BEFORE THE DEPARTMENT OF
NATURAL RESOURCES AND CONSERVATION
OF THE STATE OF MONTANA

*** * * * * * ***

APPLICATION TO CHANGE WATER RIGHT NO. 41F 30147856 BY SAMPSON INVESTMENTS, LLC AND RLBH, LLC	**)** **)** **)**	**CORRECTED PRELIMINARY DETERMINATION TO GRANT CHANGE**

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On January 6, 2020, Sampson Investments, LLC, and Fifty Mile Riffle, LLC, (Applicants) submitted Application to Change Water Right No. 41F 30147856 to change Water Right Claim Nos. 41F 30114843 and 41F 30114845 to the Bozeman Regional Office of the Department of Natural Resources and Conservation (Department or DNRC). The Department published receipt of the Application on its website. The Department sent the Applicants a deficiency letter under § 85-2-302, Montana Code Annotated (MCA), dated June 23, 2020. The Applicants responded with information dated July 27, 2020. The Application was determined to be correct and complete as of December 8, 2021. An amendment to the application was received by DNRC on February 23, 2022, which reset the received date of the application to February 23, 2022. The amended application was deemed correct and complete on March 30, 2022. On March 31, 2022, the Department updated the ownership to Sampson Investments, LLC and RLBH, LLC. A second amendment to the application was received by DNRC on July 26, 2022, which reset the received date of the application to July 26, 2022. The amended application was deemed correct and complete on December 22, 2022. The Department had a Pre-Application Meeting with the Applicants (Deb Stephenson, consultant) on November 22, 2019. An Environmental Assessment for this Application was completed on April 19, 2023.

INFORMATION

The Department considered the following information submitted by the Applicants, which is contained in the administrative record.

Application as filed:

- Application to Change an Existing Irrigation Water Right, Form 606-IR
- Attachments
- NIR.1 Application Details, NIR.2 Maps, NIR.3 Historic Use, NIR.4 Adverse Effect, NIR.5 Proposed Adequate Diversion Means and Operation, NIR.6 Proposed Beneficial Use, NIR.8 Change Application Addendums and Review.

- Exhibit A: Letter to notify ditch right owners
- Exhibit B: Split Overview
- Exhibit C: Historic Overview
- Exhibit D: Historical Imagery (July 1, 1947, USGS, July 18, 1968, USGS, August 6, 1976, USGS, September 14, 1984, USGS, September 22, 2015 & October 22, 2015, NAIP
- Exhibit E-K: Affidavits
- Exhibit L: Water Rights Investigation Report
- Exhibit M: Plans for Sampson Diversion Site 2
- Exhibit N: Sage Grouse Habitat Overview

- Maps:
  - Exhibit IR.2.B: USDA FSA map, 2017 Program Year, Farm 2658, Tract 3436.
  - Exhibit IR.2.B: USDA FSA map, 2017 Program Year, Farm 2658, Tract 3445.
  - Exhibit IR.2.B: USDA FSA map, 2017 Program Year, Farm 2658, Tract 8116.
  - Exhibit IR.2.B: USDA FSA map, 2017 Program Year, Farm 2658, Tract 8117.
  - Exhibit IR.2.C: Historic Irrigation, map produced by DMS Natural Resources.
  - Exhibit IR.2.E: Proposed Use, map produced by DMS Natural Resources.
  - Exhibit B: 41F 136420 00 & 41F 136421 00 Split Overview, map produced by DMS Natural Resources.
  - Exhibit C: 41F 136420 00 & 41F 136421 00 Historic Overview, map produced by DMS Natural Resources.
  - Exhibit D: Historical Imagery, base map July 1, 1947, USGS aerial photo, produced by DMS Natural Resources.
  - Historical Imagery, base map July 18, 1968, USGS aerial photo, produced by DMS Natural Resources.
  - Historical Imagery, base map August 16, 1976, USGS aerial photo, produced by DMS Natural Resources.
  - Historical Imagery, base map September 14, 1984, USGS aerial photo, produced by DMS Natural Resources.
  - Historical Imagery, base map September 22, 2015 & October 22, 2015 NAIP aerial photo, produced by DMS Natural Resources.
  - Sage Grouse Habitat Overview, produced by DMS Natural Resources.

Information Received after Application Filed

- Letter from Deborah Stephenson (DMS Natural Resources, Applicants' consultant) to DNRC, received by DNRC on August 8, 2022, Re: Sampson Investments, LLC and Fifty Mile Riffle, LLC-Change Applications 41F 30147383 and 41F 30147856 (2nd amendment supporting materials, additional affidavits)
- Amendment to Application and supporting materials, Received by DNRC July 26, 2022
- Letter from Deborah Stephenson (DMS Natural Resources) to DNRC, received by DNRC July 26, 2022, Re: Additional Information re: Proposed Ditch Routes and Capacities, Change Application Nos. 41F 30147383 and 41F 30147856
- Amendment to Application, Received by DNRC on February 23, 2022
- Email from DMS Natural Resources to DNRC, dated February 15, 2022, Re: Sampson Madison River Change Applications Update (confirmed dimensions of proposed ditch as amended)
- Email from William Moore (DMS Natural Resources) to DNRC, dated December 15, 2021, Re: Correct & Complete: 41F 30147856 and 41F 30147383 by Sampson Investments and Fifty Mile Riffle (confirmation of location of wintertime stock use).
- Eikeland Ditch Measurements collected in July 2021, received by DNRC July 7, 2021.
- Letter from Applicants' consultant DMS Natural Resources to DNRC dated July 24, 2020, Re: Response to Deficiency Letter for Application No. 41F 30147856, received by DNRC on July 27, 2020.

Information within the Department's Possession/Knowledge

- DNRC Irrigation Change Application Technical Report: 2nd Amendment dated December 20, 2022
- DNRC Revised Irrigation Change Application Technical Report version 2, dated March 30, 2022. Version drafted to reflect 1st amendment
- DNRC Revised Irrigation Change Application Technical Report, dated February 8, 2022
- DNRC Irrigation Change Application Technical Report for original application, dated December 8, 2021
- Water Resources Survey, Madison County, 1954
- DNRC surface water and groundwater right records and files

The Department also routinely considers the following information. The following information is not included in the administrative file for this Application but is available upon request. Please contact the Bozeman Regional Office at 406-586-3136 to request copies of the following documents.

- DNRC Historic Diverted Volume Methodology Memorandum, dated September 13, 2012
- DNRC Return Flow Memorandum, dated April 1, 2016
- DNRC Distributing Conveyance Loss on Multiple User Ditches guidance document, dated February 14, 2020
- DNRC Irrecoverable Loss Memorandum, dated April 15, 2013
- DNRC IWR Memorandum, dated February 4, 2013
- DNRC Change in Method of Irrigation Memo, dated December 2, 2015

The Department has fully reviewed and considered the evidence and argument submitted in this Application and preliminarily determines the following pursuant to the Montana Water Use Act (Title 85, chapter 2, part 3, part 4, MCA).

WATER RIGHTS TO BE CHANGED

FINDINGS OF FACT

1. The Applicants seek to change the following Water Right Claims. Water Right Claim No. 41F 30114843 which lists a flow rate of 15.31 cubic feet per second (CFS) from the Madison River using the Eikeland Ditch as a means of conveyance for the purpose of flood irrigation with a priority date of August 18, 1947. Water Right Claim No. 41F 30114845 lists a flow rate of 15.95 CFS from the Madison River using Eikeland Ditch as a means of conveyance for the purpose of flood irrigation with a priority date of August 18, 1947. For both water rights, the period of diversion and period of use is 05/01-10/20. The claimed place of use for both water rights is entirely supplemental and is 621 acres in the E2 of Section 20, E2 of Section 21, and W2 of Section 21, all in Township 7 South (T07S), Range 1 West (R01W), Madison County. The place of use is approximately 2.5 miles west of Cameron, Montana, near the Madison River. See Table 1 for an overview of the water rights being changed and Figure 1 for a map.

Table 1. Water rights proposed for change

W.R. NO.	FLOW (CFS)	VOLUME	PURPOSE	PERIOD OF USE	PLACE OF USE	POINT(S) OF DIVERSION	PRIORITY DATE

41F 30114843	15.31	Historical and beneficial use	Irrigation	05/01-10/20*	E2 Sec. 20, E2 Sec. 21, W2 Sec. 21, all in T07S R01W, Madison Co.	SESESE Sec. 33, T07S R01W, Madison Co.	08/18/1947
41F 30114845	15.95	Historical and beneficial use	Irrigation	05/01-10/20*	E2 Sec. 20, E2 Sec. 21, W2 Sec. 21, all in T07S R01W, Madison Co.	SESESE Sec. 33, T07S R01W, Madison Co.	08/18/1947

*The period of use was changed from 05/01-10/24 to 05/01-10/20 during reexamination.

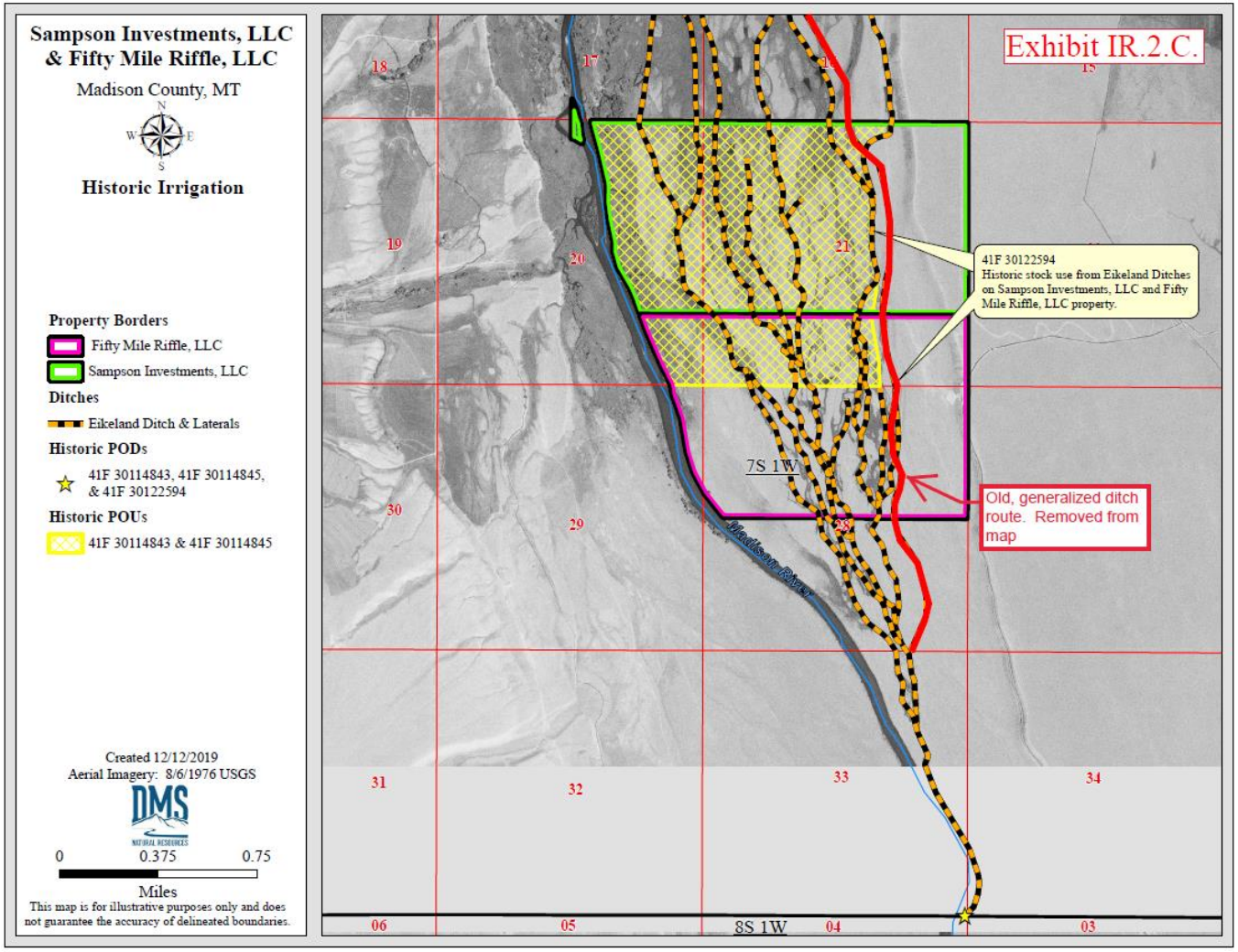


Figure 1. Historic Use (revised Exhibit IR.2.C map, transmitted to DNRC by DMS on June 16, 2022)

2. Water Right No. 41F 30114843 is a decreed water right split from parent right 41F 136420-00 on July 10, 2018, after Sampson Investments, LLC, and Peter C. & Kelly Corbett McLoughlin Revocable Living Trust (claimants) filed a Joint Motion to Split Claims on May 3, 2018. Water Right No. 41F 30114843 (or parent right 41F 136420-00) was included in the Temporary Preliminary Decree issued by the Montana Water Court for the Madison River Basin (Basin 41F) on July 25, 1984, and the Preliminary Decree issued for Basin 41F on March 1, 2023. Water Right No. 41F 30114845 is a decreed water right split from parent right 41F 136421-00 on July 10, 2018, after Sampson Investments, LLC, and Peter C. & Kelly Corbett McLoughlin Revocable Living Trust (claimants) filed a Joint Motion to Split Claims on May 3, 2018. Water Right No. 41F 30114845 (or parent right 41F 136421-00) was included in the Temporary Preliminary Decree issued by the Montana Water Court for the Madison River Basin (Basin 41F) on July 25, 1984, and the Preliminary Decree issued for Basin 41F on March 1, 2023.

3. Ownership is clear, and these water rights are not part of an undivided interest.

4. The place of use includes multiple use Claim No. 41F 30122594 for stock, which was an implied right based on irrigation Claim No. 41F 30114843. The Applicants are adding the proposed point of diversion to the stock claim under concurrent Change Application No. 41F 30147383. Groundwater Certificate 41F 30003920, for stock use, is in the historic place of use but is not part of this change application because it has a different source and means of diversion. The Applicants own a livestock direct from source claim for the Madison River, Claim No. 41F 30116793, which is not part of this application because 41F 30116793 is not a diversionary water right on the Eikeland Ditch.

5. No previous change authorizations are associated with the water rights to be changed.

CHANGE PROPOSAL

FINDINGS OF FACT

6. The Applicants propose to add a second point of diversion to Claim Nos. 41F 30114845 and 41F 30114843 (Figure 2). The Applicants originally proposed a new point of diversion in the NENENE of Section 29, T07S R01W, Madison County. The Applicants amended the proposed point of diversion to the NESENE of Section 29, T07S R01W, Madison County. The existing point of diversion, the Eikeland Ditch headgate, will remain in use. The proposed point of diversion is 2

miles downstream from the historic point of diversion. The Applicants propose a new 6142-foot ditch, with a capacity of 20 CFS, at an additional means of conveyance. The Applicants will retire 7968 feet within the 41,330-foot Eikeland Ditch system, while still providing carriage water to down-ditch water users, to offset the conveyance losses in the new ditch. The place of use, purpose, and period of use will remain the same.

7. Application to Change a Water Right No. 41F 30147383 was submitted concurrently with this application and proposes to add the same point of diversion and ditch proposed in this change to stock Claim No. 41F 30122594.

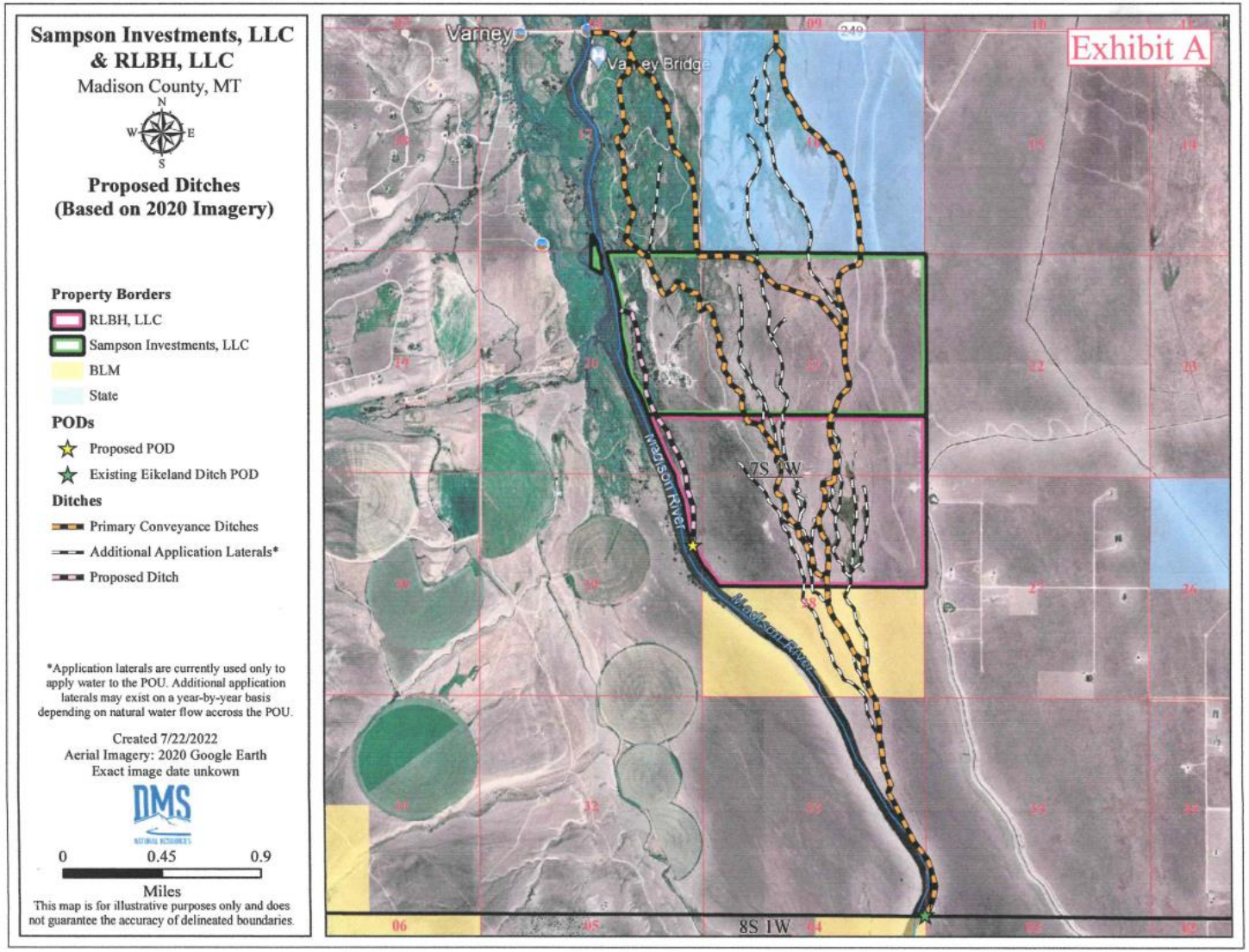

Sampson Investments, LLC
& RLBH, LLC
Madison County, MT
N
W
E
S
Proposed Ditches
(Based on 2020 Imagery)
Property Borders
RLBH, LLC
Sampson Investments, LLC
BLM
State
PODs
Proposed POD
Existing Eikeland Ditch POD
Ditches
Primary Conveyance Ditches
Additional Application Laterals*
Proposed Ditch
*Application laterals are currently used only to apply water to the POU. Additional application laterals may exist on a year-by-year basis depending on natural water flow accross the POU.
Created 7/22/2022
Aerial Imagery: 2020 Google Earth
Exact image date unkown
DMS
0
0.45
0.9
Miles
This map is for illustrative purposes only and does not guarantee the accuracy of delineated boundaries.
Exhibit A
Varney
Bridge
249
Madison River
7S 1W
8S 1W
06
05
04

Figure 2. Proposed Use (Exhibit A, July 26, 2022, Letter)

8. The application has had two amendments and the 'Received Date' of this application has been reset twice. The Applicants submitted a map to correct an error on the location of a historic ditch and a map to correct an error on the dimensions of two historic ditches (2nd amendment). The Applicants submitted with the 2nd amendment additional Affidavits from down-ditch water users asserting the proposed changes to the ditches will not hinder their continued use of water.

9. This authorization will be subject to the following condition:

WATER MEASUREMENT REQUIRED

IN AGGREGATE THE MAXIMUM FLOW RATE THAT MAY BE DIVERTED FROM MADISON RIVER WITH WATER RIGHT NO. 41F 30114843 IS 15.31 CFS AND 41F 30114845 IS 15.95 CFS FROM 05/01 TO 10/20. IN AGGREGATE THE MAXIMUM VOLUME THAT MAY BE DIVERTED FROM MADISON RIVER WITH WATER RIGHT NO. 41F 30114843 IS 2082.1 AF ANNUALLY AND WITH WATER RIGHT NO. 41F 30114845 IS 2169.1 AF ANNUALLY. ON A FORM APPROVED BY THE DEPARTMENT, THE APPROPRIATOR SHALL KEEP A WRITTEN RECORD OF THE FLOW RATE AND VOLUME OF ALL WATER DIVERTED AT BOTH POINTS OF DIVERSION, INCLUDING THE PERIOD OF TIME. RECORDS SHALL BE SUBMITTED BY JANUARY 31ST OF EACH YEAR. FAILURE TO SUBMIT REPORTS MAY BE CAUSE FOR REVOCATION OF THIS CHANGE. THE RECORDS MUST BE SENT TO THE BOZEMAN WATER RESOURCES REGIONAL OFFICE. THE APPROPRIATOR SHALL MAINTAIN THE MEASURING DEVICES SO THEY ALWAYS OPERATE PROPERLY AND MEASURE FLOWRATE AND VOLUME ACCURATELY.

CHANGE CRITERIA

10. The Department is authorized to approve a change if the applicant meets its burden to prove the applicable § 85-2-402, MCA, criteria by a preponderance of the evidence. Matter of Royston, 249 Mont. 425, 429, 816 P.2d 1054, 1057 (1991); Hohenlohe v. DNRC, 2010 MT 203, ¶¶ 33, 35, and 75, 357 Mont. 438, 240 P.3d 628 (an applicant's burden to prove change criteria by a preponderance of evidence is "more probably than not."); Town of Manhattan v. DNRC, 2012 MT 81, ¶8, 364 Mont. 450, 276 P.3d 920. Under this Preliminary Determination, the relevant change criteria in §85-2-402(2), MCA, are:

(2) Except as provided in subsections (4) through (6), (15), (16), and (18) and, if applicable, subject to subsection (17), the department shall approve a change in appropriation right if the appropriator proves by a preponderance of evidence that the following criteria are met:
(a) The proposed change in appropriation right will not adversely affect the use of the existing water rights of other persons or other perfected or planned uses or developments for which a permit or certificate has been issued or for which a state water reservation has been issued under part 3.
(b) The proposed means of diversion, construction, and operation of the appropriation works are adequate, except for: (i) a change in appropriation right for instream flow pursuant to 85-2-320 or 85-2-436; (ii) a temporary change in appropriation right for instream flow pursuant to 85-2-408; or (iii) a change in appropriation right pursuant to 85-2-420 for mitigation or marketing for mitigation.
(c) The proposed use of water is a beneficial use.
(d) The applicant has a possessory interest, or the written consent of the person with the possessory interest, in the property where the water is to be put to beneficial use or, if the proposed change involves a point of diversion, conveyance, or place of use on national forest system lands, the applicant has any written special use authorization required by federal law to occupy, use, or traverse national forest system lands for the purpose of diversion, impoundment, storage, transportation, withdrawal, use, or distribution of water. This subsection (2)(d) does not apply to: (i) a change in appropriation right for instream flow pursuant to 85-2-320 or 85-2-436; (ii) a temporary change in appropriation right for instream flow pursuant to 85-2-408; or (iii) a change in appropriation right pursuant to 85-2-420 for mitigation or marketing for mitigation.

11. The evaluation of a proposed change in appropriation does not adjudicate the underlying right(s). The Department's change process only addresses the water right holder's ability to make a different use of that existing right. E.g., Hohenlohe, at ¶¶ 29-31; Town of Manhattan, at ¶8; *In the Matter of Application to Change Appropriation Water Right No.41F-31227 by T-L Irrigation Company* (DNRC Final Order 1991).

HISTORIC USE AND ADVERSE EFFECT

FINDINGS OF FACT - Historic Use

12. The two water rights being changed are entirely supplemental. No other water rights are supplemental to the rights to be changed. The claimed number of historic acres for the water rights is 621 acres. The Department found 621 irrigated acres upon review of USDA aerial photo 1VEFX00010133, dated August 6, 1976, and USDA aerial photo 1VCANC0010050, dated July 18, 1968. The 1965 Madison County Water Resources Survey and historical aerial photos

submitted by the Applicants support 621 irrigated acres. Based on this information the Department finds 621 acres were historically irrigated with Claim Nos. 41F 30114843 and 41F 30114845.

13. The maximum historic flow rate for Water Right No. 41F 30114843 is 15.31 CFS and for Water Right No. 41F 30114845 is 15.95 CFS. The sum of the flow rates associated with both water rights included in this change application is 31.26 CFS. The Applicants calculated the ditch capacity at the headgate is 75.5 CFS using Manning's Equation with the following assumptions: Manning's n value of 0.0335, bankfull area of 33.4 ft^2, wetted perimeter of 21.1 ft, and slope of 0.0014 ft. (Application, IR.3.E). The Applicants explain that the sum of the flow rates for all water rights in ditch, 79.12 CFS, is within 5% error of 75.5 CFS, therefore it is "reasonable to assume that the entire claimed flow rate across the claims has been diverted into the ditch" (Application, IR.3.D). Based on this information the Department finds the evidence submitted by the Applicants to show the Eikeland Ditch has the capacity to convey sum of the flow rates for all water rights in ditch to be substantial and credible.

14. Applicants elected to have the Department calculate historic use for the water right pursuant to ARM 36.12.1902.The water rights being changed are Statement of Claims and as such, the underlying historic use of the rights will be evaluated as they existed prior to July 1, 1973. No documented history of calls on 41F 30114843 or 41F 30114845 exists.

15. The Applicants submitted affidavits by Alan Daems (family owned and operated place of use), Timothy Combs (family owned and operated place of use and down gradient property), C. Bruce Combs (family owned and operated place of use and down gradient property), Chief Croy (lessee of place of use), Gary Gustin (family owned and operated place of use), and Tim Beardsley (lessee of place of use) to support their description of historic irrigation practices pre-July 1, 1973. Water was diverted through a headgate on the Madison River and conveyed by the Eikeland Ditch to the place of use. Water was then distributed throughout the property by lateral ditches, ponds, and dikes. The primary crops irrigated were pasture grass and hay crops; occasionally other food crops were irrigated. Livestock fed directly from the pasture grass in the fields and there were no hay cuttings. According to the affidavits water was distributed to every part of the pasture to meet the needs of freely grazing cattle.

16. The Applicants explain that the Eikeland Ditch headgate was historically opened by May 1st and remained fully opened until the end of the growing season on October 24th. The Montana

Water Court revised the period of use during reexamination to October 20th from October 24th; the period of use cannot extend past this date. The Department finds 172 days irrigated based on the period of use and the Applicants' description of historic irrigation practices.

17. The irrigation place of use is in Madison County, south of Ennis. Pursuant to the standard methodologies described in ARM 36.12.1902(10), the nearest and most representative weather station is in Ennis, at 4953 ft elevation. Evapotranspiration (ET) for Madison County at the Ennis weather station is 17.19 inches annually. The 1964-1973 Management Factor for Madison County is 65.2%. The irrigation method was wild flood irrigation, and the field did not receive improvements such as leveling or contouring. The Department selected an on-farm efficiency of 25% based on the practice of wild flood irrigation. A 2010 study of the historical place of use by Gateway Engineering concluded the cobbly soil and lack of field leveling led to an irrigation efficiency of no greater than 10%. The Department used its standard for wild flood irrigation because the report did not provide justification for a 10% on-farm efficiency; the figure appeared to be an assumed value and no further physical evidence of a lower on-farm efficiency was provided. The Department standard for wild flood irrigation (25% on-farm efficiency) is suited for situations such as these where no improvements to the land exist, such as leveling, and a variety of soil types exist. The Department selected an irrecoverable loss (IL) rate of 5%, which is standard for flood irrigation.

18. The Department calculated historic consumptive volume (HCV) according to the rules set forth in ARM 36.12.1902(16), using the following equations:

$$HCV_{minusIL,total} = ET * Management\ Factor * Historic\ Acres * \frac{1ft}{12in}$$

$$Field\ Applied\ Volume_{total} = \frac{HCV_{minusIL,total}}{On\text{-}farm\ Efficiency}$$

$$IL_{total} = Irrecoverable\ Loss\ Rate * Field\ Applied\ Volume_{total}$$

$$HCV_{total} = HCV_{minusIL,total} + IL_{total}$$

19. The Department attributed the historic consumptive volume to each water right based on the proportion of the total flow rate each water right represents. To do so, the Department used the following equations:

$$Flow\ Proportion_{41F\ 30114843} = \frac{Flow\ Rate_{41F\ 30114843}}{Flow\ Rate_{41F\ 30114843} + Flow\ Rate_{41F\ 30114845}}$$

$$Flow\ Proportion_{41F\ 30114845} = \frac{Flow\ Rate_{41F\ 30114845}}{Flow\ Rate_{41F\ 30114843} + Flow\ Rate_{41F\ 30114845}}$$

$$HCV_{minus\ IL,41F\ 30114843} = HCV_{minus\ IL,total} * Flow\ Proportion_{41F\ 30114843}$$
$$HCV_{minus\ IL,41F\ 30114845} = HCV_{minus\ IL,total} * Flow\ Proportion_{41F\ 30114845}$$

$$Field\ Applied\ Volume_{41F\ 30114843} = Field\ Applied\ Volume_{total} * Flow\ Proportion_{41F\ 30114843}$$
$$Field\ Applied\ Volume_{41F\ 30114845} = Field\ Applied\ Volume_{total} * Flow\ Proportion_{41F\ 30114845}$$

$$HCV_{41F\ 30114843} = HCV_{total} * Flow\ Proportion_{41F\ 30114843}$$
$$HCV_{41F\ 30114845} = HCV_{total} * Flow\ Proportion_{41F\ 30114845}$$

20. Table 2 summarizes the calculations for total historic consumptive volume, and Table 3 summarizes the calculations for historic consumptive volume attributed to each water right. The Department finds historic consumed volumes of 340.9 acre-feet (AF) and 355.1 AF for Claim Nos. 41F 30114843 and 41F 30114845, respectively.

Table 2. Total HCV for historic acres

HCV Total	ET (*inches*)	Management Factor *(%)*	Historic Acres	HCV minus IL *(AF)*	On-farm Efficiency (%)	Field Application (*AF*)	IL (*AF*)	**HCV (*AF*)**
Both WRs	17.19	65.2%	621	580.01	25%	2320.03	116.0	**696.0**

Table 3. HCV per water right for historic acres

HCV Per Water Right	Flow Rate	Flow Proportion	HCV minus IL *(AF)*	Field Application (*AF*)	**HCV (*AF*)**
41F 30114843	15.31	0.490	284.07	1136.27	**340.9**
41F 30114845	15.95	0.510	295.94	1183.77	**355.1**
	31.26				

21. The Department calculated historic diverted volume (HDV) pursuant to ARM 36.12.1902(10) and the Department's standard methodology (Roberts and Heffner, 2012). The Department used the following general equations to calculate HDV:

$$HDV_{41F\ 30114843} = \frac{HCV_{minusIL,41F\ 30114843}}{On\text{-}farm\ Efficiency} + (Flow\ Proportion_{41F\ 30114843} * Conveyance\ Loss_{Distributed})$$

$$HDV_{41F\ 30114845} = \frac{HCV_{minusIL,41F\ 30114845}}{On\text{-}farm\ Efficiency} + (Flow\ Proportion_{41F\ 30114845} * Conveyance\ Loss_{Distributed})$$

$$HDV_{Total} = HDV_{41F\ 30114843} + HDV_{41F\ 30114845}$$

22. Conveyance loss is the sum of seepage loss, vegetation loss, and ditch evaporation:

$$Conveyance\ Loss_{Distributed} = Seepage\ Loss_{Distributed} + Vegetation\ Loss_{Distributed} + Ditch\ Evaporation_{Distributed}$$

23. Claim No. 41F 30114843 has a multiple use relationship with stock Claim No. 41F 30122594 and provides all conveyance losses for stock Claim No. 41F 30122594 from 05/01 - 10/20. All conveyance losses for stock Claim No. 41F 30122594 from 10/21 – 04/30 are provided by Claim No. 41F 30122594. See Application to Change Water Right No. 41F 30147383 for more information on non-irrigation season conveyance losses.

24. The Department calculated historic conveyance loss between the historic point of diversion and the start of the historic place of use. The Department used ditch information supplied by the Applicants for the 2nd Application Amendment, which included an updated historic ditch map (revised Exhibit IR.2.C map transmitted to DNRC on June 16, 2022) and ditch measurements (revised Eikeland Ditch Measurements map, Exhibit B, transmitted to DNRC with 2nd Amendment to Application materials on June 26, 2022). The ditch dimensions come from field measurements taken by Trout Unlimited and River Design Group in the summer of 2015, follow-up measurements taken by DMS Natural Resources LLC (submitted to DNRC July 7, 2021), and

corrected measurements taken by contractor Pete Allhands (transmitted to DNRC with 2nd Amendment to Application materials on June 26, 2022).

25. The ditch system is highly complex, and information specific to individual ditch segments is limited. Applicants assert "water was allowed to flow freely across the landscape and form its own flow channels" (DMS Letter to Department dated July 26, 2022, "Re: Additional Information re Proposed Ditch Routes and Capacities, Change Application Nos. 41F 30147383 and 41F 30147856", p. 2). Ditch measurements are not available for the pre-1973 ditch system. Available ditch measurements are limited to 12 measurements of width and depth taken in 2015, 2021, and 2022. Ditch measurements are averaged if more than one exists for each down-ditch combination and assumed to represent an average for the down-ditch combination.

26. The Department distributed conveyance loss pursuant to the memo "Distributing Conveyance Loss on Multiple User Ditches" (Water Management Bureau, 2020). The Department calculated conveyance losses for the ditch segments by breaking them into 'down-ditch combinations', which account for all combinations of the water rights located downstream of the Applicants' place of use. The Department determined the down-ditch combination by assessing which places of use for the down-ditch water rights could be accessed from that ditch segment. For example, if water moving through a ditch segment only passes through the Sampson Investments/RLBH place of use and then terminates in the place of use for 41F 136420-00 and 41F 136421-00 (Peter & Kelly C. McLoughlin Revocable Living Trust), that ditch segment was given down-ditch combination #1. The Department used total flows for each water right in a down-ditch combination to determine the distribution proportion only. The Department is not asserting that the sum of the flow rates for each water right is conveyed in each down-ditch combination. The Department assumes water flows freely throughout the network of ditches and the total flow through the whole ditch network at any given time does not exceed the flow rate for all the water rights conveyed by the ditch network.

27. The Department created a list of all possible combinations of water rights that a ditch segment can convey (Table 4) and then assigned each ditch segment one of the "down-ditch combinations" (Figure 3). Down-ditch combinations remain the same for analyses. Water does not flow in all combinations in all analyses. For some analyses, the down-ditch combination will have a length of zero and will have no associated volume. The historic use analysis includes reaches assigned down-ditch combinations 1-5. The proposed use analysis includes reaches

assigned down-ditch combinations 1, 3, and 5. The historic carriage water analysis includes reaches assigned down-ditch combinations 1, 2, 3, 4, and 6. The proposed carriage water analysis includes reaches assigned down-ditch combinations 1, 3, and 4.

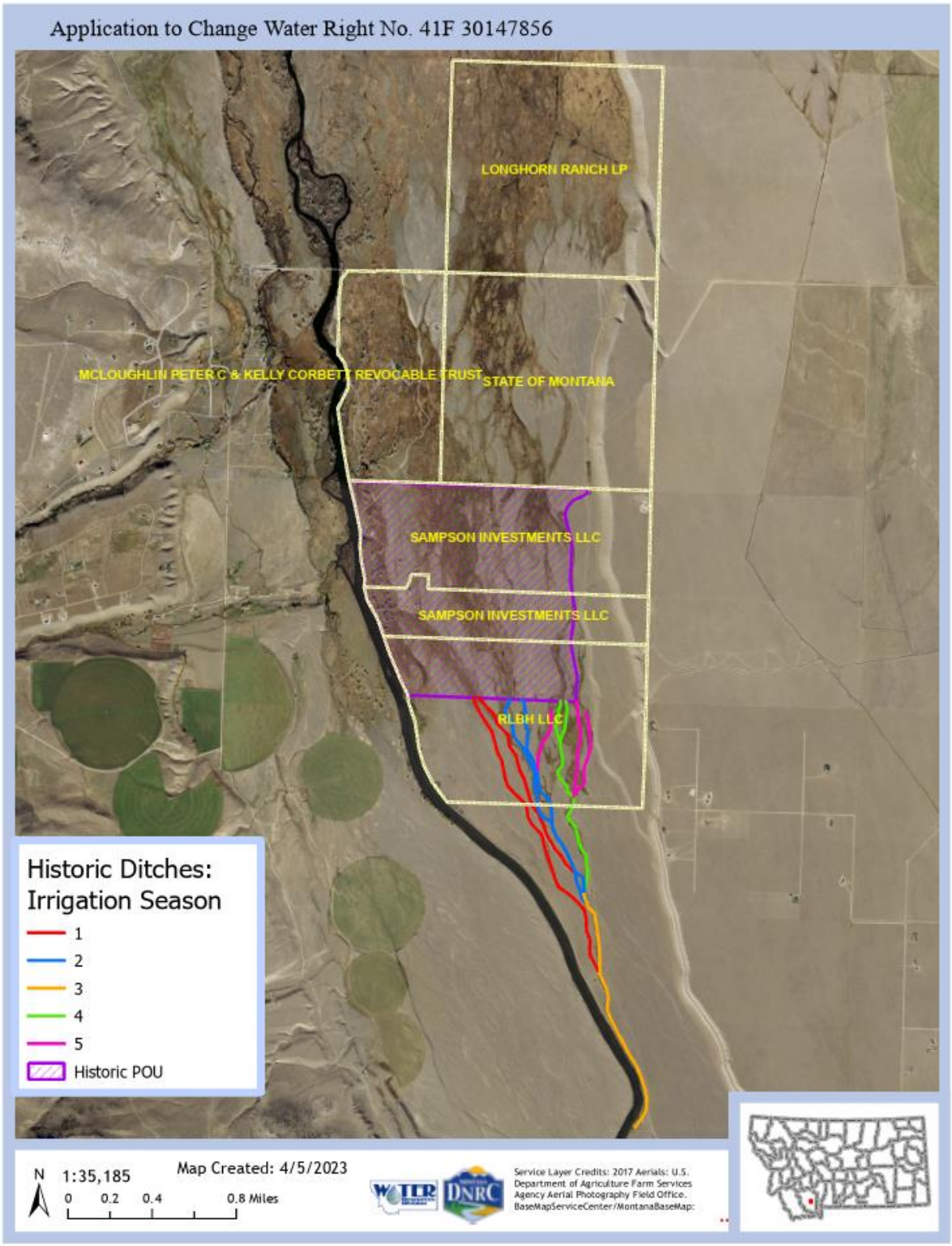
Table 4. List of down-ditch combinations

Down-ditch Combo	Water Right
1	41F 30114843, 41F 30114845: Sampson/RLBH
	41F 136420 00, 41F 136421 00: MCLOUGHLIN,PETER & KELLY C. REVOCABLE LIVING TRUST
2	41F 30114843, 41F 30114845: Sampson/RLBH
	41F 136420 00, 41F 136421 00: MCLOUGHLIN,PETER & KELLY C. REVOCABLE LIVING TRUST
	41F 30114842, 41F 30114844: MONTANA STATE BOARD OF LAND COMMISSIONERS
3	41F 30114843, 41F 30114845: Sampson/RLBH
	41F 136420 00, 41F 136421 00: MCLOUGHLIN,PETER & KELLY C. REVOCABLE LIVING TRUST
	41F 30114842, 41F 30114844: MONTANA STATE BOARD OF LAND COMMISSIONERS
	41F 8985 00: GRANGER RANCHES LP
4	41F 30114843, 41F 30114845: Sampson/RLBH
	41F 30114842, 41F 30114844: MONTANA STATE BOARD OF LAND COMMISSIONERS
	41F 8985 00: GRANGER RANCHES LP
5	41F 30114843, 41F 30114845: Sampson/RLBH
6	41F 30114843, 41F 30114845: Sampson/RLBH
	41F 30114842, 41F 30114844: MONTANA STATE BOARD OF LAND COMMISSIONERS

28. The Department calculated the distribution proportion for 41F 30114843 and 41F 30114845 using the following equation:

$$Distribution\ proportion_{Combo\ j} = \frac{Flow\ rate_{41F\ 30114843} + Flow\ rate_{41F\ 30114845}}{Flow\ rate_{All\ water\ rights\ in\ Combo\ j}}$$

Table 5 lists the water rights, flow rates, and distribution proportion for each Water Right Ditch Combination.


Application to Change Water Right No. 41F 30147856
LONGHORN RANCH LP
MCLOUGHLIN PETER C & KELLY CORBETT REVOCABLE TRUST
STATE OF MONTANA
SAMPSON INVESTMENTS LLC
SAMPSON INVESTMENTS LLC
RLBH LLC
Historic Ditches:
Irrigation Season
1
2
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0 0.2 0.4 0.8 Miles
Map Created: 4/5/2023
Service Layer Credits: 2017 Aerials: U.S. Department of Agriculture Farm Services Agency Aerial Photography Field Office. BaseMapServiceCenter/MontanaBaseMap:

Figure 3. Historic down-ditch combinations map. Granger Ranches LLC place of use in Sections 4 and 5 North and Northwest of Longhorn Ranch LP.

Table 5. Distribution proportions for each down-ditch combination

Down-ditch Combo	Water Right	Flow	Total Flow	Distribution Proportion
1	Sampson/RLBH: 41F 30114843, 41F 30114845	31.26		
	MCLOUGHLIN,PETER & KELLY C. REVOCABLE LIVING TRUST: 41F 136420 00, 41F 136421 00	7.64	38.9	0.804
2	Sampson/RLBH: 41F 30114843, 41F 30114845	31.26		
	MCLOUGHLIN,PETER & KELLY C. REVOCABLE LIVING TRUST: 41F 136420 00, 41F 136421 00	7.64		
	MONTANA STATE BOARD OF LAND COMMISSIONERS: 41F 30114842, 41F 30114844	10.09	48.99	0.638
3	Sampson/RLBH: 41F 30114843, 41F 30114845	31.26		
	MCLOUGHLIN,PETER & KELLY C. REVOCABLE LIVING TRUST: 41F 136420 00, 41F 136421 00	7.64		
	MONTANA STATE BOARD OF LAND COMMISSIONERS: 41F 30114842, 41F 30114844	10.09		
	GRANGER RANCHES LP: 41F 8985 00	30.13	79.12	0.395
4	Sampson/RLBH: 41F 30114843, 41F 30114845	31.26		
	MONTANA STATE BOARD OF LAND COMMISSIONERS: 41F 30114842, 41F 30114844	10.09		
	GRANGER RANCHES LP: 41F 8985 00	30.13	71.48	0.437
5	Sampson/RLBH: 41F 30114843, 41F 30114845	31.26	31.26	1.000
6	Sampson/RLBH: 41F 30114843, 41F 30114845	31.26		
	MONTANA STATE BOARD OF LAND COMMISSIONERS: 41F 30114842, 41F 30114844	10.09	41.35	0.756

29. The Department calculated seepage loss with the following equation:

$$Seepage\ Loss_{Distributed} = \sum_{j=1}^{6} Wetted\ Perimeter * Ditch\ Length_{\text{Combo j}} * Seepage\ Loss\ Rate * Days\ Irrigated * \frac{1\ acre}{43560\ ft^2} * Distribution\ Proportion_{\text{Combo j}}$$

30. The Department calculated wetted perimeter for each down-ditch combination using Manning's equation. For bottom base width, the Department averaged the ditch width measurements provided for each down-ditch combination (Table 6).

Table 6. Down-ditch combination widths

Down-ditch combo	Measured Width (in)	Average Width (in)	Avgerage Width (ft)
1	25	17.00	**1.42**
	9		
2	141	98.67	**8.22**
	17		
	138		
3	156	156.00	**13.00**
4	99	41.67	**3.47**
	15		
	11		
5	178	79.67	**6.64**
	28		
	33		
6	n/a	n/a	n/a

Using Google Earth Pro, the Department confirmed the ditch slope provided by the Applicants, 0.0014 ft/ft. The Department used the Gaukler-Manning Coefficient, 0.0335 sec/ft$^{1/3}$, and flow depth, 1.7 ft, provided by the Applicants (Application IR.3.E). The Department used ArcGIS Pro 2.7.1 to georeference the map of Eikeland Ditch (revised Exhibit IR.2.C map) transmitted to DNRC by DMS on June 16, 2022. The Department then used ArcGIS Pro 2.7.1 to determine the length of the down-ditch combinations between the historic point of diversion and the historic place of use. The Department assigned a ditch loss rate of 1.8 ft^3/ft^2/day, typical for the Scravo very cobbly sandy loam soil type characteristic of area below Eikeland ditch (Soil Conservation Service, Web Soil Survey). Days irrigated equaled the period of use as changed by reexamination, based on the Applicants' assertion irrigation occurred continuously during the period of use. The

Department multiplied total seepage loss by distribution proportion to calculate distributed seepage loss. The following table summarizes these calculations:

Table 7. Historic Seepage Loss

Seepage Loss:	Wetted Perimeter (Feet)	Ditch Length *(Feet)*	Ditch Loss Rate (ft3/ft2/day)	Days Irrigated	Seepage Loss *(AF)*	Distribution Proportion	Dist. Seepage Loss (*AF*)
Total		**41330**			**2721.35**		**1727.44**
Combo 1	4.82	12949	1.8	172	443.60	0.804	356.48
Combo 2	11.62	9636	1.8	172	795.82	0.638	507.81
Combo 3	16.4	6326	1.8	172	737.37	0.395	291.33
Combo 4	6.87	6287	1.8	172	306.98	0.437	134.25
Combo 5	10.04	6132	1.8	172	437.57	1.000	437.57
Combo 6	0	0	1.8	172	0.00	0.756	0.00

31. The Department calculated vegetation loss with the following equation:

$$Vegetation\ Loss_{Distributed} = \sum_{j=1}^{6} Vegetation\ Loss\ Rate * \left(\frac{Ditch\ Capcity\ at\ Headgate}{Down\ Ditch\ Combinations}\right) * Days\ Irrigated * Ditch\ Length * 2 * Distribution\ Proportion_{\text{Combo j}}$$

The vegetation loss rate is the standard of 0.75% loss per mile (NEH standard, 1993). To determine the estimated flow rate, the Department evenly divided the ditch capacity by the number of non-zero length ditch combinations. The method used by the Department to determine the following factors is described above: ditch length, days irrigated, and distribution proportion. The following table summarizes these calculations:

Table 8. Vegetation Loss Rate

Vegetation Loss:	Loss Rate	Ditch Capacity at Headgate (*CFS*)	# Ditch Combos	Est. Flow Rate *(CFS)*	Days Irrigated	Ditch Length *(miles)*	Vegetation Loss (*AF*)	Distribution Proportion	Dist. Vegetation Loss (*AF*)
Total						**7.8**	**304.95**		**206.12**
Combo 1	0.0075	75.5	5	15.1	172	2.5	95.54	0.804	76.78
Combo 2	0.0075	75.5	5	15.1	172	1.8	71.10	0.638	45.37
Combo 3	0.0075	75.5	5	15.1	172	1.2	46.68	0.395	18.44
Combo 4	0.0075	75.5	5	15.1	172	1.2	46.39	0.437	20.29
Combo 5	0.0075	75.5	5	15.1	172	1.2	45.24	1.000	45.24

32. The Department calculated ditch evaporation with the following equation:

$$Ditch\ Evaporation = \sum_{j=1}^{6} Ditch\ Width * Ditch\ Length_{\text{Combo j}} * \left(Annual\ Evaporation * \frac{\text{Days Irrigated}}{210}\right) * \frac{1\ acre}{43560\ ft^2} * Distribution\ Proportion_{\text{Combo j}}$$

Ditch width is the average of the measurements for each down-ditch combination DMS Natural Resources provided to DNRC on July 7, 2021. The Department measured ditch length with a georeferenced map of ditch segments provided by the Applicants using ArcGIS Pro 2.7.1. Annual evaporation, 3.48 AF, is for Ennis, the closest and most representative weather station evaluated by Potts (1998). The Department adjusted annual evaporation for the period of irrigation, 172 days. The Department multiplied total ditch evaporation by the distribution proportion to calculate distributed ditch evaporation. The following table summarizes these calculations.

Table 9. Ditch evaporation

Ditch Evaporation:	Ditch Width *(Feet)*	Ditch Length *(Feet)*	Annual Evaporation *(Potts)*	Period Adjusted Evaporation *(AF)*	Ditch Evaporation *(AF)*	Distribution Proportion	Dist. Ditch Evaporation *(AF)*
Total		**41330**			**15.86**		**9.69**
Combo 1	1.42	12949	3.48	2.85	1.20	0.804	0.97
Combo 2	8.22	9636	3.48	2.85	5.18	0.638	3.31
Combo 3	13	6326	3.48	2.85	5.38	0.395	2.13
Combo 4	3.47	6287	3.48	2.85	1.43	0.437	0.62
Combo 5	6.64	6132	3.48	2.85	2.66	1.000	2.66

33. The following tables summarize the HDV calculations.

Table 10. Total HDV

HDV	**HCV minus IL (AF)**	**On-farm Efficiency (%)**	**Distributed Seasonal Conveyance Loss (AF)**	**Distributed HDV (AF)**
Total	580.01	25	1943.25	4263.3

Table 11. HDV by water right

Water Right	HCV minus IL (AF)	On-farm Efficiency (%)	Flow Rate (CFS)	Flow Proporation	Distributed Seasonal Conveyance Loss (AF)	Distributed HDV (AF)
41F 30114843	284.07	25%	15.31	0.49	951.73	2088.0
41F 30114845	295.94	25%	15.95	0.51	991.52	2175.3

34. The Department finds the following historic use for Claim Nos. 41F 30114843 and 41F 30114845 (Table 12):

Table 12. Historic use

WR Claim #	Priority Date	Diverted Volume (AF)	Flow Rate (CFS)	Purpose (Total Acres)	Consumptive Use (AF)	Place of Use	Point of Diversion
41F 30114843	08/18/ 1947	2088.0	15.31	621	340.9	E2 Sec. 20, E2 Sec. 21, W2 Sec. 21; all in T7S R1W, Madison Co.	SESESE Sec. 33, T7S R1W, Madison Co.
41F 30114845	08/18/ 1947	2175.3	15.95	621	355.1	E2 Sec. 20, E2 Sec. 21, W2 Sec. 21; all in T7S R1W, Madison Co.	SESESE Sec. 33, T7S R1W, Madison Co.

FINDINGS OF FACT – Adverse Effect

35. When Water Right Nos. 41F 30114843 and 41F 30114845 are changed, a new point of diversion will be added in the Madison River at NESENE of Section 29, T07S R01W, Madison County. The additional point of diversion will divert water into a new ditch that is 6142 feet in length and 20 CFS in capacity. The place of use, period of use, period of diversion, and purpose will remain unchanged. The two ditches will be used in combination, but the flow rate running through each ditch will be adjusted to ensure the historic flow rates of 41F 30114843 and 41F 30114845 are not exceeded. The Applicants will retire 7968 feet of historic Eikeland Ditch segments to prevent expansion of the historic diverted volume. The Applicants will ensure down-ditch Claim Nos. 41F 136420-00, 41F 136421-00, 41F 30114842, and 41F 30114844 receive carriage water, where applicable (Application IR.1.D and IR.4.B).

36. No diversions from the Madison River are located between the historic and new points of diversion. The Montana Department of Fish Wildlife and Parks (FWP) has four instream flow

reservations in the Madison River. The Applicants explain that the instream flow reservations will not experience adverse effect because the water will stay in the river longer before being diverted, and the proposed diverted volumes and flow rates will not exceed the historic diverted volumes or flow rates. The Department finds that FWP's instream flow reservations will not be adversely affected by the proposed change.

37. The proposed consumptive volume (PCV) is equal to the HCV because no changes are proposed to the historic place of use. The PCV is 340.9 AF for 41F 30114843 and 355.1 AF for 41F 30114845.

38. The Department calculated proposed diverted volume (PDV) pursuant to ARM 36.12.1902(10) and the Department's standard methodology (Roberts and Heffner, 2012), with the following equations:

$$PDV_{41F\ 30114843} = \frac{PCV_{minusIL,41F\ 30114843}}{On\text{-}farm\ Efficiency} + (Flow\ Proportion_{41F\ 30114843} * Conveyance\ Loss_{Distributed})$$

$$PDV_{41F\ 30114845} = \frac{PCV_{minusIL,41F\ 30114845}}{On\text{-}farm\ Efficiency} + (Flow\ Proportion_{41F\ 30114845} * Conveyance\ Loss_{Distributed})$$

39. The Department determined the PDV using the historic use analysis, best available information regarding the Eikeland Ditch, and information about the proposed additional point of diversion and new ditch submitted by the Applicants. The PDV is the sum of the post-change field application volume and post-change conveyance losses. The Department distributed conveyance losses using the same methods as for HDV, based on the Department's memorandum 'Distributing Conveyance Loss on Multiple User Ditches' (Heffner, 2020). The Department assigned down-ditch combinations using the same methods as for historic ditches, see Figure 4 for an overview of down-ditch combinations for the proposed ditches. Only three, rather than five, down-ditch combinations exist for the post-change use of the Eikeland Ditch system. The down-ditch combinations retained the same numbers and water rights as for historic uses, but only down-ditch combinations 1, 3, and 5 have ditch lengths associated with the proposed use. The

distribution proportions for the down-ditch combinations and on-farm efficiency remain unchanged.

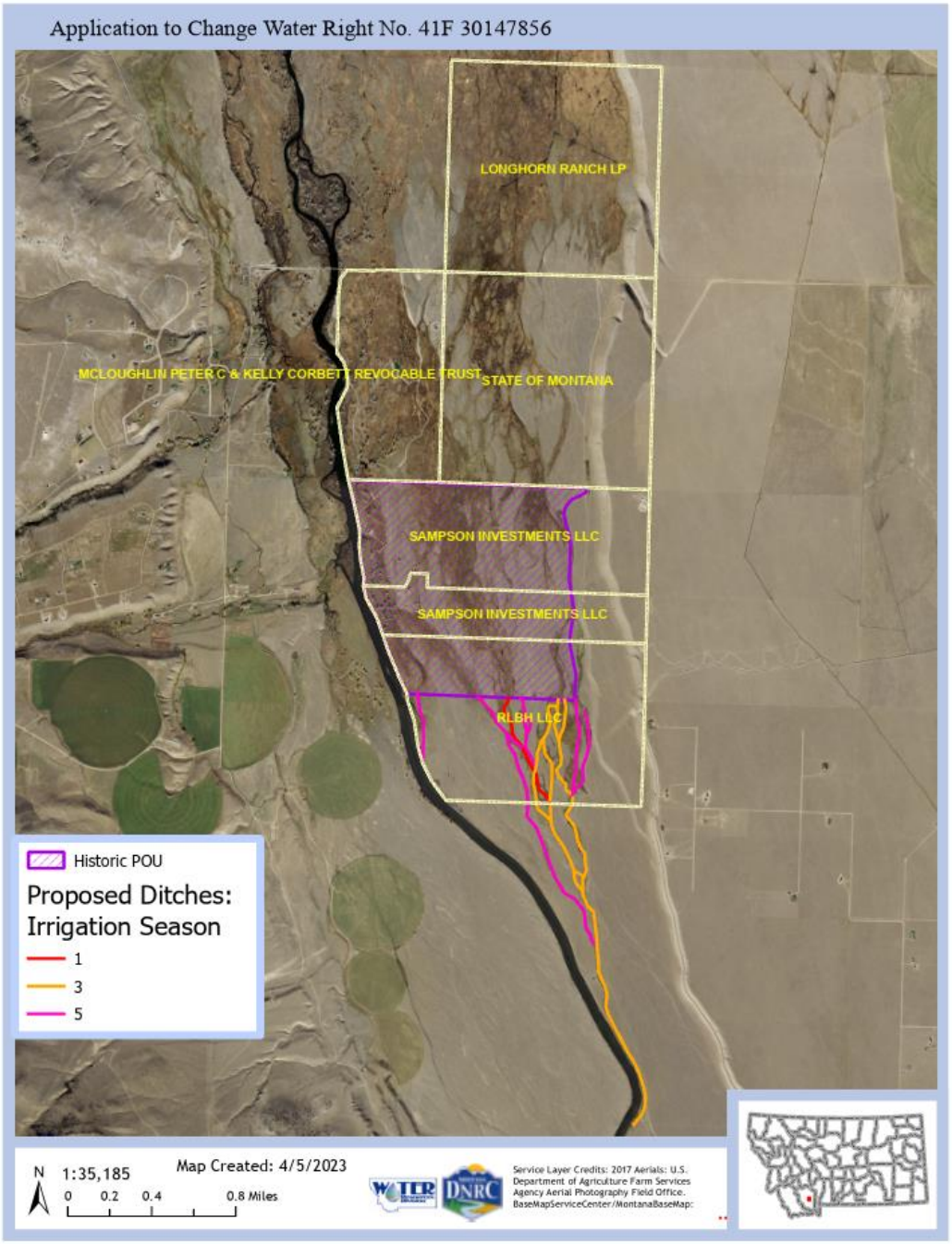


Figure 4. Proposed down-ditch combinations. Granger Ranches LLC place of use in Sections 4 and 5 North and Northwest of Longhorn Ranch LP.

40. The Department calculated conveyance loss with the same general methods as for historic use, with the following equation:

$$Conveyance\ Loss_{Distributed} = Seepage\ Loss_{Distributed} + Vegetation\ Loss_{Distributed} + Ditch\ Evaporation_{Distributed}$$

41. The formula for proposed seepage loss is equal to that for historic seepage loss:

$$Seepage\ Loss_{Distributed} = \sum_{j=1}^{6} Wetted\ Perimeter * Ditch\ Length_{\text{Combo j}} * Seepage\ Loss\ Rate * Days\ Irrigated * \frac{1\ acre}{43560\ ft^2} * Distribution\ Proportion_{\text{Combo j}}$$

The Department recalculated wetted perimeter with the same parameters as for historic use, apart from updated channel widths. To update channel widths, the Department assigned the available ditch measurements to the appropriate down-ditch combination. The Department incorporated the proposed ditch into down-ditch combination 5. The proposed ditch width, 5 feet, was averaged with the other ditch widths for down-ditch combination 5. The Department georeferenced the proposed use map in ArcGIS Pro 2.7.1 to recalculate the ditch lengths. The seepage loss rate, days irrigated, and distribution proportions remain unchanged. The following table summarizes the proposed distributed seepage loss calculation:

Table 13. Proposed seepage loss

Seepage Loss:	Ditch Wetted Perimeter (Feet)	Ditch Length *(Feet)*	Ditch Loss Rate (ft3/ft2/day)	Days Irrigated	Seepage Loss *(AF)*	Distribution Proportion	Dist. Seepage Loss *(AF)*
Total		**39504**			**2673.16**		**1593.80**
Combo 1	14.9	3040	1.8	172	321.94	0.804	258.71
Combo 2	0	0	1.8	172	0.00	0.638	0.00
Combo 3	11.73	20149	1.8	172	1679.83	0.395	663.69
Combo 4	0	0	1.8	172	0.00	0.437	0.00
Combo 5	5.79	16315	1.8	172	671.40	1.000	671.40

42. The Department calculated proposed vegetation loss with a formula equal to historic vegetation loss:

$$Vegetation\ Loss_{Distributed} = \sum_{j=1}^{6} Vegetation\ Loss\ Rate * Flow\ Rate * Days\ Irrigated * Ditch\ Length * 2 * Distribution\ Proportion_{\text{Combo j}}$$

Vegetation loss rate, days irrigated, and distribution proportion remain unchanged. The Department recalculated flow rate assuming three non-zero length down-ditch combinations, rather than five, and calculated a flow rate of 25.17 CFS. The method to determine ditch length is described in FOF 30. Table 14 summarizes the results of the proposed vegetation loss calculation:

Table 14. Proposed vegetation loss

Vegetation Loss:	Loss Rate	Ditch Capacity at Headgate (*CFS*)	# Ditch Combos	Est. Flow Rate (*CFS*)	Days Irrigated	Ditch Length (*miles*)	Vegetation Loss (*AF*)	Distribution Proportion	Dist. Vegetation Loss (*AF*)
Total						**7.5**	**485.79**		**328.57**
Combo 1	0.0075	75.5	3	25.17	172	0.6	37.38	0.804	30.04
Combo 2	0.0075	75.5	3	25.17	172	0.0	0.00	0.638	0.00
Combo 3	0.0075	75.5	3	25.17	172	3.8	247.78	0.395	97.90
Combo 4	0.0075	75.5	3	25.17	172	0.0	0.00	0.437	0.00
Combo 5	0.0075	75.5	3	25.17	172	3.1	200.63	1.000	200.63

43. The Department calculated proposed ditch evaporation using the following equation:

$$Ditch\ Evaporation = \sum_{j=1}^{6} Ditch\ Width * Ditch\ Length_{\text{Combo j}} * \left(Annual\ Evaporation * \frac{\text{Days Irrigated}}{210}\right) * \frac{1\ acre}{43560\ ft^2} * Distribution\ Proportion_{\text{Combo j}}$$

The methods to recalculate ditch width and ditch length for the proposed use are described in FOF 41. The number of days irrigated, period adjusted evaporation, and distribution proportion remain unchanged. The following table summarizes the proposed ditch evaporation calculation:

Table 15. Proposed ditch evaporation

Ditch Evaporation:	Ditch Width *(Feet)*	Ditch Length *(Feet)*	Annual Evaporation *(Potts)*	Period Adjusted Evaporation (*AF*)	Ditch Evaporation (*AF*)	Distribution Proportion	Dist. Ditch Evaporation (*AF*)
Total		**39504**			**15.82**		**8.73**
Combo 1	11.5	3040	3.48	2.85	2.29	0.804	1.84
Combo 2	0.0	0	3.48	2.85	0.00	0.638	0.00
Combo 3	8.3	20149	3.48	2.85	10.98	0.395	4.34
Combo 4	0.0	0	3.48	2.85	0.00	0.437	0.00
Combo 5	2.4	16315	3.48	2.85	2.55	1.000	2.55

44. The following tables summarize the PDV calculations:

Table 16. Total PDV

PDV	**PCV minus IL (AF)**	**On-farm Efficiency (%)**	**Distributed Seasonal Conveyance Loss (AF)**	**Distributed PDV (AF)**
Total	580.01	25	1931.10	4251.1

Table 17. PDV for each water right

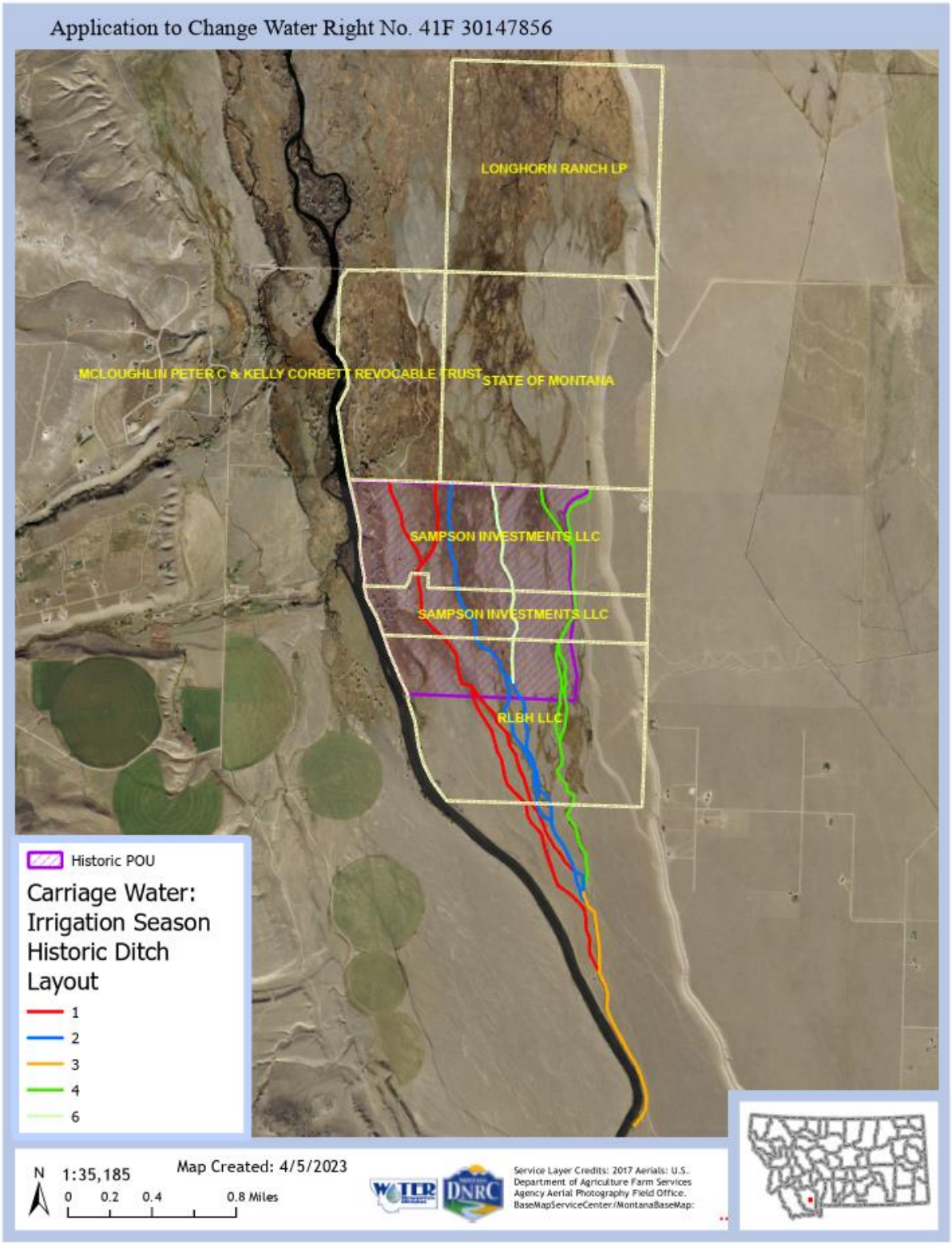
Water Right	**PCV minus IL (AF)**	**On-farm Efficiency (%)**	**Flow Rate (CFS)**	**Flow Proporation**	**Distributed Seasonal Conveyance Loss (AF)**	**Distributed PDV (AF)**
41F 30114843	284.07	25%	15.31	0.490	945.78	2082.0
41F 30114845	295.94	25%	15.95	0.510	985.32	2169.1

45. The post-change consumptive use is equal to the historic consumptive use. The diverted volume for the proposed use, 4251.1 AF (2082.0 AF for 41F 30114843 and 2169.1 AF for 41F 30114845) is less than the diverted volume for the historic use, 4263.3 AF (2088.0 AF for 41F 30114843 and 2175.3 AF for 41F 30114845). The Department finds the proposed uses will have consumptive and diverted volumes that will not exceed historical values.

46. Water Right Nos. 41F 30114843 and 41F 30114845 have an obligation to provide continued carriage water for the water rights that were part of the 2018 split, which include: 41F 136420-00 and 41F 136421-00 (Peter & Kelly C. McLoughlin Revocable Living Trust) and 41F 30114842 and 41F 30114844 (Montana State Board of Land Commissioners) (see FOF 2). Carriage water for down-ditch water users during the irrigation season consists of the distributed conveyance losses for every ditch that conveys water from the point of diversion to the down-ditch edge of the Applicants' historic place of use. To determine if carriage water under proposed

practices is sufficient to prevent adverse effects, the Department calculated carriage water under historic practices and under proposed practices and compared the two. If the carriage water requirement under the proposed practices is less than that of the historic practices, and if the ditches can convey this amount of water, then the Department will determine the carriage water requirement is met.

47. The Department calculated the historic and proposed carriage water requirements using the same formulas and methods described above for calculating distributed conveyance losses. Carriage water calculations extend from the point of diversion to the northern boundary between the Applicants' property and the down-ditch users. Any ditch segment that terminates on the Applicants' property is not included in carriage water calculations. The Department assigned down-ditch combinations with the same methods as previously described and found five non-zero length down-ditch combinations for historic carriage water (Figure 5). The Department recalculated the ditch length and ditch width with the methods described above.


Application to Change Water Right No. 41F 30147856
LONGHORN RANCH LP
MCLOUGHLIN PETER C & KELLY CORBETT REVOCABLE TRUST
STATE OF MONTANA
SAMPSON INVESTMENTS LLC
SAMPSON INVESTMENTS LLC
RLBH LLC
Historic POU
Carriage Water: Irrigation Season Historic Ditch Layout
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Map Created: 4/5/2023
Service Layer Credits: 2017 Aerials: U.S. Department of Agriculture Farm Services Agency Aerial Photography Field Office. BaseMapServiceCenter/MontanaBaseMap:

Figure 5. Historic carriage water for historic uses. Granger Ranches LLC place of use in Sections 4 and 5 North and Northwest of Longhorn Ranch LP.

48. The following tables summarize the historic carriage water calculations:

Table 18. Seepage component of historic carriage water

Seepage Loss:	Ditch Wetted Perimeter (Feet)	Ditch Length *(Feet)*	Ditch Loss Rate (ft3/ft2/day)	Days Irrigated	Seepage Loss *(AF)*	Distribution Proportion	Dist. Seepage Loss *(AF)*
Total		64452			3684.33		**2161.53**
Combo 1	4.82	21506	1.8	172	736.75	0.804	**592.05**
Combo 2	11.39	16248	1.8	172	1315.34	0.638	**839.30**
Combo 3	16.4	6330	1.8	172	737.84	0.395	**291.52**
Combo 4	6.87	15264	1.8	172	745.31	0.437	**325.94**
Combo 5	0	0	1.8	172	0.00	1.000	**0.00**
Combo 6	4.11	5104	1.8	172	149.10	0.756	**112.71**

Table 19. Vegetation loss component of historic carriage water

Vegetation Loss:	Loss Rate	Ditch Capacity at Headgate *(CFS)*	# Ditch Combos	Est. Flow Rate *(CFS)*	Days Irrigated	Ditch Length *(miles)*	Vegetation Loss *(AF)*	Distribution Proportion	Dist. Vegetation Loss *(AF)*
Total						12.21	475.55		300.19
Combo 1	0.0075	75.5	5	15.1	172	4.07	158.68	0.804	127.52
Combo 2	0.0075	75.5	5	15.1	172	3.08	119.88	0.638	76.50
Combo 3	0.0075	75.5	5	15.1	172	1.20	46.71	0.395	18.45
Combo 4	0.0075	75.5	5	15.1	172	2.89	112.62	0.437	49.25
Combo 5	0.0075	75.5	5	15.1	172	0.00	0.00	1.000	0.00
Combo 6	0.0075	75.5	5	15.1	172	0.97	37.66	0.756	28.47

Table 20. Ditch evaporation component of historic carriage water

Ditch Evaporation:	Ditch Width *(Feet)*	Ditch Length *(Feet)*	Annual Evaporation *(Potts)*	Period Adjusted Evaporation *(AF)*	Ditch Evaporation *(AF)*	Distribution Proportion	Dist. Ditch Evaporation *(AF)*
Total		64452			19.58		10.85
Combo 1	1.42	21506	3.48	2.85	2.00	0.804	1.61
Combo 2	7.99	16248	3.48	2.85	8.49	0.638	5.42
Combo 3	13	6330	3.48	2.85	5.38	0.395	2.13
Combo 4	3.47	15264	3.48	2.85	3.47	0.437	1.52
Combo 5	0	0	3.48	2.85	0.00	1.000	0.00
Combo 6	0.71	5104	3.48	2.85	0.24	0.756	0.18

Table 21. Historic carriage water

Historic Carriage Water	Flow Rate (CFS)	Proportion Flow Rate	**Historic Carriage Water (AF)**
Total	31.26	1.00	2472.56
41F 30114843	15.31	0.490	1210.97
41F 30114845	15.95	0.510	1261.59

49. To determine carriage water for the proposed use, the Department assigned down-ditch combinations with the same methods as previously described and found three non-zero length down-ditch combinations (Figure 6). The Department recalculated the ditch length and ditch width with the methods described above.

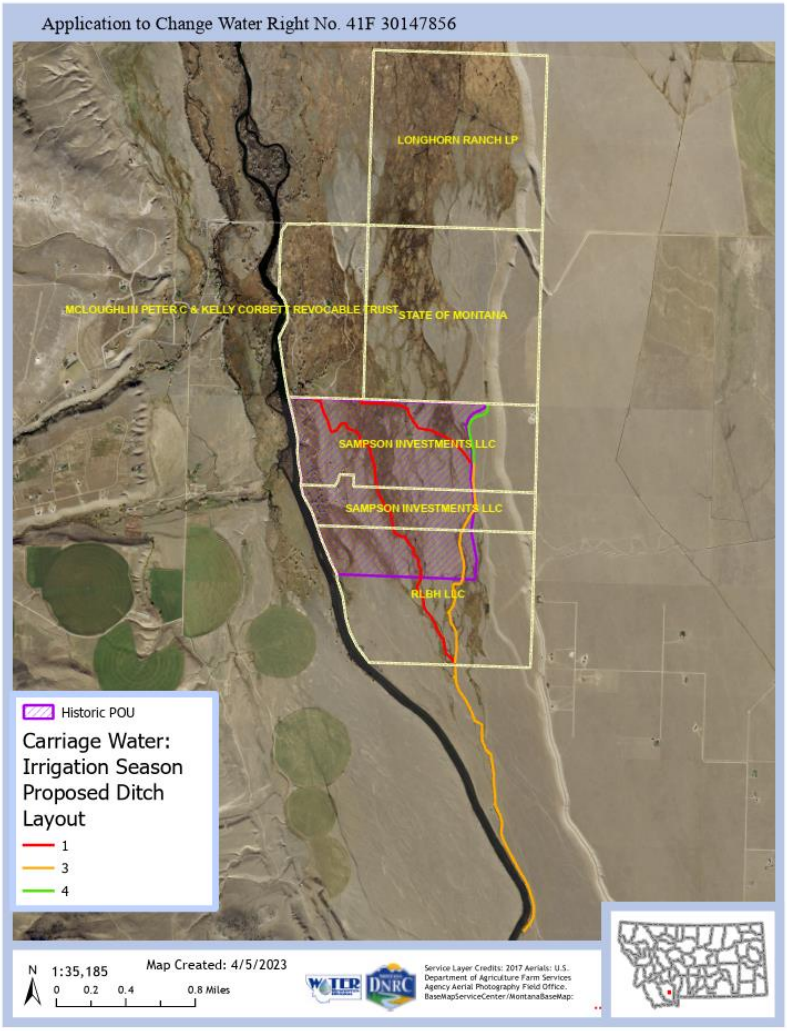

Figure 6. Proposed carriage water down-ditch combinations. Granger Ranches LLC place of use in Sections 4 and 5 North and Northwest of Longhorn Ranch LP.

50. The following tables summarize the proposed carriage water calculations:

Table 22. Seepage component of proposed carriage water

Seepage Loss:	Ditch Wetted Perimeter (*Feet*)	Ditch Length *(Feet)*	Ditch Loss Rate (ft3/ft2/day)	Days Irrigated	Seepage Loss *(AF)*	Distribution Proportion	Dist. Seepage Loss (*AF*)
Total		32304			3274.73		**1940.21**
Combo 1	14.9	14784	1.8	172	1565.64	0.804	**1258.14**
Combo 2	0	0	1.8	172	0.00	0.638	**0.00**
Combo 3	14.12	15424	1.8	172	1547.91	0.395	**611.57**
Combo 4	10.82	2096	1.8	172	161.19	0.437	**70.49**
Combo 5	0	0	1.8	172	0.00	1.000	**0.00**
Combo 6	0	0	1.8	172	0.00	0.756	**0.00**

Table 23. Vegetation loss component of proposed carriage water

Vegetation Loss:	Loss Rate	Ditch Capacity at Headgate (*CFS*)	# Ditch Combos	Est. Flow Rate *(CFS)*	Days Irrigated	Ditch Length *(miles)*	Vegetation Loss (*AF*)	Distribution Proportion	Dist. Vegetation Loss (*AF*)
Total						6.12	397.25		**232.31**
Combo 1	0.0075	75.5	3	25.2	172	2.80	181.80	0.804	**146.10**
Combo 2	0.0075	75.5	3	25.2	172	0.00	0.00	0.638	**0.00**
Combo 3	0.0075	75.5	3	25.2	172	2.92	189.67	0.395	**74.94**
Combo 4	0.0075	75.5	3	25.2	172	0.40	25.78	0.437	**11.27**
Combo 5	0.0075	75.5	3	25.2	172	0.00	0.00	1.000	**0.00**
Combo 6	0.0075	75.5	3	25.2	172	0.00	0.00	0.756	**0.00**

Table 24. Ditch evaporation component of proposed carriage water

Ditch Evaporation:	Ditch Width *(Feet)*	Ditch Length *(Feet)*	Annual Evaporation *(Potts)*	Period Adjusted Evaporation (*AF*)	Ditch Evaporation (*AF*)	Distribution Proportion	Dist. Ditch Evaporation (*AF*)
Total		32304			22.96		13.66
Combo 1	11.5	14784	3.48	2.85	11.12	0.804	8.94
Combo 2	0	0	3.48	2.85	0.00	0.638	0.00
Combo 3	10.72	15424	3.48	2.85	10.82	0.395	4.27
Combo 4	7.42	2096	3.48	2.85	1.02	0.437	0.45
Combo 5	0	0	3.48	2.85	0.00	1.000	0.00
Combo 6	0	0	3.48	2.85	0.00	0.756	0.00

Table 25. Proposed carriage water

Proposed Carriage Water:	Flow Rate	Proportion Flow Rate	**Proposed Carriage Water (AF)**
Total	31.26	1.00	2186.18
41F 30114843	15.31	0.490	1070.71
41F 30114845	15.95	0.510	1115.47

51. Based on the analysis provided in FOF Nos. 46 – 49, the carriage water associated with the historic practices, 2472.56 AF (1210.97 AF for 41F 30114843 and 1261.59 AF for 41F 30114845) is greater than the carriage water associated with proposed practices, 2186.18 AF (1070.71 AF for 41F 30114843 and 1115.47 AF for 41F 30114845) associated with historical practices.

52. The Applicants state the headgate to Eikeland Ditch is opened at the beginning of the irrigation season and stays open during the duration of the season. Assuming the historic Eikeland Ditch system operated at a continuous 31.26 CFS throughout the 172-day irrigation season, a volume of 10664.7 AF of water moves though historic ditch system. The sum of the distributed carriage water for the historic ditches (2472.6 AF) and the consumptive use for irrigation of 621 acres (696.0 AF) is 3186.6 AF, which is less than the amount of water that could be diverted (3168.6 AF compared to 10664.7 AF). Assuming the proposed ditch operates a maximum of 20 CFS during the irrigation season, 11.26 CFS is available to move through the remaining Eikeland Ditch segments for carriage water (31.26 CFS – 20 CFS = 11.26 CFS). Water left in the Eikeland Ditch at a continuous rate of 11.26 CFS throughout the 172-day irrigation season produces a volume of 3841.5 AF. The distributed carriage water requirement for the proposed use is 2186.2 AF. The sum of the distributed carriage water requirement for proposed ditches (2186.2 AF) and the consumptive use for irrigation of 621 acres (696.0 AF) is 2882.2 AF, which is less than 3841.5 AF.

53. The Department calculated the capacity of the Eikeland Ditch segments conveying post-change carriage water to the down-ditch users. The western carriage water ditch is 11’6” wide and the eastern carriage water ditch is 14’10” wide (Figure 7). The Department evenly divided the width of the eastern carriage water ditch, which splits before the Applicants’ northern property boundary. Using the same parameters as for conveyance loss, with updated widths, the

Department determined with Manning's Equation that the capacity of the western carriage water ditch is 38.89 CFS and that the capacity of the eastern carriage water ditch is 23.19 CFS on each side. The Applicants' carriage water requirement for the proposed use, 2186.2 AF, is equal to 6.41 CFS.

54. The Department finds the ditches conveying carriage water to the down-ditch users are adequately sized to convey the needed flow rate and volume to meet Applicant's carriage water requirements.

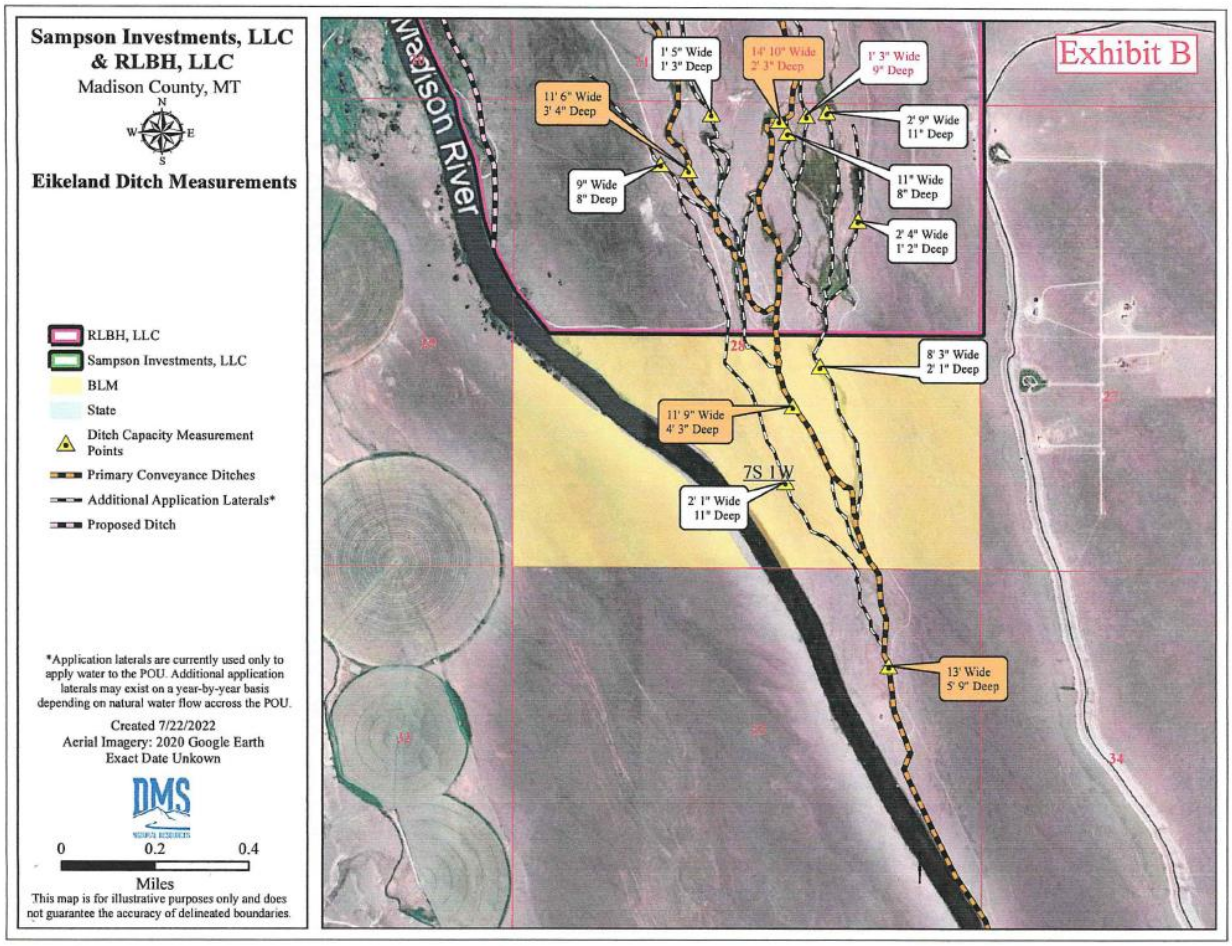

Figure 7. Eikeland ditch measurements, 2nd amendment

55. The Applicants submitted three affidavits with the materials for the 2nd application amendment that corroborate the Applicants' explanation that the proposed changes to the Eikeland Ditch will not cause adverse effect to down-ditch users. The affidavits were written by the managing partner of Granger Ranches, the owners of the Peter C. and Kelly Corbett

McLoughlin Revocable Trust, and an individual under agreement with Applicants to graze horses in the historic place of use and in the State of Montana parcel to the north. Each affidavit says the proposed changes make the ditch system more efficient, which makes it easier to move water around to the different ditch users.

56. The Applicants do not propose to measure the water rights because they have never been subject to a call and explain they can prevent diverting more water than historic practices through their operations. The Applicants explain each point of diversion has a headgate that can be adjusted, which will allow the Applicants to reduce flows to ensure the historic diverted flow rate is not exceeded. The Department determines a measurement condition is needed to meet the adverse effect criteria. The capacity of the new ditch is greater than what can be diverted by the new ditch without adversely affecting down-ditch water rights from insufficient carriage water.

57. Water Right Nos. 41F 30114843 and 41F 30114845 are currently in use and no known period of non-use exists. After this change the maximum flow rates that will be diverted with the two water rights being changed into the Eikeland Ditch headgate and the new point of diversion, respectively will not to exceed a maximum aggregate flow rate of 31.26 CFS. To ensure the post-change use of water with the claims being changed do not exceed historical amounts, this change authorization will be subject to the following measurement condition:

<u>WATER MEASUREMENT REQUIRED</u>

> IN AGGREGATE THE MAXIMUM FLOW RATE THAT MAY BE DIVERTED FROM MADISON RIVER WITH WATER RIGHT NO. 41F 30114843 IS 15.31 CFS AND 41F 30114845 IS 15.95 CFS FROM 05/01 TO 10/20. IN AGGREGATE THE MAXIMUM VOLUME THAT MAY BE DIVERTED FROM MADISON RIVER WITH WATER RIGHT NO. 41F 30114843 IS 2082.1 AF ANNUALLY AND WITH WATER RIGHT NO. 41F 30114845 IS 2169.1 AF ANNUALLY. ON A FORM APPROVED BY THE DEPARTMENT, THE APPROPRIATOR SHALL KEEP A WRITTEN RECORD OF THE FLOW RATE AND VOLUME OF ALL WATER DIVERTED AT BOTH POINTS OF DIVERSION, INCLUDING THE PERIOD OF TIME. RECORDS SHALL BE SUBMITTED BY JANUARY 31ST OF EACH YEAR. FAILURE TO SUBMIT REPORTS MAY BE CAUSE FOR REVOCATION OF THIS CHANGE. THE RECORDS MUST BE SENT TO THE BOZEMAN WATER RESOURCES REGIONAL OFFICE. THE APPROPRIATOR SHALL MAINTAIN THE

MEASURING DEVICES SO THEY ALWAYS OPERATE PROPERLY AND MEASURE FLOWRATE AND VOLUME ACCURATELY.

58. The Department finds the proposed change will not adversely affect water rights conveyed by the Eikeland Ditch or those listing the Madison River as a source. Carriage water will be left in the Eikeland Ditch for down ditch water users. The headgates can be operated to reduce flows to prevent an increase in diversions compared to historic practices.

BENEFICIAL USE

FINDINGS OF FACT

59. The Applicants propose to use water for 621 acres of flood irrigation in the E2 Section 20, E2 Section 21, and W2 Section 21, all in T07S R01W, Madison County. Water will continue to be diverted at SESESE Section 33, T07S R01W, Madison County, into the Eikeland Ditch. The Applicants will use 39,504 feet of remaining Eikeland Ditch segments and retire a total of 7968 feet of ditch. Applicants propose an additional point of diversion at NESENE of Section 29, T07S R01W, Madison County. The Applicants propose a new ditch that will be associated with the additional point of diversion, which is 6142 feet in length and 20 CFS in capacity. The Applicants propose to irrigate 130 acres in the historic place of use with the new ditch, while the remaining 491 acres will be irrigated with water conveyed along the Eikeland Ditch. Irrigation is a recognized beneficial use of water in the State of Montana, per § 85-2-102(5), MCA.

60. Applicants provided evidence of the need to add a point of diversion and ditch. The Applicants state the new ditch will be located closer to the place of use which will reduce distance travelled by the water before it can be used for irrigation. In doing so, the proposed change is expected to increase the efficiency of the system. (Application IR.1.F).

61. The Applicants propose to divert 4251.1 AF (2082.1 AF with Claim No. 41F 30114843 and 2169.1 AF with Claim No. 41F 30114845) and consume 696.0 AF (340.9 AF with Claim No. 41F 30114843 and 355.1 AF with Claim No. 41F 30114845), at a flow rate equal to 31.26 CFS (15.31 CFS with Claim No. 41F 30114843 and 15.95 CFS with Claim No. 41F 30114845). The Department finds the proposed addition of the new point of diversion and continued irrigation of the historical place of use with Claim Nos. 41F 30114843 and 41F 30114845 to be a beneficial use of water.

ADEQUATE DIVERSION

FINDINGS OF FACT

62. The proposed point of diversion diverts water into a newly created ditch from the Madison River through a headgate consisting of two 30-inch diameter canal gates in a concrete headgate structure with a rock dike in the Madison River directing water into the headgate that have a combined maximum capacity of 20 CFS. The ditch runs 6142 feet along the west side of the place of use. The new point of diversion is located in the NESENE of Section 29, T7S R21W. In aggregate, the maximum flow rate and volume of water that will be diverted for irrigation purposes into both points of diversion at the same time after this change is 31.26 CFS and 4,251.1 AF.

63. Water rights 41F 30114843 and 41F 30114845 will be the only irrigation water rights conveyed by the proposed ditch during their periods of use (05/01-10/20). The total combined flow rate of these water rights, 31.26 CFS, exceeds the flow rate that can be carried by the proposed ditch alone. The full flow rate is not necessary to convey because the proposed ditch will irrigate 130 out of 621 acres. The remaining 39,504 feet of Eikeland Ditch segments will be used in conjunction with the proposed ditch.

64. Based on the proposed diversionary specifications of the additional point of diversion and ditch, and the remaining segments of the Eikeland Ditch system that will continue being used after this change, the Department finds the proposed diversion infrastructure is adequate to accommodate the proposed change in point of diversion for Claims 41F 30114843 and 41F 30114845.

POSSESSORY INTEREST

FINDINGS OF FACT

65. The Applicants signed the affidavit on the application form affirming the Applicants have possessory interest, or the written consent of the person with the possessory interest, in the property where the water is to be put to beneficial use. (Department file)

CONCLUSIONS OF LAW

HISTORIC USE AND ADVERSE EFFECT

66. Montana's change statute codifies the fundamental principles of the Prior Appropriation Doctrine. Sections 85-2-401 and -402(1)(a), MCA, authorize changes to existing water rights,

permits, and water reservations subject to the fundamental tenet of Montana water law that one may change only that to which he or she has the right based upon beneficial use. A change to an existing water right may not expand the consumptive use of the underlying right or remove the well-established limit of the appropriator's right to water actually taken and beneficially used. An increase in consumptive use constitutes a new appropriation and is subject to the new water use permit requirements of the MWUA. McDonald v. State, 220 Mont. 519, 530, 722 P.2d 598, 605 (1986)(beneficial use constitutes the basis, measure, and limit of a water right); Featherman v. Hennessy, 43 Mont. 310, 316-17, 115 P. 983, 986 (1911)(increased consumption associated with expanded use of underlying right amounted to new appropriation rather than change in use); Quigley v. McIntosh, 110 Mont. 495, 103 P.2d 1067, 1072-74 (1940)(appropriator may not expand a water right through the guise of a change – expanded use constitutes a new use with a new priority date junior to intervening water uses); Allen v. Petrick, 69 Mont. 373, 222 P. 451(1924)("quantity of water which may be claimed lawfully under a prior appropriation is limited to that quantity within the amount claimed which the appropriator has needed, and which within a reasonable time he has actually and economically applied to a beneficial use. . . . it may be said that the principle of beneficial use is the one of paramount importance . . . The appropriator does not own the water. He has a right of ownership in its use only"); Town of Manhattan, at ¶ 10 (an appropriator's right only attaches to the amount of water actually taken and beneficially applied); Town of Manhattan v. DNRC, Cause No. DV-09-872C, Montana Eighteenth Judicial District Court, *Order Re Petition for Judicial Review,* Pg. 9 (2011)(the rule that one may change only that to which it has a right is a fundamental tenet of Montana water law and imperative to MWUA change provisions); In the Matter of Application to Change a Water Right No. 41I 30002512 by Brewer Land Co, LLC, DNRC Proposal For Decision and Final Order (2004).[1]

67. Sections 85-2-401(1) and -402(2)(a), MCA, codify the prior appropriation principles that Montana appropriators have a vested right to maintain surface and ground water conditions substantially as they existed at the time of their appropriation; subsequent appropriators may insist that prior appropriators confine their use to what was actually appropriated or necessary for their originally intended purpose of use; and, an appropriator may not change or alter its use in a manner that adversely affects another water user. Spokane Ranch & Water Co. v. Beatty, 37

[1] DNRC decisions are available at:
http://www.dnrc.mt.gov/wrd/water_rts/hearing_info/hearing_orders/hearingorders.asp

Mont. 342, 96 P. 727, 731 (1908); Quigley, 110 Mont. at 505-11,103 P.2d at 1072-74; Matter of Royston, 249 Mont. at 429, 816 P.2d at 1057; Hohenlohe, at ¶¶43-45.[2]

68. The cornerstone of evaluating potential adverse effect to other appropriators is the determination of the "historic use" of the water right being changed. Town of Manhattan, at ¶10 (recognizing that the Department's obligation to ensure that change will not adversely affect other water rights requires analysis of the actual historic amount, pattern, and means of water use). A change applicant must prove the extent and pattern of use for the underlying right proposed for change through evidence of the historic diverted amount, consumed amount, place of use, pattern of use, and return flow because a statement of claim, permit, or decree may not include the beneficial use information necessary to evaluate the amount of water available for change or potential for adverse effect.[3] A comparative analysis of the historic use of the water right to the proposed change in use is necessary to prove the change will not result in expansion of the original right, or adversely affect water users who are entitled to rely upon maintenance of conditions on the source of supply for their water rights. Quigley, 103 P.2d at 1072-75 (it is necessary to ascertain historic use of a decreed water right to determine whether a change in use expands the underlying right to the detriment of other water user because a decree only provides a limited description of the right); Royston, 249 Mont. at 431-32, 816 P.2d at 1059-60 (record could not sustain a conclusion of no adverse effect because the applicant failed to provide the Department with evidence of the historic diverted volume, consumption, and return flow); Hohenlohe, at ¶44-45; Town of Manhattan v. DNRC, Cause No. DV-09-872C, Montana Eighteenth Judicial District Court, *Order Re Petition for Judicial Review,* Pgs. 11-12 (proof of historic use is required even when the right has been decreed because the decreed flow rate or

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[2] See also Holmstrom Land Co., Inc., v. Newlan Creek Water District,185 Mont. 409, 605 P.2d 1060 (1979); Lokowich v. Helena, 46 Mont. 575, 129 P. 1063(1913); Thompson v. Harvey, 164 Mont. 133, 519 P.2d 963 (1974)(plaintiff could not change his diversion to a point upstream of the defendants because of the injury resulting to the defendants); McIntosh v. Graveley, 159 Mont. 72, 495 P.2d 186 (1972)(appropriator was entitled to move his point of diversion downstream, so long as he installed measuring devices to ensure that he took no more than would have been available at his original point of diversion); Head v. Hale, 38 Mont. 302, 100 P. 222 (1909)(successors of the appropriator of water appropriated for placer mining purposes cannot so change its use as to deprive lower appropriators of their rights, already acquired, in the use of it for irrigating purposes); and, Gassert v. Noyes, 18 Mont. 216, 44 P. 959(1896)(change in place of use was unlawful where reduced the amount of water in the source of supply available which was subject to plaintiff's subsequent right).

[3]A claim only constitutes *prima facie* evidence for the purposes of the adjudication under § 85-2-221, MCA. The claim does not constitute *prima facie* evidence of historical use in a change proceeding under §85-2-402, MCA. For example, most water rights decreed for irrigation are not decreed with a volume and provide limited evidence of actual historic beneficial use. §85-2-234, MCA

volume establishes the maximum appropriation that may be diverted, and may exceed the historical pattern of use, amount diverted or amount consumed through actual use); Matter of Application For Beneficial Water Use Permit By City of Bozeman, *Memorandum*, Pgs. 8-22 (Adopted by DNRC *Final Order* January 9,1985)(evidence of historic use must be compared to the proposed change in use to give effect to the implied limitations read into every decreed right that an appropriator has no right to expand his appropriation or change his use to the detriment of juniors).[4]

69. An applicant must also analyze the extent to which a proposed change may alter historic return flows for purposes of establishing that the proposed change will not result in adverse effect. The requisite return flow analysis reflects the fundamental tenant of Montana water law that once water leaves the control of the original appropriator, the original appropriator has no right to its use and the water is subject to appropriation by others. E.g., Hohenlohe, at ¶44; Rock Creek Ditch & Flume Co. v. Miller, 93 Mont. 248, 17 P.2d 1074, 1077 (1933); Newton v. Weiler, 87 Mont. 164, 286 P. 133(1930); Popham v. Holloron, 84 Mont. 442, 275 P. 1099, 1102 (1929); Galiger v. McNulty, 80 Mont. 339, 260 P. 401 (1927); Head v. Hale, 38 Mont. 302, 100 P. 222 (1909); Spokane Ranch & Water Co., 37 Mont. at 351-52, 96 P. at 731; Hidden Hollow Ranch v. Fields, 2004 MT 153, 321 Mont. 505, 92 P.3d 1185; In the Matter of Application for Change Authorization

[4] Other western states likewise rely upon the doctrine of historic use as a critical component in evaluating changes in appropriation rights for expansion and adverse effect: Pueblo West Metropolitan District v. Southeastern Colorado Water Conservancy District, 717 P.2d 955, 959 (Colo. 1986)("[O]nce an appropriator exercises his or her privilege to change a water right … the appropriator runs a real risk of requantification of the water right based on actual historical consumptive use. In such a change proceeding a junior water right … which had been strictly administered throughout its existence would, in all probability, be reduced to a lesser quantity because of the relatively limited actual historic use of the right."); Santa Fe Trail Ranches Property Owners Ass'n v. Simpson, 990 P.2d 46, 55 -57 (Colo.,1999); Farmers Reservoir and Irr. Co. v. City of Golden, 44 P.3d 241, 245 (Colo. 2002)("We [Colorado Supreme Court] have stated time and again that the need for security and predictability in the prior appropriation system dictates that holders of vested water rights are entitled to the continuation of stream conditions as they existed at the time they first made their appropriation); Application for Water Rights in Rio Grande County, 53 P.3d 1165, 1170 (Colo. 2002); Wyo. Stat. § 41-3-104 (When an owner of a water right wishes to change a water right … he shall file a petition requesting permission to make such a change …. The change … may be allowed provided that the quantity of water transferred … shall not exceed the amount of water historically diverted under the existing use, nor increase the historic rate of diversion under the existing use, nor increase the historic amount consumptively used under the existing use, nor decrease the historic amount of return flow, nor in any manner injure other existing lawful appropriators.); Basin Elec. Power Co-op. v. State Bd. of Control, 578 P.2d 557, 564 -566 (Wyo,1978) (a water right holder may not effect a change of use transferring more water than he had historically consumptively used; regardless of the lack of injury to other appropriators, the amount of water historically diverted under the existing use, the historic rate of diversion under the existing use, the historic amount consumptively used under the existing use, and the historic amount of return flow must be considered.)

No. G (W)028708-411 by Hedrich/Straugh/Ringer, DNRC Final Order (Dec. 13, 1991); In the Matter of Application for Change Authorization No. G(W)008323-G76I By Starkel/Koester, DNRC Final Order (Apr. 1, 1992); In the Matter of Application to Change a Water Right No. 41I 30002512 by Brewer Land Co, LLC, DNRC Proposal For Decision and Final Order (2004); Admin. R.M. 36.12.101(56)(Return flow - that part of a diverted flow which is not consumed by the appropriator and returns underground to its original source or another source of water - is not part of a water right and is subject to appropriation by subsequent water users).[5]

70. Although the level of analysis may vary, analysis of the extent to which a proposed change may alter the amount, location, or timing return flows is critical in order to prove that the proposed change will not adversely affect other appropriators who rely on those return flows as part of the source of supply for their water rights. Royston, 249 Mont. at 431, 816 P.2d at 1059-60; Hohenlohe, at ¶¶ 45-6 and 55-6; Spokane Ranch & Water Co., 37 Mont. at 351-52, 96 P. at 731. Noted Montana Water Law scholar Al Stone explained that the water right holder who seeks to change a water right is unlikely to receive the full amount claimed or historically used at the original place of use due to reliance upon return flows by other water users. Montana Water Law, Albert W. Stone, Pgs. 112-17 (State Bar of Montana 1994).

71. In Royston, the Montana Supreme Court confirmed that an applicant is required to prove lack of adverse effect through comparison of the proposed change to the historic use, historic consumption, and historic return flows of the original right. 249 Mont. at 431, 816 P.2d at 1059-60. More recently, the Montana Supreme Court explained the relationship between the fundamental principles of historic beneficial use, return flow, and the rights of subsequent appropriators as they relate to the adverse effect analysis in a change proceeding in the following manner:

> The question of adverse effect under §§ 85-2-402(2) and -408(3), MCA, implicates return flows. A change in the amount of return flow, or to the hydrogeologic pattern of return flow, has the potential to affect adversely downstream water rights. There consequently exists an inextricable link between the "amount historically consumed" and the water that re-enters the stream as return flow. . . .
> An appropriator historically has been entitled to the greatest quantity of water he

[5] The Montana Supreme Court recently recognized the fundamental nature of return flows to Montana's water sources in addressing whether the Mitchell Slough was a perennial flowing stream, given the large amount of irrigation return flow which feeds the stream. The Court acknowledged that the Mitchell's flows are fed by irrigation return flows available for appropriation. Bitterroot River Protective Ass'n, Inc. v. Bitterroot Conservation Dist. 2008 MT 377, ¶¶ 22, 31, 43, 346 Mont. 508, ¶¶ 22, 31,43, 198 P.3d 219, ¶¶ 22, 31,43(*citing* Hidden Hollow Ranch v. Fields, 2004 MT 153, 321 Mont. 505, 92 P.3d 1185).

> can put to use. The requirement that the use be both beneficial and reasonable, however, proscribes this tenet. This limitation springs from a fundamental tenet of western water law-that an appropriator has a right only to that amount of water historically put to beneficial use-developed in concert with the rationale that each subsequent appropriator "is entitled to have the water flow in the same manner as when he located," and the appropriator may insist that prior appropriators do not affect adversely his rights.
> This fundamental rule of Montana water law has dictated the Department's determinations in numerous prior change proceedings. The Department claims that historic consumptive use, as quantified in part by return flow analysis, represents a key element of proving historic beneficial use.
> We do not dispute this interrelationship between historic consumptive use, return flow, and the amount of water to which an appropriator is entitled as limited by his past beneficial use.

Hohenlohe, at ¶¶ 42-45 (internal citations omitted).

72. The Department's rules reflect the above fundamental principles of Montana water law and are designed to itemize the type evidence and analysis required for an applicant to meet its burden of proof. Admin.R.M. 36.12.1901 through 1903. These rules forth specific evidence and analysis required to establish the parameters of historic use of the water right being changed. Admin.R.M. 36.12.1901 and 1902. The rules also outline the analysis required to establish a lack of adverse effect based upon a comparison of historic use of the water rights being changed to the proposed use under the changed conditions along with evaluation of the potential impacts of the change on other water users caused by changes in the amount, timing, or location of historic diversions and return flows. Admin.R.M. 36.12.1901 and 1903.

73. Applicant seeks to change existing water rights represented by its Water Right Claims. The "existing water rights" in this case are those as they existed prior to July 1, 1973, because with limited exception, no changes could have been made to those rights after that date without the Department's approval. Analysis of adverse effect in a change to an "existing water right" requires evaluation of what the water right looked like and how it was exercised prior to July 1, 1973. In McDonald v. State, the Montana Supreme Court explained:

> The foregoing cases and many others serve to illustrate that what is preserved to owners of appropriated or decreed water rights by the provision of the 1972 Constitution is what the law has always contemplated in this state as the extent of a water right: such amount of water as, by pattern of use and means of use, the owners or their predecessors put to beneficial use. . . . the Water Use Act contemplates that all water rights, regardless of prior statements or claims as to amount, must nevertheless, to be recognized, pass the test of historical,

> unabandoned beneficial use. . . . To that extent only the 1972 constitutional recognition of water rights is effective and will be sustained.

220 Mont. at 529, 722 P.2d at 604; see also Matter of Clark Fork River Drainage Area, 254 Mont. 11, 17, 833 P.2d 1120 (1992).

74. Water Resources Surveys were authorized by the 1939 legislature. 1939 Mont. Laws Ch. 185, § 5. Since their completion, Water Resources Surveys have been invaluable evidence in water right disputes and have long been relied on by Montana courts. In re Adjudication of Existing Rights to Use of All Water in North End Subbasin of Bitterroot River Drainage Area in Ravalli and Missoula Counties, 295 Mont. 447, 453, 984 P.2d 151, 155 (1999)(Water Resources Survey used as evidence in adjudicating of water rights); Wareing v. Schreckendgust, 280 Mont. 196, 213, 930 P.2d 37, 47 (1996)(Water Resources Survey used as evidence in a prescriptive ditch easement case); Olsen v. McQueary, 212 Mont. 173, 180, 687 P.2d 712, 716 (1984) (judicial notice taken of Water Resources Survey in water right dispute concerning branches of a creek).

75. While evidence may be provided that a particular parcel was irrigated, the actual amount of water historically diverted and consumed is critical. E.g., *In the Matter of Application to Change Water Right No. 41H 1223599 by MGRR #1, LLC.*, DNRC Proposal for Decision adopted by Final Order (2005). The Department cannot assume that a parcel received the full duty of water or that it received sufficient water to constitute full service irrigation for optimum plant growth. Even when it seems clear that no other rights could be affected solely by a particular change in the location of diversion, it is essential that the change also not enlarge an existing right. See MacDonald, 220 Mont. at 529, 722 P.2d at 604; Featherman, 43 Mont. at 316-17, 115 P. at 986; Trail's End Ranch, L.L.C. v. Colorado Div. of Water Resources 91 P.3d 1058, 1063 (Colo., 2004).

76. The Department has adopted a rule providing for the calculation of historic consumptive use where the applicant proves by a preponderance of the evidence that the acreage was historically irrigated. Admin. R. M. 36.12.1902 (16). In the alternative an applicant may present its own evidence of historic beneficial use. In this case Applicant elected to proceed under Admin. R.M. 36.12.1902. (FOF No.14).

77. If an applicant seeks more than the historic consumptive use as calculated by Admin.R.M .36.12.1902 (16), the applicant bears the burden of proof to demonstrate the amount of historic consumptive use by a preponderance of the evidence. The actual historic use of water could be less than the optimum utilization represented by the calculated duty of water in any particular

case. E.g., Application for Water Rights in Rio Grande County 53 P.3d 1165 (Colo., 2002) (historical use must be quantified to ensure no enlargement); In the Matter of Application to Change Water Right No. 41H 1223599 by MGRR #1, LLC., supra; Orr v. Arapahoe Water and Sanitation Dist. 753 P.2d 1217, 1223 -1224 (Colo., 1988)(historical use of a water right could very well be less than the duty of water); Weibert v. Rothe Bros., Inc., 200 Colo. 310, 317, 618 P.2d 1367, 1371 - 1372 (Colo. 1980) (historical use could be less than the optimum utilization "duty of water").

78. Based upon the Applicants' evidence of historic use, the Applicants have proven by a preponderance of the evidence the historic use of Water Right Claim No. 41F 30114843 of 2088.0 acre-feet diverted volume and 15.31 CFS flow rate with a consumptive use of 340.9 acre-feet. The Applicants have proven by a preponderance of the evidence the historic use of Water Right Claim No. 41F 30114845 of 2175.3 acre-feet diverted volume and 15.95 CFS flow rate with a consumptive use of 355.1 acre-feet. (FOF Nos. 12-34)

79. Based upon the Applicants' comparative analysis of historic water use to water use under the proposed change, the Applicants have proven that the proposed change in appropriation right will not adversely affect the use of the existing water rights of other persons or other perfected or planned uses or developments for which a permit or certificate has been issued or for which a state water reservation has been issued. §85-2-402(2)(b), MCA. (FOF Nos. 35-58)

BENEFICIAL USE

80. A change applicant must prove by a preponderance of the evidence the proposed use is a beneficial use. §§85-2-102(5) and -402(2)(c), MCA. Beneficial use is and has always been the hallmark of a valid Montana water right: "[T]he amount actually needed for beneficial use within the appropriation will be the basis, measure, and the limit of all water rights in Montana . . ." McDonald, 220 Mont. at 532, 722 P.2d at 606. The analysis of the beneficial use criterion is the same for change authorizations under §85-2-402, MCA, and new beneficial permits under §85-2-311, MCA. Admin.R.M. 36.12.1801. The amount of water that may be authorized for change is limited to the amount of water necessary to sustain the beneficial use. E.g., Bitterroot River Protective Association v. Siebel*, Order on Petition for Judicial Review*, Cause No. BDV-2002-519, Montana First Judicial District Court (2003) (*affirmed on other grounds*, 2005 MT 60, 326 Mont.

241, 108 P.3d 518); Worden v. Alexander, 108 Mont. 208, 90 P.2d 160 (1939); Allen v. Petrick, 69 Mont. 373, 222 P. 451(1924); Sitz Ranch v. DNRC, DV-10-13390, Montana Fifth Judicial District Court, *Order Affirming DNRC Decision*, Pg. 3 (2011)(citing BRPA v. Siebel, 2005 MT 60, and rejecting applicant's argument that it be allowed to appropriate 800 acre-feet when a typical year would require 200-300 acre-feet); Toohey v. Campbell, 24 Mont. 13, 60 P. 396 (1900)("The policy of the law is to prevent a person from acquiring exclusive control of a stream, or any part thereof, not for present and actual beneficial use, but for mere future speculative profit or advantage, without regard to existing or contemplated beneficial uses. He is restricted in the amount that he can appropriate to the quantity needed for such beneficial purposes."); §85-2-312(1)(a), MCA (DNRC is statutorily prohibited from issuing a permit for more water than can be beneficially used).

81. Applicants propose to use water for irrigation, which is a recognized beneficial use. §85-2-102(5), MCA. Applicants have proven by a preponderance of the evidence irrigation is a beneficial use and that 4251.1 acre-feet of diverted volume (41F 30114843 is 2082.1 acre-feet and 41F 30114845 is 2169.1 acre-feet) and 31.26 CFS flow rate of water requested (15.31 CFS for 41F 30114843 and 15.95 CFS for 41F 30114845) is the amount needed to sustain the beneficial use and is within the standards set by DNRC Rule/other standard. §85-2-402(2)(c), MCA (FOF Nos. 59 – 61)

ADEQUATE MEANS OF DIVERSION

82. Pursuant to §85-2-402 (2)(b), MCA, the Applicant must prove by a preponderance of the evidence that the proposed means of diversion, construction, and operation of the appropriation works are adequate. This codifies the prior appropriation principle that the means of diversion must be reasonably effective for the contemplated use and may not result in a waste of the resource. Crowley v. 6th Judicial District Court, 108 Mont. 89, 88 P.2d 23 (1939); In the Matter of Application for Beneficial Water Use Permit No. 41C-11339900 by Three Creeks Ranch of Wyoming LLC (DNRC Final Order 2002)(information needed to prove that proposed means of diversion, construction, and operation of the appropriation works are adequate varies based upon project complexity; design by licensed engineer adequate).

83. Pursuant to §85-2-402 (2)(b), MCA, Applicants have proven by a preponderance of the evidence that the proposed means of diversion, construction, and operation of the appropriation works are adequate for the proposed beneficial use. (FOF Nos. 62 – 64)

POSSESSORY INTEREST

84. Pursuant to §85-2-402(2)(d), MCA, the Applicant must prove by a preponderance of the evidence that it has a possessory interest, or the written consent of the person with the possessory interest, in the property where the water is to be put to beneficial use. See also Admin.R.M. 36.12.1802

85. Applicants have proven by a preponderance of the evidence that it has a possessory interest, or the written consent of the person with the possessory interest, in the property where the water is to be put to beneficial use. (FOF Nos 65)

PRELIMINARY DETERMINATION

Subject to the terms and analysis in this Preliminary Determination Order, the Department preliminarily determines that this Application to Change Water Right No. 41F 30147356 should be GRANTED subject to the following.

The Applicants are authorized to divert Water Right Nos. 41F 30114843 and 41F 30114845 from two points of diversion, including the historical Eikeland Ditch headgate in SESESE Section 33, T07S R01W, Madison County and a headgate in the NESENE of Section 29, T07S R01E, Madison County. Under 41F 30114843, the Applicants may divert a maximum volume of 2082.1 AF and consume a volume of 340.9 AF at a flow rate of 15.31 CFS from 05/01 to 10/20 for irrigation on 621 acres in the E2 Section 20, E2 Section 21, and W2 Section 21, all in T07S R01W, Madison County. Under 41F 30114845, the Applicants may divert a maximum volume of 2169.1 AF and consume a volume 355.1 AF at a flow rate of 15.95 CFS from 05/01 to 10/20 for 621 acres of irrigation in the E2 Section 20, E2 Section 21, and W2 Section 21, all in T07S R01W, Madison County. In aggregate, the maximum flow rate and volume that will be diverted from the Madison River into both points of diversion at the same time with both water rights after this change cannot exceed 31.26 CFS and 4,251.2 AF.

This Authorization is subject to the following conditions.

WATER MEASUREMENT REQUIRED

IN AGGREGATE THE MAXIMUM FLOW RATE THAT MAY BE DIVERTED FROM MADISON RIVER WITH WATER RIGHT NO. 41F 30114843 IS 15.31 CFS AND 41F 30114845 IS 15.95 CFS FROM 05/01 TO 10/20. IN AGGREGATE THE MAXIMUM VOLUME THAT MAY BE DIVERTED FROM MADISON RIVER WITH WATER RIGHT NO. 41F 30114843 IS 2082.1 AF ANNUALLY AND WITH WATER RIGHT NO. 41F 30114845 IS 2169.1 AF ANNUALLY. ON A FORM APPROVED BY THE DEPARTMENT, THE APPROPRIATOR SHALL KEEP A WRITTEN RECORD OF THE FLOW RATE AND VOLUME OF ALL WATER DIVERTED AT BOTH POINTS OF DIVERSION, INCLUDING THE PERIOD OF TIME. RECORDS SHALL BE SUBMITTED BY JANUARY 31ST OF EACH YEAR. FAILURE TO SUBMIT REPORTS MAY BE CAUSE FOR REVOCATION OF THIS CHANGE. THE RECORDS MUST BE SENT TO THE BOZEMAN WATER RESOURCES REGIONAL OFFICE. THE APPROPRIATOR SHALL MAINTAIN THE MEASURING DEVICES SO THEY ALWAYS OPERATE PROPERLY AND MEASURE FLOWRATE AND VOLUME ACCURATELY.

NOTICE

This Department will provide public notice of this Application and the Department's Preliminary Determination to Grant pursuant to §85-2-307, MCA. The Department will set a deadline for objections to this Application pursuant to §§85-2-307, and -308, MCA. If this Application receives a valid objection, it will proceed to a contested case proceeding pursuant to Title 2 Chapter 4 Part 6, MCA, and §85-2-309, MCA. If this Application receives no valid objection or all valid objections are unconditionally withdrawn, the Department will grant this Application as herein approved. If this Application receives a valid objection(s) and the valid objection(s) are conditionally withdrawn, the Department will consider the proposed condition(s) and grant the Application with such conditions as the Department decides necessary to satisfy the applicable criteria. E.g., §§85-2-310, -312, MCA.

DATED this 3rd day of May 2023.

/Original signed by Kerri Strasheim/
Kerri Strasheim, Manager
Bozeman Regional Office
Department of Natural Resources
and Conservation

CERTIFICATE OF SERVICE

This certifies that a true and correct copy of the PRELIMINARY DETERMINATION TO GRANT was served upon all parties listed below on this 3rd day of May 2023, by first class United States mail.

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