for the European Union on proper approaches to environmental equivalency analysis and as an expert on the use of environmental valuation techniques in development planning to the Swedish EPA. As a result of his expertise, he is often called upon to speak on the topic of environmental damage assessment, to both technical, professional, and academic audiences.

Mr. Unsworth has worked extensively with Native American communities in the development and resolution of environmental damage claims, conducting damage assessment activities at over a dozen sites involving over two dozen tribal governments nationwide. He has lectured on the topic of tribal damage assessment, and has assisted tribes in achieving acceptable resolution of claims ranging from small scale oil spills to long-term,

large-scale environmental legacy sites. He is frequently called upon to assist tribal government representatives and their legal counsel in understanding technical options for the pursuit of claims for the loss of tribal environmental services. He is currently working with several Tribal governments using survey-based techniques to gather information on indigenous community use and preferences for natural resources, including resources injured by the release of hazardous substances.

Mr. Unsworth has developed guidance documents on the conduct of damage assessment under the Oil Pollution Act of 1990 and the Comprehensive Environmental Response, Compensation, and Liability Act for the National Oceanic and Atmospheric Administration and the U.S. Department of the Interior's Fish and Wildlife Service, National Park Service, and Office of Policy Analysis. He has assisted state and Federal agencies in the development and review of best practices for environmental damage assessment, has worked as a consultant to the U.S. Department of Justice, and has consulted with over 20 states and more than a dozen Indian Nations on natural resource damage claims and program development.

Selected Relevant Project Experience

Under CERCLA, The Oil Pollution Act and Other State and Federal Damage Assessment Statutes

Mr. Unsworth is a recognized expert in natural resource damage assessment under CERCLA, OPA, and other State and Federal Natural Resource Damage Statutes. Examples of work he has performed includes:

For the **HANFORD NATURAL RESOURCE TRUSTEE COUNCIL**, directing the development of an Injury Assessment Plan, a Preliminary Estimate of Damages, and other documents to support planning for one of the most extensive and complex natural resource damage assessments conducted to-date. Injuries considered include terrestrial and aquatic biota, surface water, groundwater, and Tribal lost use services. Trustees include two states, three Tribal governments, and three Federal agencies. Current work includes serving as a consulting expert to the State of Washington on groundwater service losses and damages at this site.

For the **LOS ALAMOS NATURAL RESOURCE TRUSTEE COUNCIL**, directing the development of a Damage Assessment Plan, a preliminary injury evaluation, and other documents required to support restoration planning at this site. Subsequent to this work he has, for the past four years, directed the implementation of the damage assessment at this site, working with the LANL Trustee Council on the full range of topics and work involved in damage assessment at a complex legacy site. Resources of concern include groundwater, surface water, terrestrial and aquatic biota, and Tribal lost use services. Trustees include the State of New Mexico, five Federal agencies, and four Pueblo governments.

For the **STATE OF NEW YORK** providing expert support in the assessment of groundwater injuries and damages at several sites in the State.

For the **STATE OF NEW MEXICO**, providing technical and case strategy support in the context of natural resource damage claims for injury to groundwater and other resources at NASA's White Sands Test Facility and the Rio Algom uranium mining site.

For the **TRUSTEES OF THE HUDSON RIVER**, assessing and presenting in settlement negotiations recreational fishing losses associated with PCB-related advisories.

ASSISTING IN A COOPERATIVE ASSESSMENT OF DAMAGES DUE TO THE RELEASE OF MERCURY, PCBS, AND RADIONUCLIDES AT OAK RIDGE IN TENNESSEE. Constructed a habitat equivalency analysis for aquatic injuries, and assessed the scale of ecological and human use restoration credits provided by a large parcel of forested land at the site.

For the **U.S. Department of Energy and the U.S. Department of Justice**, providing expert testimony and technical support in settlement negotiations in a claim brought by the State of Ohio against the U.S. for groundwater damages resulting from radionuclide releases from the Fernald Ohio site.

For the **Confederated Tribes of the Colville Reservation** serving as an expert on tribal service losses resulting from mine waste contamination of the upper Columbia River. Estimated the value of lost and diminished use opportunities by tribal members, using survey data on tribal member behaviors and existing literature on the value of lost and diminished trips.

For the **Navajo Nation**, serving as a damages expert in claims brought in response to the Gold King Mine disaster, including assistance in ephemeral data collection, monetizing private claims by Navajo farmers, estimating damages to the Nation (including the cost of addressing harms created by the disaster), and working with the Nation and other trustees in the development of a natural resource damage claim.

For the **Leech Lake Band of Ojibwa**, serving as an expert on environmental damages resulting from legacy releases of hazardous contaminants, including conducting a survey of Band members to assess how use of natural resources has changed as a result of contamination of tribal lands and adjacent natural resources.

For the **Trustees of the Holden Mine site** (Washington State), providing guidance on updating an existing assessment and approaches to settlement negotiations.

For the **Trustees of the Lower Duwamish River**, developing an injury assessment plan and preliminary estimate of recreational fishing losses.

For **State and Federal Trustees as well as the St. Regis Mohawk Tribe**, led an assessment of natural resource damages and participated in a cooperative damage assessment of harms due to hazardous substance releases to the St. Lawrence environment/Akwesasne.

Providing general case management support to **Federal trustees and the Cheyenne River Sioux Tribe**, pursuing a claim for natural resource damages associated with mine tailings-related injuries to the Cheyenne River in South Dakota. This support included development of case strategy, participation in settlement negotiations, and preparation for a focused damage assessment.

Provided technical support in the development of damage claims for **tribal resources**, such as Clark Fork River Basin of western Montana for the **Confederated Salish and Kootenai Tribes of the Flathead Reservation**; for the **Penobscot Nation**, Penobscot River, Maine; **Spokane Tribe of Indians** for the Midnight Mine site, Idaho; and for the **Suquamish Tribe** for damages associated with the Point Wells oil spill and the Duwamish River site. Mr. Unsworth has also provided technical support to the U.S. Department of Justice (representing the U.S. as defendant) for natural resource damage claims brought by the **Quapaw Nation**.

For the **Territorial Government of the U.S. Virgin Islands**, providing an expert opinion and expert testimony regarding natural resource damages resulting from groundwater contamination at the Tutu well fields site on St. Thomas. Research considered added costs, the public's willingness to pay for a replacement water supply, and the non-use values associated with the contaminated aquifer.

For the **U.S. Department of Justice and the U.S. Army**, assessing damages associated with groundwater contamination at the Twin Cities Army Ammunitions Plant in Minnesota.

For the **States of Kansas, Oklahoma, and Missouri**, providing an expert opinion in the context of a bankruptcy proceeding as to groundwater damages due to mining activity in the Tri-States Mining district.

For the **State of New Jersey**, providing expert opinions of groundwater damages at over a dozen sites in the State, including sites injured due to the release of MTBE to groundwater.

Providing **TECHNICAL AND EXPERT WITNESS PREPARATION SUPPORT** to the **U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, AND THE U.S. DEPARTMENT OF JUSTICE** to support claims arising from the grounding of the freighter *Elpis* in the Key Largo Natural Marine Sanctuary, Florida.

Providing **TECHNICAL SUPPORT TO A COOPERATIVE ASSESSMENT OF DAMAGES** associated with a large-scale bird kill at Lake Apopka, Florida.

Assisting in the development of a preliminary damage estimate and provided technical support to negotiations between Trustees and the responsible party at the **PALMERTON ZINC SUPERFUND SITE** in Pennsylvania. Categories of loss considered include ecological services associated with injured forested and aquatic ecosystems, as well as recreational fishing, hunting and timber harvest opportunities.

Serving as an expert for the **U.S. DEPARTMENT OF JUSTICE AND THE NAVY** on the economic valuation of injuries to the Allen Harbor clam fishery in Rhode Island, as well as damages associated with contamination of groundwater at the site.

Serving as an expert for the **U.S. DEPARTMENT OF JUSTICE AND THE ARMY** on the economic valuation of contamination of groundwater at the Rocky Mountain Arsenal site in Colorado.

Assessing a proposed set of restoration options offered by **MAINE YANKEE** to compensate for injury to groundwater and marine resources at this former nuclear powered generating station.

Conducting and managing various damage assessment activities and developing a formal, publicly released plan for the assessment of damages and the development of restoration options associated with injuries to the **GRAND CALUMET RIVER AND INDIANA HARBOR** in northwest Indiana.

ASSESSING DAMAGES TO NATURAL RESOURCES RESULTING FROM THE RELEASE OF PCBS TO THE HOUSATONIC RIVER in Massachusetts and Connecticut. Assisting the trustees in settlement negotiations. Assisting in the development of a Restoration Project Selection Criteria document and in a Programmatic Environmental Assessment under NEPA for restoration actions at this site.

ASSISTING IN THE RESOLUTION OF A CLAIM FOR ECOLOGICAL INJURY AND RECREATIONAL FISHING LOSSES resulting from the release of PCBs to Lake Hartwell, South Carolina/Georgia, and an associated tributary. Provided technical support to a cooperative assessment of damages and in the development of a formal **RESTORATION AND COMPENSATION DETERMINATION PLAN.**

PROVIDING TECHNICAL AND EXPERT WITNESS PREPARATION support to the **U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, AND THE U.S. DEPARTMENT OF JUSTICE** in natural resource damage claims resulting from the release of asbestos and other hazardous substances in the Great Swamp National Wildlife Refuge, New Jersey.

ASSISTING NEW YORK STATE IN NEGOTIATIONS regarding recreational fishing losses due to the release of mirex to Lake Ontario. Also conducted a source allocation of PCBs, dioxins and mirex in the Niagara River and Lake Ontario, and assessed the likely persistence of these contaminants in Lake Ontario.

PROVIDING TECHNICAL AND ECONOMIC SUPPORT TO THE TRUSTEES OF LAVACA BAY, TEXAS. Efforts include estimating economic losses suffered by recreational anglers and losses resulting from increased dredging costs associated with mercury contaminated sediments; case management support, including direction of a geostatistical analysis of mercury contamination of bay sediments and direction of a detailed review of historical releases from the site; and developing a draft preassessment screening document.

Providing **CASE STRATEGY AND TECHNICAL SUPPORT TO THE NATIONAL PARK SERVICE** in assessment of damages to Grant-Kohrs National Historical Site, Deer Lodge, Montana, resulting from contamination of portions of the Park with mining-related wastes.

Providing a **TECHNICAL REPORT AND AFFIDAVIT FOR THE U.S. DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE**, regarding economic damages associated with PCB contamination of Valley Creek in Valley Forge National Park.

Providing support to a **HEDONIC PROPERTY VALUATION STUDY** designed to assess the impact of PCB contamination on housing values in New Bedford, MA.

PROVIDING AN EXPERT WITNESS NARRATIVE for the **U.S. DEPARTMENT OF JUSTICE** and **NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION** on the application of the habitat equivalency approach to the assessment of natural resource damages resulting from the Blackbird Mine site in Idaho.

Providing **TECHNICAL SUPPORT TO THE NATIONAL PARK SERVICE** in the assessment of damages due to an oil spill on the Obed River, Tennessee.

Directing an **ASSESSMENT OF ECONOMIC DAMAGES** to Fish Creek in Indiana as a result of a fuel oil pipeline break. This assessment focused on potential damages associated with a federally listed endangered species in the creek.

PROVIDING TECHNICAL AND MANAGERIAL SUPPORT IN THE FEDERAL EFFORT TO ESTIMATE ECONOMIC DAMAGES RESULTING FROM THE *EXXON VALDEZ* OIL SPILL. This included assisting in the preparation and analysis of results from a nationwide contingent valuation survey designed to estimate changes in the passive-use value of Prince William Sound as a result of this oil spill.

PARTICIPATING IN A COOPERATIVE DAMAGE ASSESSMENT at the John C. Heinz National Wildlife Refuge, Philadelphia, Pennsylvania. This effort involves assessment of ecological and human use losses resulting from an oil pipeline spill within the Refuge.

Assisting in the **ANALYSIS OF SETTLEMENT COMPONENTS** to support trustee claims arising from the 1990 Arthur Kill, New York Harbor oil spill.

Providing **LITIGATION PREPARATION AND EXPERT WITNESS SUPPORT** to **U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, AND THE U.S. DEPARTMENT OF JUSTICE** to support claims for injury to marine bird populations resulting from the *Apex Houston* oil spill, California.

In addition to the above cases, provided damage assessment and case strategy **SUPPORT AT OVER 50 OTHER SITES** in the U.S. and Caribbean, such as the **SOUTH VALLEY** site, New Mexico; **BAYOU METO** ("Vertac") dioxin site in Arkansas; **SAGINAW BAY** in Michigan; **JAMAICA BAY, NEWTOWN CREEK, WESTSIDE SITE, AND BUFFALO RIVER**, New York; **SRS SITE** in Connecticut; **WHITE RIVER** in Indiana; **UNION CITY** site in Indiana; **METAL BANK**, Pennsylvania; **SAUGET SITE**, Illinois; **SALTVILLE, SOUTH RIVER AND AVTEX** sites in Virginia; **CALF PASTURE POINT**, Rhode Island; **ACORN FORK** in Kentucky; **COLRAIN ACID SPILL**, Massachusetts; **KOCH OIL** site, Minnesota; **CHRISTINA RIVER** and several other confidential sites in Delaware.

Applications of Natural Resource and Environmental Economics in Other Contexts

In addition to work for Trustees under state and Federal damage statutes, Mr. Unsworth provides **TECHNICAL AND CASE STRATEGY SUPPORT IN THE CONTEXT OF PRIVATE CLAIMS AND CLAIMS BY GOVERNMENT AGENCIES UNDER OTHER CAUSES OF ACTION FOR DAMAGES ASSOCIATED WITH ENVIRONMENTAL CONTAMINATION**, oil spills, and forest fires, and

other changes in the natural environment and natural resources. He has also provided expert support in interstate water conflicts and international law.

For the **REPUBLIC OF NICARAGUA** serving as an expert witness on best practices for the assessment of environmental damages associated with land-clearing and other disturbances in the context of a cross-border dispute with the Republic of Costa Rica. This effort included critiquing a claim brought by Costa Rica, as well as presentation of an affirmative damage estimate.

For over **TWO DOZEN STATE, COUNTY AND MUNICIPAL GOVERNMENTS**, he has led assessments of the full range of financial, economic, and environmental damages resulting from 2017, 2018, 2019 and 2020 wildfires in California. His work on these claims has supported the recovery of over $1.4 billion in damages, all through mediated settlements.

For the **U.S. DEPARTMENT OF JUSTICE, U.S. ATTORNEY'S OFFICE, AND THE U.S. FOREST SERVICE**, assessing natural resource damages associated with several large-scale wildland fires, including the Moonlight, Storrie, Big Creek, Freds, Sims and Witch fires. Provided expert deposition testimony in several of these cases, and assisted U.S. DOJ in successful settlement negotiations.

For the **ATLANTA REGIONAL COMMISSION**, assessed the regional economic impacts that would result from a change in water availability from the Chattahoochee River, in the context of interstate water claims brought by the State of Florida against Georgia. This included detailed modeling of how changes in water system operations would change to meet additional flow requirements in Florida.

For the **CITY OF MEMPHIS**, assessed the validity of claims for economic damage developed by the State of Mississippi associated with Memphis' use of groundwater. Testified in deposition as to the appropriate approach for groundwater valuation in the context of competing demands for this resource.

For **RESIDENTS OF BENNINGTON, VERMONT**, serving as an expert witness on added cost and natural resource service damages in the context of a class action lawsuit under State law.

For the **STATE OF NEW YORK**, assessing groundwater damages associated with a large-scale salt mine collapse, and assisted in successfully resolving this claim through settlement.

Assessed the damages to a private landowner in New Jersey resulting from the Warren Grove Gunnery Range wildland fire. **PROVIDED EXPERT TESTIMONY FOR THE U.S. AIR FORCE AND DEPARTMENT OF JUSTICE** as defendants in this matter on the correct approach to value the plaintiff's losses.

Serving as an expert in the valuation of **LOSSES SUFFERED BY LOBSTERMEN** impacted by the collapse of the western Long Island Sound lobster fishery.

Providing technical support, in cooperation with Dr. Raymond Kopp, to an assessment of added costs and **PROPERTY VALUE LOSSES ASSOCIATED WITH GROUNDWATER CONTAMINATION** of a residential neighborhood in suburban Chicago.

Policy and Analytical Tool Development

Authoring guidance on assessment of damages due to small spills, for the **U.S. DEPARTMENT OF THE INTERIOR**, including development of a model for use in expeditated assessments of small spills.

Authoring guidance on the appropriate use of contingencies in restoration project planning and costing, for the **U.S. DEPARTMENT OF THE INTERIOR**, in the context of natural resource damage assessment.

Authored a guidance document for the **U.S. DEPARTMENT OF THE INTERIOR** on the use of economics in indigenous community (i.e., tribal) natural resource damage assessment. Participated in listening sessions with tribal environmental leaders and assessed the record of tribal damage claims in the U.S.

For the **COMMONWEALTH OF MASSACHUSETTS**, developing a general oil spill damage assessment model to be applied to assign damages from small and moderate scale oil spills in terrestrial, aquatic, and marine environments.

Assisting the **STATES OF NEW JERSEY, MASSACHUSETTS, AND MISSOURI** in the development of guidance for natural resource damage assessment associated with injury to groundwater and habitat resources.

Developing a **GUIDANCE DOCUMENT ON DAMAGE ASSESSMENT UNDER SECTION 19(JJ)** of the Park Service Protection Act, for the **NATIONAL PARK SERVICE'S DAMAGE ASSESSMENT GROUP**.

DEVELOPING A GUIDANCE MANUAL ON THE USE OF ECONOMICS IN NATURAL RESOURCE DAMAGE ASSESSMENT, and conducting a series of training sessions on this topic for the **U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE**.

Providing technical and administrative support to the **NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**, including support in selecting **METHODS THAT COULD BE USED TO ESTIMATE ECONOMIC DAMAGES**; determining the strengths and weaknesses of each relevant assessment methodology for the determination of damages to a variety of resource categories; and selecting principal investigators to perform these damage assessments.

Providing support to the **NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION** in the development of **EXPEDITED DAMAGE ASSESSMENT REGULATIONS** and guidelines under the Oil Pollution Act of 1990.

Assisting the **STATE OF FLORIDA** in the **DEVELOPMENT OF STATE GUIDELINES** for the conduct of natural resource damage assessments following major oil spills.

PROVIDING TECHNICAL SUPPORT TO THE NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION in the development of a contract management system to facilitate tracking and recovery of costs incurred in the conduct of natural resource damage assessment cases.

Publications and Presentations

Mendelsohn, Robert, Daniel Hellerstein, Michael Huguenin, Richard Brazee, and R. Unsworth. 1992. "Measuring Hazardous Waste Damages with Panel Models." *Journal of Environmental Economics and Management* 22:259-271.

Bishop, Richard and Robert Unsworth. 1994. "Assessing Natural Resource Damages Using Environmental Annuities." *Ecological Economics* 11:35-41.

Environmental Performance of Tanker Designs in Collision and Grounding: Method for Comparison. Committee for Evaluation Double-Hull Tanker Design Alternatives, Marine Board, Transportation Research Board, National Academies. Washington, DC. 2001.

Genova, Leslie, Robert E. Unsworth, and David S. Brookshire. 2012. "Impacts of Endangered Species Protection on Water Management, Allocation and Use in New Mexico." In: Water Policy in New Mexico: Addressing the Challenge of an Uncertain Future. Resources for the Future Press, Washington, DC.

Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants, Support Studies and Technical Appendices. Appendix E: Economic Costs of Once-Through Cooling Impacts. California Energy Commission, Staff Report. June 2005. CEC-700-2005-013-AP-A.

Economic Valuation of Natural Resource Damages: Groundwater. Law Seminars International, Natural Resource Damages Litigation. Santa Fe, NM. July 9-10, 2009.

Equivalency Methods in Natural Resource Damage Assessment. Law Seminars International, Natural Resource Damages. Newark, NJ. November 12-13, 2009

Factors Trustees Consider in Selecting Damage Assessment Approaches. Fourth Annual Advanced Conference on Natural Resource Damages, Law Seminars International. Santa Fe, NM. July 15-16, 2010.

Identifying and Accounting for Cultural Use of Natural Resources in the NRDAR Process, Economic and Other Methodologies. State and Tribal Government Working Group, 2011 Natural Resource Damage Assessment and Restoration Workgroup. Albuquerque, NM. February 15-16, 2011.

Assessment of Lost Cultural Use in the NRDAR Process. U.S. Department of the Interior, Annual NRDA Restoration Workshop, Tribal Session. Phoenix, AZ. March 28, 2011.

An Introduction to Tribal Natural Resource Damage Claims. With Dr. Gerald (Taiaiake) Alfred. Law Seminars International Conference on Natural Resource Damages. Santa Fe, NM. July 14-15, 2011.

Thoughts on Early Restoration and the Measurement of the Benefits of Enhanced Remediation in the Context of Natural Resource Damage Assessment. Ad-Hoc Industry Natural Resource Damage Group 8th Annual Natural Resource Damage Symposium. Washington, DC. October 25-26, 2011.

Natural Resource Damage Claims Using Habitat and Resource Equivalency: The Case of Wildland Fire. Law Seminars International, Natural Resource Damages: *Evolving strategic, tactical and substantive issues*. Washington, DC. February 14-15, 2013.

California Assembly Bill 1492: An Economist's View of Implications for Wildland Fire Damages Claims. Wildland Fire Litigation Conference. Monterey, CA. April 21, 2013.

Natural Resource Damage Assessment in the Context of Tribal Trusteeship. With Robert Unsworth, Leah Shearer, Leslie Genova, and Nadia Martin. Law Seminars International Conference on Natural Resource Damages. Santa Fe, NM. July 19, 2013.

Climate Change and Wildland Fire Damages. With Christine Lee. Wildland Fire Litigation Conference, Monterey, California. April 26, 2014.

Baseline: What Does It Really Mean and How Do You Prove It? Law Seminars International Conference on Natural Resource Damages. Washington, DC. April 2014.

Trustee Considerations in Applying Non-use Valuation Methods for Purposes of NRDA. Law Seminars International: The Eighth Annual Advanced Conference on Litigating Natural Resource Damages. Santa Fe, NM. July 24-25, 2014.

An Introduction to Natural Resource Damage Assessment. Regional Response Team III. Virginia Beach, VA. May 20, 2015.

"Experience of remedial measures taken after an armed conflict." Seminar on the Protection of the Environment in relation to Armed Conflict. For: the Permanent Missions to the United Nations of Sweden, Denmark, Finland, Iceland and Norway, Rutgers University, the Environmental Law Institute and the International Union for Conservation of Nature World Commission on Environmental Law, New York, NY. 29 October 2015

Boston College School of Law. The Role of an Expert in Environmental Damages Litigation. Boston, Massachusetts. March 2016.

University of Houston Law Center, Economics of Natural Resource Damage Assessment. Houston, Texas. September 2016.

A Practitioner's View: An Update on Tribal Damage Assessment. Law Seminars International, Tribal Natural Resource Damage Assessment. Seattle, WA. 16 December 2016.

"The Role of Science and Economics to Advance Tribal Interests in an Uncertain World." With Jane Israel. 2016 Tribal Lands & Environment Forum: A National Conversation on Tribal land and Water Resources. August 17, 2016.

"Natural Resource Damage Assessment: Groundwater" For: Invited Regulatory Development Session. State of Vermont Department of Environmental Conservation. 24 August 2016.

Yale University. Environmental and Natural Resource Economics in Practice: Water Wars in the American South. New Haven, Connecticut. March 2017.

Economic Analysis in Tribal NRDA Settlements. Law Seminars International, Fourth Annual Comprehensive Seminar on Tribal Natural Resource Damage Assessments: Best strategies and tactics for conducting Tribal NRD Assessments. Seattle, Washington. 10 December 2018.

Vermont Law School, U.S.-Asia Partnerships for Environmental Law (Training session for Chinese Environmental Judges). Economics and Environmental Damage Assessment: Principles, Methods, Examples of Remedies for Environmental Harm. South Royalton, VT. 20 August 2018.

Valuing Damaged Natural Resources: Contemplating the Potential Impact of PFFAS on Indigenous Communities. Law Seminars International, PFAS Litigation. San Diego, CA. 10 December 2019

The Economics of Wildfire Damage Cases: Recent Developments in Claims Brought by Governmental Entities and Analytical Approaches to Incorporate Climate Change into Ecosystem Service Losses. Law Seminars International. Santa Fe, NM. 18 July 2019.

The Gold King Mine Disaster: Five Years Later. Law Seminars International 13th Annual Advanced Conference on Litigating Natural Resource Damages. Santa Fe, NM. August 20, 2020.

Thinking Beyond of the CERCLA/OPA Envelope: Reframing Tribal Environmental Damages Claims. Law Seminars International. 6th Annual Comprehensive Seminar on Tribal Natural Resource Damages Assessment. 14 November 2020.

Technical perspectives on the best approaches for addressing culturally significant sites including damage assessment and selection of remedies. Law Seminars International 15th Annual Advanced Conference on Litigating Natural Resource Damages. Santa Fe, NM. July 14 & 15, 2022.

Effective Use of Technical Consultants in Natural Resource Damage Assessment. Law Seminars International 8th Annual Comprehensive Seminar on Tribal Natural Resource Damages Assessment February 16, 2023.

Testimony (past four years)

In Re: Gold King Mine Release In San Juan County, Colorado, on August 5, 2015, Case Nos. 1:18-MD-02824-WJ; 1:16-cv-00465-WJ-LF; 1:16-cv-00931-WJ-LF. United States District Court for the District of New Mexico.

December 8, 9 and 10, 2021. [testimony concerned damages to Navajo Nation and Navajo individual farmers from Gold King Mine Disaster]

State of New York, et al., Plaintiffs, against Pride Solvents and Chemical Co. Inc. et al., Defendants, Pride Solvents and Chemical Co. Inc. et al., Third-Party Plaintiffs, against Kean Babylon, Inc., Convend, LLC, et al., Third-Party Defendants. CASE NO. 2:15-cv-06569-DRH-ARL, United States District Court, Eastern District of New York. 17 January 19, 2022. [testimony concerned damages to groundwater resources of the State of New York].

David Back, et al., Plaintiffs vs Bayer Cropscience, LP et al., Defendants Cause No. 18SL-CC03530, Div. No.: 18 In the Circuit Cortt of St. Louis County, State of Missouri. April 19, 2022. [testimony concerned damages to individuals and the Mohawk Nation from the release of PCBs in the St Lawence Environment and Mohawk homeland of Akwesasne]

Joseph A. Pakootas, an individual and enrolled member of the Confederated Tribes of the Colville Reservation; and Donand R. Michel, an individual and enrolled member of the Confederated Tribes of the Colville Reservation, and The Confederated Tribes of the Colville Reservation. Plaintiffs, and the State of Washington, Plaintiff/Intervenor, vs. Teck Cominco Metals, LTD a Canadian Corporation, Defendant, Case No.: 2:04-cv-00256, In the United States District Court, Eastern District of Washington, Monday, June 5, 2023. [testimony concerned monetary damages resulting from Tribal loss of use of natural resources due to metals pollution in the Upper Columbia River]

Exhibit B

Injury Quantification Inputs

Item	Value	Units	Notes
General Model Inputs			
Discount rate	3%	percent	Standard NRDA practice (Horsch et al. 2023).
Current year	2023	year	Current year for use in calculations.
Plume Inputs			
Thickness	22	feet	Average thickness of the contaminated aquifer in the Brenntag Source Area (a.k.a. Soco West) (MTDEQ and USEPA 2005).
Porosity	27%	percent	Effective porosity of the plume-bearing unit (MTDEQ and US USEPA 2005).
Plume Area			
Start of injury	1981	year	Modeling suggests that the plume reached the Yellowstone River by 1977, reached its maximum length and width by 1982, and that no significant changes in the dimensions of the plume had taken place between then and the time of publication (MTDEQ and USEPA 2005). Therefore, I conclude that the plume was already present at the Site when CERCLA was enacted in December 1980 and use the first full year after its enactment as the start date of injury (i.e., 1981).
Area of injury	33	acres	Area of contaminated groundwater at and downgradient of Brenntag Source Area (a.k.a. Soco West). Determined through ArcMap calculations using boundary digitized from MTDEQ and USEPA 2005.
Controlled Groundwater Area			
Start of injury	2019	year	First full year after boundary was adopted, which occurred in October 2018 (MT DNRC 2018).
Area of injury	91	acres	Portion of Controlled Groundwater Area that is within OU2 and outside the plume. Determined through ArcMap calculations using boundaries digitized from USEPA and MTDEQ 2018 and MT DNRC 2018.
End of injury	perpetuity	-	The First Five-Year Review of OU-2 indicated that the boundary is permanent (USEPA 2022).
Conversion Factors			
acre-feet per cubic foot	0.000022957	acre-feet	
acres to square feet	43,560	square feet	

Injury Quantification Outputs

Item	Value	Units
Present value injured volume	1,287	acre-feet

Restoration Outputs

Total Damages (Present Value)	PV Unit Cost	Units	Damages (2023$)
Septic replacement, low	$880	2023$/acre-foot	
Septic replacement, high	$1,046	2023$/acre-foot	
Septic replacement, average	$963	2023$/acre-foot	
Wastewater connection, low	$835	2023$/acre-foot	
Wastewater connection, high	$1,068	2023$/acre-foot	
Wastewater connection, average	$951	2023$/acre-foot	
Average	$957	2023$/acre-foot	
Average with 20% contingency	**$1,148**	**2023$/acre-foot**	**$1,477,738**

Year	Plume Area (acres)	Plume Volume (acre-feet)	Present Value Plume Volume (acre-feet)
1981	32.92	195.53	676.67
1982	-	-	-
1983	-	-	-
1984	-	-	-
1985	-	-	-
1986	-	-	-
1987	-	-	-
1988	-	-	-
1989	-	-	-
1990	-	-	-
1991	-	-	-
1992	-	-	-
1993	-	-	-
1994	-	-	-
1995	-	-	-
1996	-	-	-
1997	-	-	-
1998	-	-	-
1999	-	-	-
2000	-	-	-
2001	-	-	-
2002	-	-	-
2003	-	-	-
2004	-	-	-
2005	-	-	-
2006	-	-	-
2007	-	-	-
2008	-	-	-
2009	-	-	-
2010	-	-	-
2011	-	-	-
2012	-	-	-
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	91.25	542.02	610.05

Restoration Project Information

I consider the septic needs of a two-bedroom house, which would require a 2,500 square foot drain field (National Tank Outlet 2021). Wells and drain fields in Montana must be located 100 feet apart (ARM 17.36.323, MTDEQ et al. 2022). As such, the stock of water effectively made available by removing a septic system is equivalent to $\pi \times r^2$, where r is 135 feet (i.e., the 100 ft distance plus half the diagonal of the drain field). As such, this area reflects the benefit to groundwater of replacing older septic systems with modern alternatives or by connecting households to municipal wastewater. In calculating the benefits of this project, I use the same hydrogeological characteristics as those for the injured aquifer (i.e., in porosity and thickness).

Area benefit (acres)	1.32
Thickness (feet)	22
Porosity	0.27
Protected volume (acre-feet)	7.85

Septic System Replacement

Item	Cost	Dollar Month and Year of Cost	Cost ($2023)	PV Unit Cost ($2023/acre-foot)	IEc Notes
Septic installation, low	$6,907.55	Oct-23	$6,907.55	$880.08	Assuming Oct 2023$, date of retrieval from ProMatcher 2023.
Septic installation, high	$8,206.90	Oct-23	$8,206.90	$1,045.63	Assuming Oct 2023$, date of retrieval from ProMatcher 2023.
Septic installation, average	$7,557.23	Oct-23	$7,557.23	$962.85	

Connection to Municipal Sewer

Item	Cost	Dollar Month and Year of Cost	Cost ($2023)	PV Unit Cost ($2023/acre-foot)	Notes from Lockwood 2022 | IEc Notes
Low					
System development fee	$2,040.00	Jun-22	$1,867.10	$237.88	One-time assessment, $2,040 (for typical residence; City of Blgs $1,430; LWSD $610).
Sewer service permit fee	$60.00	Jun-22	$54.91	$7.00	One-time payment.
Construction cost for service line and septic tank abandonment	$3,000.00	Jun-22	$2,745.74	$349.83	
Monthly user charges	$2,057.40	Jun-22	$1,883.03	$239.91	Based on typical "winter" water usage of 5,000 gal/mo., $57.15/mo. | Applying three years of cost to incentivize residents to join.
Total costs:	$5,100.00	-	$4,667.75	$834.62	
High					
System development fee	$2,040.00	Jun-22	$1,867.10	$237.88	One-time assessment, $2,040 (for typical residence; City of Blgs $1,430; LWSD $610).
Sewer service permit fee	$60.00	Jun-22	$54.91	$7.00	One-time payment.
Construction cost for service line and septic tank abandonment	$5,000.00	Jun-22	$4,576.23	$583.05	
Monthly user charges	$2,057.40	Jun-22	$1,883.03	$239.91	Based on typical "winter" water usage of 5,000 gal/mo., $57.15/mo. | Applying three years of cost to incentivize residents to join.
Total costs:	$7,100.00	-	$6,498.24	$1,067.84	
Average total costs:	$6,100.00	-	$5,583.00	$951.23	

Producer Price Index

Historical Producer Price Index for all commodities

https://fred.stlouisfed.org/series/PPIACO

PPI Historical Data

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1999	122.900	122.300	122.600	123.600	124.700	125.200	125.700	126.900	128.000	127.700	128.300	127.800	125.475
2000	128.300	129.800	130.800	130.700	131.600	133.800	133.700	132.900	134.700	135.400	135.000	136.200	132.7
2001	140.000	137.400	135.900	136.400	136.800	135.500	133.400	133.400	133.300	130.300	129.800	128.100	134.2
2002	128.500	128.400	129.800	130.800	130.800	130.900	131.200	131.500	132.300	133.200	133.100	132.900	131.1
2003	135.300	137.600	141.200	136.800	136.700	138.000	137.700	138.000	138.500	139.300	138.900	139.500	138.1
2004	141.400	142.100	143.100	144.800	146.800	147.200	147.400	148.000	147.700	150.000	151.400	150.200	146.7
2005	141.400	142.100	143.100	144.800	146.800	147.200	147.400	148.000	147.700	150.000	151.400	150.200	146.7
2006	164.300	161.800	162.200	164.300	165.800	166.100	166.800	167.900	165.400	162.200	164.600	165.600	164.8
2007	164.000	166.800	169.300	171.400	173.300	173.800	175.100	172.400	173.500	174.700	179.000	178.600	172.7
2008	181.000	182.700	187.900	190.900	196.600	200.500	205.500	199.000	196.900	186.400	176.800	170.900	189.6
2009	171.200	169.300	168.100	169.100	170.800	174.100	172.500	175.000	174.100	175.200	177.400	178.100	172.9
2010	181.900	181.000	183.300	184.400	184.800	183.500	184.100	184.900	184.900	186.600	187.700	189.700	184.7
2011	192.700	195.800	199.200	203.100	204.100	203.900	204.600	203.200	203.700	201.100	201.400	199.800	201.1
2012	200.700	201.600	204.200	203.700	201.900	199.800	200.100	202.700	204.400	203.500	201.800	201.500	202.2
2013	202.500	204.300	204.000	203.500	204.100	204.300	204.400	204.200	203.900	202.500	201.200	202.000	203.4
2014	203.800	205.700	207.000	208.300	208.000	208.300	208.000	207.000	206.400	203.400	200.900	197.000	205.3
2015	192.000	191.100	191.500	190.900	193.400	194.800	193.900	191.900	189.100	187.500	185.700	183.500	190.4
2016	182.600	181.300	182.100	183.200	185.300	187.600	187.700	186.600	186.900	186.700	186.300	188.200	185.4
2017	190.700	191.600	191.500	193.000	192.800	193.600	193.500	193.800	194.800	194.900	195.900	196.300	193.5
2018	197.900	199.300	199.300	200.300	203.200	204.200	204.300	203.400	203.600	204.600	202.300	201.000	202.0
2019	199.100	199.200	200.800	202.100	201.700	200.300	200.700	199.200	198.400	198.600	199.000	199.000	199.8
2020	199.300	196.700	193.100	185.500	188.600	191.200	193.000	194.300	195.500	196.500	198.300	200.500	194.4
2021	204.800	210.600	215.000	217.900	224.900	228.900	231.850	233.415	235.678	240.465	243.287	241.338	227.3
2022	246.453	252.660	260.014	265.310	273.251	280.251	272.274	269.546	267.898	265.061	263.157	257.897	264.5
2023	260.227	258.669	257.062	256.908	253.751	253.937	253.865	257.568					256.498

PPI Adjustment Factors to 2023$

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1999	2.087	2.097	2.092	2.075	2.057	2.049	2.041	2.021	2.004	2.009	1.999	2.007	2.044
2000	1.999	1.976	1.961	1.962	1.949	1.917	1.918	1.930	1.904	1.894	1.900	1.883	1.932
2001	1.832	1.867	1.887	1.880	1.875	1.893	1.923	1.923	1.924	1.969	1.976	2.002	1.911
2002	1.996	1.998	1.976	1.961	1.961	1.959	1.955	1.951	1.939	1.926	1.927	1.930	1.956
2003	1.896	1.864	1.817	1.875	1.876	1.859	1.863	1.859	1.852	1.841	1.847	1.839	1.857
2004	1.814	1.805	1.792	1.771	1.747	1.743	1.740	1.733	1.737	1.710	1.694	1.708	1.749
2005	1.814	1.805	1.792	1.771	1.747	1.743	1.740	1.733	1.737	1.710	1.694	1.708	1.749
2006	1.561	1.585	1.581	1.561	1.547	1.544	1.538	1.528	1.551	1.581	1.558	1.549	1.557
2007	1.564	1.538	1.515	1.496	1.480	1.476	1.465	1.488	1.478	1.468	1.433	1.436	1.486
2008	1.417	1.404	1.365	1.344	1.305	1.279	1.248	1.289	1.303	1.376	1.451	1.501	1.353
2009	1.498	1.515	1.526	1.517	1.502	1.473	1.487	1.466	1.473	1.464	1.446	1.440	1.483
2010	1.410	1.417	1.399	1.391	1.388	1.398	1.393	1.387	1.387	1.375	1.367	1.352	1.388
2011	1.331	1.310	1.288	1.263	1.257	1.258	1.254	1.262	1.259	1.275	1.274	1.284	1.276
2012	1.278	1.272	1.256	1.259	1.270	1.284	1.282	1.265	1.255	1.260	1.271	1.273	1.269
2013	1.267	1.255	1.257	1.260	1.257	1.255	1.255	1.256	1.258	1.267	1.275	1.270	1.261
2014	1.259	1.247	1.239	1.231	1.233	1.231	1.233	1.239	1.243	1.261	1.277	1.302	1.249
2015	1.336	1.342	1.339	1.344	1.326	1.317	1.323	1.337	1.356	1.368	1.381	1.398	1.347
2016	1.405	1.415	1.409	1.400	1.384	1.367	1.367	1.375	1.372	1.374	1.377	1.363	1.384
2017	1.345	1.339	1.339	1.329	1.330	1.325	1.326	1.324	1.317	1.316	1.309	1.307	1.325
2018	1.296	1.287	1.287	1.281	1.262	1.256	1.255	1.261	1.260	1.254	1.268	1.276	1.270
2019	1.288	1.288	1.277	1.269	1.272	1.281	1.278	1.288	1.293	1.292	1.289	1.289	1.284
2020	1.287	1.304	1.328	1.383	1.360	1.342	1.329	1.320	1.312	1.305	1.293	1.279	1.320
2021	1.252	1.218	1.193	1.177	1.140	1.121	1.106	1.099	1.088	1.067	1.054	1.063	1.128
2022	1.041	1.015	0.986	0.967	0.939	0.915	0.942	0.952	0.957	0.968	0.975	0.995	0.970
2023	0.986	0.992	0.998	0.998	1.011	1.010	1.010	0.996	No data	No data	No data	No data	1.000

Exhibit B

U.S. Department of Justice

Office of Justice Programs
Office of the Chief Financial Officer

Washington, D.C. 20531

CERTIFICATION OF DE MINIMIS INDIRECT COST RATE

An award recipient that proposes to use federal grant funds to pay for indirect costs but has never received a federally negotiated indirect cost rate may elect to charge a de minimis rate of up to 10% of its modified total direct costs (MTDC) which may be used indefinitely. (2 CFR § 200.414) In order to charge a de minimis rate of up to 10% of its MTDC, the award recipient should submit this certification form to the Office of Chief Financial Officer, Office of Justice Programs.

I certify that Montana Department of Justice (name of award recipient)

meets the following eligibility criteria to use the 6.76% de minimis indirect cost rate:

1. The November 12, 2020 Office of Management and Budget (OMB) revision to 2 CFR 200.414(f) expanded the use of the de minimis rate of 10 percent of modified total direct costs (MTDC) to all non-Federal entities (except for those described in Appendix VII to Part 200—State and Local Government and Indian Tribe Indirect Cost Proposals, paragraph D.1.b). The expansion revises 2 CFR 200.414(f) to allow the use of the de minimis rate for non-federal agencies that have had an indirect cost rate, but the negotiated rate has expired. The award recipient currently either has never received a Federally-negotiated indirect cost rate for any federal awards, or currently has an expired indirect cost rate.

2. The award recipient has received less than $35 million in direct federal funding for the fiscal year requested.

3. The de minimis rate approved will be applied to Modified Total Direct Cost (MTDC). This base includes all direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel, and up to the first $25,000 of each subaward (regardless of the period of performance of the subawards under the award); excludes equipment, capital expenditures, charges for patient care, rental costs, tuition remission, scholarships and fellowships, participant support costs and the portion of each subaward in excess of $25,000. Other items may only be excluded when necessary to avoid a serious inequity in the distribution of indirect costs, and with the approval of the cognizant agency for indirect costs.

4. The project costs will be consistently charged as either indirect or direct and will not be double charged or inconsistently charged as both.

5. The proper use and application of the de minimis rate is the responsibility of the award recipient. The Office of Justice Programs may perform a financial monitoring review to ensure compliance with 2 CFR Part 200.

SUBMITTED BY:

Signature: _____ Date: 08/10/2021

Name: Nate Thomas Title: Budget Bureau Chief

(Authorized Official Only)