



September 20, 2023

Oregon Water Resources Department
Attn: Jen Woody
725 Summer Street NE, Suite A
Salem, OR 97301-1266

Re: Artificial Groundwater Recharge Limited License Application for Recovery – Madison Ranches, Inc.

Enclosed is an application for a Limited License for Recovery of Artificial Groundwater Recharge on behalf of Madison Ranches. This application requests continuation of the testing performed under LL 1927 (from 2023). Supporting documentation, and a check in the amount of \$1,150 is enclosed.

A Land Use Information Form and Watermaster form are included with the application.

If you have any questions, please call me at 503-239-8799 ext. 130.

Sincerely,

A handwritten signature in blue ink that reads "Robyn Cook".

Robyn Cook, RG, CWRE
Hydrogeologist
GSI Water Solutions, Inc.

Attachments: Artificial Groundwater Recharge Limited License Application for Recovery
Supporting Documentation
Check in the amount of \$1,150

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Limited License Application for Use of Artificially Recharged Water

Madison Ranches

Submitted to

Oregon Water Resources Department

September 20, 2023

Prepared by



650 NE Holladay St., Suite 900
Portland, OR 97232
P: 503.239.8799
accounting@gsiws.com
www.gsiws.com

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**Limited License Application for
Use of Artificially Recharged Water**

LL-1963



Oregon Water Resources Department
 725 Summer Street NE, Suite A
 Salem Oregon 97301-1271
 (503) 986-0900
 www.wrd.state.or.us

Application for Limited Water Use License

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License No.: LL-1963

Applicant Information

NAME Jake Madison, Madison Ranches, Inc.			PHONE (HM)
PHONE (WK) (541) 376-8107	CELL (541) 571-0569	FAX	
ADDRESS 29299 Madison Road			
CITY Echo	STATE OR	ZIP 97826	E-MAIL * Jake@MadisonRanches.com

Agent Information

NAME Robyn Cook, GSI Water Solutions, Inc.			PHONE (971) 200-8532	FAX
ADDRESS 650 NE Holliday Street, Suite 900			CELL	
CITY Portland	STATE OR	ZIP 97232	E-MAIL * rcook@gsiws.com	

I (We) make application for a Limited License to use or store the following described surface waters or groundwater – not otherwise exempt, or to use stored water of for a use of a short-term or fixed-duration:
 Artificial Groundwater

- SOURCE(S) OF WATER:** Recharge a tributary of _____
- AMOUNT OF WATER** to be diverted;
 Maximum and instantaneous rate (cubic feet or gallons per minute): see below
 Total volume (gallons or acre-feet): see below. If water is to be used from more than one source, give the quantity from each: _____

3. INTENDED USE(S) OF WATER: (check all that apply)

- Road construction or maintenance
- General construction
- Forestland and rangeland management; or
- Other: Supplemental Irrigation,

4. DESCRIPTION OF PROPOSED PROJECT: Include a description of the place of use as shown on the accompanying site map, the method of water diversion, the type of equipment to be used (including pump horsepower, if applicable), length and dimensions of supply ditches and pipelines:

The attached supplemental report and map describe the project infrastructure and place of use. Water will be recovered at an existing alluvial collector well that is an authorized point of appropriation for several water rights with a cumulative permitted pumping rate of 925 gpm. Recovery rates of 925 gpm or less will be authorized by these water rights, and any rate over 925 gpm will be considered recovery of artificially recharged water. Recovery will cease when 85% of the recharge volume is reached during the water year, and the balance of recharge volume not recovered will be relinquished.

5. PROJECT SCHEDULE: (List day, month, and year)

Date water use will begin: Upon issuance of limited license and expiration of LL-1927 (Feb 24, 2024)
 Date water use will be completed: 1 year after issuance of limited license

Months of the year water would be diverted and used: Recovery season: November through August

If for other than irrigation from stored water, how and where will water be discharged after use:


 Applicant Signature

Jake Madison, President
 Print Name and title if applicable

9-18-23
 Date

PLEASE READ CAREFULLY

NOTE: A completed water availability statement from the local watermaster, Land Use Information Form completed by the local Planning Department, fees and site map meeting the requirements of OAR 690-340-030 must accompany this request. The fee for this request is **\$280** for the first point of diversion plus **\$30** for each additional point of diversion. Please review the Department's fee schedule to view fees required to request a limited license for Aquifer Storage and Recovery testing purposes or for Artificial Groundwater Recharge testing purposes.

Failure to provide any of the required information will result in return of your application. The license, if granted, will not be issued or replaced by a new license for a period of more than five consecutive years. The license, if granted, will be subordinate to all other authorized uses that rely upon the same source, or water affected by the source, and may be revoked at any time it is determined the use causes injury to any other water right or minimum perennial streamflow.

If water source is well, well logs or adequate information for the Department to determine aquifer, well depth, well seal and open interval, etc. are required. The licensee shall indicate the intended aquifer. If for multiple wells, each map location shall be clearly tied to a well log.

If a limited license is approved, the licensee shall give notice to the Department (Watermaster) at least 15 days in advance of using the water under the Limited License and shall maintain a record of use. The record of use shall include, but need not be limited to, an estimate of the amount of water used, the period of use and the categories of beneficial use to which the water is applied. During the period of the Limited License, the record of use shall be available for review by the Department upon request.

**A summary of review criteria and procedures that are generally applicable to these applications is available at: <http://www.oregon.gov/owrd/pages/pubs/forms.aspx>*

Mapping Requirements (OAR 690-340-0030):

- (1) A request for a limited license shall be submitted on a form provided by the Water Resources Department, and shall be accompanied by the following:
 - a. A site map of reproducible quality, drawn to a standard, even scale of not less than 2 inches = 1 mile, showing:
 - i. The locations of all proposed points of diversion referenced by coordinates or by bearing and distance to the nearest established or projected public land survey corner;
 - ii. The general course of the source for the proposed use, if applicable;
 - iii. Other topographical features such as roads, streams, railroads, etc., which may be helpful in locating the diversion points in the field.

REMARKS:

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Robyn Cook submitted application for watermaster review via email on 8/22/2023

This page to be completed by the local Watermaster.

WATER AVAILABILITY STATEMENT

Name of Applicant: Madison Ranches Limited License Number: LL-1968

1. To your knowledge, has the stream or basin that is the source for this application ever been regulated for prior rights?

Yes No

If yes, please explain:

Annually

2. Based on your observations, would there be water available in the quantity and at the times needed to supply the use proposed by this application?

Yes No

Defer to groundwater section

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3. Do you observe this stream system during regular fieldwork?

Yes No

If yes, what are your observations for the stream?

Seasonal spring run off provides 100% of water in this area of Butter Creek.

4. If the source is a well and if WRD were to determine that there is the potential for substantial interference with nearby surface water sources, would there still be ground water and surface water available during the time requested and in the amount requested without injury to existing water rights?

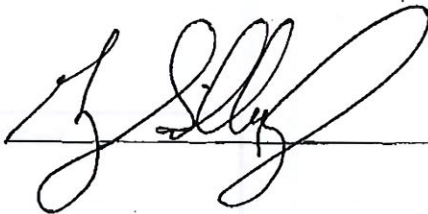
Yes No N/A

What would you recommend for conditions on a limited license that may be issued approving this application?

I will work with groundwater section regarding any additional conditions.

5. Any other recommendations you would like to make?

Signature



WM District #: 5 Date: 9/15/2023

Land Use Information Form



Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.oregon.gov/OWRD

NOTE TO APPLICANTS

In order for your application to be processed by the Water Resources Department (WRD), this Land Use Information Form must be completed by a local government planning official in the jurisdiction(s) where your water right will be used and developed. The planning official may choose to complete the form while you wait, or return the receipt stub to you. Applications received by WRD without the Land Use Form or the receipt stub will be returned to you. Please be aware that your application will not be approved without land use approval.

This form is NOT required if:

- 1) Water is to be diverted, conveyed, and/or used only on federal lands; **OR**
- 2) The application is for a water right transfer, allocation of conserved water, exchange, permit amendment, or ground water registration modification, and all of the following apply:
 - a) The existing and proposed water use is located entirely within lands zoned for exclusive farm-use or within an irrigation district;
 - b) The application involves a change in place of use only;
 - c) The change does not involve the placement or modification of structures, including but not limited to water diversion, impoundment, distribution facilities, water wells and well houses; and
 - d) The application involves irrigation water uses only.

NOTE TO LOCAL GOVERNMENTS

The person presenting the attached Land Use Information Form is applying for or modifying a water right. The Water Resources Department (WRD) requires its applicants to obtain land-use information to be sure the water rights do not result in land uses that are incompatible with your comprehensive plan. Please complete the form or detach the receipt stub and return it to the applicant for inclusion in their water right application. You will receive notice once the applicant formally submits his or her request to the WRD. The notice will give more information about WRD's water rights process and provide additional comment opportunities. You will have 30 days from the date of the notice to complete the land-use form and return it to the WRD. If no land-use information is received from you within that 30-day period, the WRD may presume the land use associated with the proposed water right is compatible with your comprehensive plan. Your attention to this request for information is greatly appreciated by the Water Resources Department. If you have any questions concerning this form, please contact the WRD's Customer Service Group at 503-986-0801.

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Land Use Information Form

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Applicant(s): Madison Ranches, Inc.

Mailing Address: 29299 Madison Road

City: Echo

State: OR

Zip Code: 97826

Daytime Phone: 541-376-8107

A. Land and Location

Please include the following information for all tax lots where water will be diverted (taken from its source), conveyed (transported), and/or used or developed. Applicants for municipal use, or irrigation uses within irrigation districts may substitute existing and proposed service-area boundaries for the tax-lot information requested below.

Township	Range	Section	¼ ¼	Tax Lot #	Plan Designation (e.g., Rural Residential/RR-5)	Water to be:			Proposed Land Use:
<u>3N & 2N</u>	<u>27E & 28E</u>	<u>See attached table</u>			<u>EFU</u>	<input checked="" type="checkbox"/> Diverted	<input checked="" type="checkbox"/> Conveyed	<input checked="" type="checkbox"/> Used	<u>Supplemental Irrigation</u>
_____	_____	_____	_____	_____	_____	<input type="checkbox"/> Diverted	<input type="checkbox"/> Conveyed	<input type="checkbox"/> Used	_____
_____	_____	_____	_____	_____	_____	<input type="checkbox"/> Diverted	<input type="checkbox"/> Conveyed	<input type="checkbox"/> Used	_____
_____	_____	_____	_____	_____	_____	<input type="checkbox"/> Diverted	<input type="checkbox"/> Conveyed	<input type="checkbox"/> Used	_____

List all counties and cities where water is proposed to be diverted, conveyed, and/or used or developed:

Umatilla County

B. Description of Proposed Use

Type of application to be filed with the Water Resources Department:

- Permit to Use or Store Water
 Water Right Transfer
 Permit Amendment or Ground Water Registration Modification
 Limited Water Use License
 Allocation of Conserved Water
 Exchange of Water

Source of water: Reservoir/Pond
 Ground Water
 Surface Water (name) _____

Estimated quantity of water needed: see below
 cubic feet per second
 gallons per minute
 acre-feet

Intended use of water: Irrigation
 Commercial
 Industrial
 Domestic for _____ household(s)
 Municipal
 Quasi-Municipal
 Instream
 Other _____

Briefly describe:

The limited license application proposes to recover up to 85% of the artificially recharged water authorized by limited license #1926.

Note to applicant: If the Land Use Information Form cannot be completed while you wait, please have a local government representative sign the receipt at the bottom of the next page and include it with the application filed with the Water Resources Department.

See bottom of Page 3. →

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For Local Government Use Only

The following section must be completed by a planning official from each county and city listed unless the project will be located entirely within the city limits. In that case, only the city planning agency must complete this form. This deals only with the local land-use plan. Do not include approval for activities such as building or grading permits.

Please check the appropriate box below and provide the requested information

- Land uses to be served by the proposed water uses (including proposed construction) are allowed outright or are not regulated by your comprehensive plan. Cite applicable ordinance section(s): UCDC Section 152.056(A) Farm Use
- Land uses to be served by the proposed water uses (including proposed construction) involve discretionary land-use approvals as listed in the table below. (Please attach documentation of applicable land-use approvals which have already been obtained. Record of Action/land-use decision and accompanying findings are sufficient.) **If approvals have been obtained but all appeal periods have not ended, check "Being pursued."**

Type of Land-Use Approval Needed (e.g., plan amendments, rezones, conditional-use permits, etc.)	Cite Most Significant, Applicable Plan Policies & Ordinance Section References	Land-Use Approval:	
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued

Local governments are invited to express special land-use concerns or make recommendations to the Water Resources Department regarding this proposed use of water below, or on a separate sheet.

Name: CAROL JOHNSON Title: Planner
 Signature: *Carol Johnson* Phone: 541-278-6252 Date: 08/18/2023
 Government Entity: UMATILLA COUNTY

Note to local government representative: Please complete this form or sign the receipt below and return it to the applicant. If you sign the receipt, you will have 30 days from the Water Resources Department's notice date to return the completed Land Use Information Form or WRD may presume the land use associated with the proposed use of water is compatible with local comprehensive plans.



Receipt for Request for Land Use Information

Applicant name: _____
 City or County: _____ Staff contact: _____
 Signature: _____ Phone: _____ Date: _____

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Tax Lots involved in Limited License Application for Artificial Recharge Recovery
 Madison Farms

Township		Range		Section	Tax Lot #	Map ID
2	N	27	E	1	200	2N27000000200
3	N	27	E	36	6200	3N27000006200
3	N	27	E	36	5902	3N27000005902
3	N	27	E	36	5900	3N27000005900
3	N	28	E	31	200	3N28000000200
3	N	28	E	31	8500	3N28000008500
3	N	27	E	25	5200	3N27000005200
3	N	27	E	25	5900	3N27000005900
3	N	27	E	25	5901	3N27000005901
3	N	28	E	30	8300	3N28000008300
3	N	28	E	30	8600	3N28000008600
3	N	28	E	30	3600	3N28000006300
3	N	28	E	30	8500	3N28000008500
3	N	27	E	24	4701	3N27000004701
3	N	27	E	24	5200	3N27000005200
3	N	28	E	19	6300	3N28000006300
3	N	28	E	19	6500	3N28000006500
3	N	28	E	19	6200	3N28000006200
3	N	28	E	19	6100	3N28000006100

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TECHNICAL MEMORANDUM

Artificially Recharge Recovery Limited License Application
Supplemental Information - Madison Ranches

PREPARED FOR: Jake Madison - Madison Ranches
PREPARED BY: Robyn Cook, RC, CWRE - GSI Water Solutions, Inc.
Bruce Brady-Haine, RC, CWRE - GSI Water Solutions, Inc.
CC: Jen Woody, RC - Oregon Water Resources Department
DATE: August 9, 2023

1. Introduction

Madison Ranches (Madison) operates an artificial groundwater recharge (AWR) program authorized for...
division and recharge testing by limited license (LL) 1958 and for recovery of artificially recharged water...
in 2023 by LL 1957. This memorandum provides supplemental information related to application for a new...
limited license for recovery of artificially recharged water in 2023-2024, as described in Oregon...
Administrative Rule (OAR) 690-320-0130. Specifically, project infrastructure and planned recovery...
operations are described, and hydrogeologic information is presented to demonstrate that the recovered...
water comes from the artificially recharged reservoir (aquifer). Madison has artificially recharged water...
each year since 2005, authorized by the following limited licenses:

- LL 1964 from 2005 to 2006
- LL 1957 from 2006 to 2009
- LL 1959 from 2009 to 2012
- LL 1945 from 2013 to 2016
- LL 1958 from 2016 to 2021, and
- LL 1957 from 2021-2023

Artificially recharged water has been recovered at Madison each year since 2012, authorized by the following limited licenses:

- LL 1944 in 2012
- LL 1952 in 2013
- LL 1950 in 2014
- LL 1953 in 2015
- LL 1957 in 2016
- LL 1954 in 2017
- LL 1957 in 2018
- LL 1957 in 2019
- LL 1957 in 2020
- LL 1957 in 2021
- LL 1957 in 2022
- LL 1957 in 2023

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Limited License Supplemental Information

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TECHNICAL MEMORANDUM

Artificial Recharge Recovery Limited License Application Supplemental Information - Madison Ranches

PREPARED FOR: Jake Madison – Madison Ranches
PREPARED BY: Robyn Cook, RG, CWRE – GSI Water Solutions, Inc.
Bruce Brody-Heine, RG, CWRE – GSI Water Solutions, Inc.
CC: Jen Woody, RG – Oregon Water Resources Department
DATE: August 9, 2023

1. Introduction

Madison Ranches (Madison) operates an artificial groundwater recharge (AR) program authorized for diversion and recharge testing by Limited License (LL) 1926 and for recovery of artificially recharged water in 20123 by LL 1927. This memorandum provides supplemental information required to apply for a new limited license for recovery of artificially recharged water in 2023-2024, as described in Oregon Administrative Rule (OAR) 690-350-0130. Specifically, project infrastructure and planned recovery operations are described, and hydrogeologic information is presented to demonstrate that the recovered water comes from the artificially recharged reservoir (aquifer). Madison has artificially recharged water each year since 2002, authorized by the following limited licenses:

- LL 764 from 2002 to 2006,
- LL 952 from 2006 to 2009,
- LL 1193 from 2009 to 2012,
- LL 1442 from 2013 to 2016,
- LL 1628 from 2016 to 2021, and
- LL 1927 from 2023-2028.

Artificially recharged water has been recovered at Madison each year since 2012, authorized by the following limited licenses:

- LL 1424 in 2012,
- LL 1452 in 2013,
- LL 1510 in 2014,
- LL 1553 in 2015,
- LL 1615 in 2016,
- LL 1684 in 2017,
- LL 1717 in 2018,
- LL 1772 in 2019, and
- LL 1927 in 2023.

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This limited license application is intended to continue AR recovery testing similar to the testing conducted under the previous limited licenses.

2. Project Description and System Design

The Madison AR program involves diverting winter/spring stream flows from Butter Creek to a series of recharge basins on Madison property (Figure 1). The following sections describe the AR system design and operation.

Diversion and Recharge

The locations of the project diversion structure, conveyance, and recharge basins are shown on Figure 1. A 42-inch Palmer-Bowlus automatically operated diversion structure and flume are installed at the Butter Creek point of diversion. The flume (manufactured by Plasti-Fab) can measure flow between approximately 0.48 cubic feet per second (cfs) and 58 cfs. A second 30-inch flume is installed at the entrance to the recharge basins. This system was installed and utilized for testing under Madison's previous AR LLs. Diversion of water from Butter Creek is limited to periods when there is adequate flow in Butter Creek to satisfy all existing water rights and is further limited to times when streamflows are either less than 50 cfs or in excess of 175 cfs. Figure 1 shows diversion, conveyance, and recharge elements of the Madison AR project.

The Madison current AR facility is approximately 15 acres in size (Figures 1 and 2). The recharge basins are surrounded by a 1- to 2-foot-high earthen berms to maintain water inside the recharge area. Each basin contains a series of cells separated by 20-foot-wide, 1-foot-high berms. Cell sizes range from 0.5 to 3.3 acres. The cells have been designed so that water entering from the diversion structure fills the first southern-most cell and then the water flows north over the berm into the next cell and so on. The berms are generally covered with grass. The flow entering the recharge basin is manually adjusted so that the height of water in the last cell is maintained below the top of the berm.

Artificial recharge flow rates and volumes are monitored at flume-type monitoring stations located at the Butter Creek diversion and at the entrance to the recharge basins. Recharge rates and volumes are recorded at the flumes using ultrasonic flow meters and data loggers which are also connected to Madison's telemetry system, allowing for real-time monitoring and data archiving.

Recovery

The Madison existing AR Program collector well (also referred to as the Windmill Well) develops shallow groundwater in the vicinity of the recharge basins and is intended to be used for recovery under this LL. The collector well is a horizontal well that is approximately 0.5 miles long and up to 25 feet deep. A 100-horsepower (hp) end suction centrifugal pump and 60-hp booster pump, capable of producing 2,500 gallons per minute (gpm), are located within a vertical pump chamber on the east end of the collector well. The well captures alluvial groundwater, moving generally downgradient and parallel to Butter Creek, and recharged water from the AR basins.

In most years, there is a sufficient amount of groundwater in the alluvium during the months of April through June to allow pumping from the collector well. Madison has water right certificates (75107, 83692, 83693, and T-11414) to withdraw up to 2.06 cfs (925 gpm) of native groundwater from the existing Windmill collector well for irrigation purposes. The Windmill collector well is also used to pump groundwater from the alluvial aquifer for injection into the deep basalt aquifer as part of Madison's aquifer storage and recovery (ASR) project currently authorized by LL 020, issued by OWRD in 2013 (ASR testing has been conducted since 2006).

Water levels and flow rates are continuously monitored at the Windmill Well, and data are logged hourly by Madison's telemetry system.

3. Source Proof

OAR 690-350-0130(2)© requires submittal of proof that recovered water under a secondary groundwater permit, and in this case a limited license for AR recovery, is water that has been artificially recharged. This proof may include water level similarities to the recharged aquifer, geologic and geographic similarities, hydraulic information, and other data. This section provides information intended to meet the source proof requirement.

Geologic information from nearby well logs indicates continuity between the recharge basin and the alluvial collector well. Water well driller's logs in the vicinity of the project describe sediments ranging from silty sand to coarse gravel and cobbles to depths of up to 45 feet and do not indicate confining units are present that would result reduce or impede infiltration of recharged water at the surface or prevent recovery by the collector well. Since the Windmill Well's horizontal lateral is located directly under the artificial recharge basin, it is highly likely that water recharged in the basin is available for recovery from the collector well.

This geologic observation associated with the historic AR Program configuration is supported by water level and water quality changes observed during AR testing completed to date. Figure 3 shows water levels at the Windmill Well and net flow rate from October 2019 through September 2020. This figure shows water level changes in the Windmill Well that are correlated to initiation of recharge, as well as changes in the net flow rate, demonstrating a hydraulic connection between the Windmill Well and the artificially recharged aquifer.

- ✓ Nitrate concentrations in artificially recharged water from Butter Creek are significantly lower than the nitrate concentrations in alluvial groundwater (GSI, 2009), resulting in lower nitrate concentrations at the collector well during the recharge period. After the end of the artificial recharge period, nitrate concentrations appear to increase at the Windmill Well.

In our opinion, the geologic, water level, and water quality observations presented above, and as previously presented in past reports and applications, demonstrate that water recovered from the collector well represents water that has been artificially recharged and fulfills the requirement for source proof.

4. AR Recovery Operations

The Madison telemetry system allows continuous tracking of flow rates and volumes at the following locations: the diversion on Butter Creek, recharge into the recharge basin, and the recovery from the Windmill Well. This system is used to track instantaneous rates and cumulative volume during artificial recharge and recovery, and provides a summary report of project information on a daily basis. Specifically, the telemetry system produces a daily report which displays 24 hours of recharge and recovery rates, minimum/maximum/average rates for the 24-hour period, cumulative AR storage volume, cumulative AR recovery volume, and net AR storage available for recovery. These reports are currently provided to OWRD on a daily basis via email.

As previously described, the Windmill Well to be used for AR recovery is an authorized point of appropriation for several water rights with a cumulative permitted pumping rate of 925 gpm. During recovery operations, collector well pumping rates of 925 gpm or less would be authorized by these water rights, and any pumping rate over 925 gpm would be considered recovery of artificially recharged water. For the AR recovery system, AR recovery will cease when 85% of the recharge volume is reached in a given water year, as required by OAR 690-350-0130(3). Any balance of AR storage volume not recovered in a

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given water year will be relinquished and will not be available for recovery in the following year. The location of the place of use (for supplemental irrigation) is shown on Figure 2.

The AR recovery testing operations in 2023-2024 are anticipated to be similar to the testing conducted under the previous limited licenses.

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5. References and Sources Consulted

GSI. 2009. Hydrogeologic Feasibility Assessment and Project Description Report Artificial Recharge Limited License Application - Madison Farms. Prepared by GSI Water Solutions. July 17, 2009.

GSI. 2016. Madison Ranches Limited License Application for Artificial Groundwater Recharge. Prepared by GSI Water Solutions. January 29, 2016.

GSI. 2016. Madison Ranches Limited License Application for Artificial Groundwater Recharge – Addendum to revise water quality monitoring plan. Prepared by GSI Water Solutions. March 29, 2016.

OWRD. 2016. Artificial Recharge Limited License 1628. Oregon Water Resources Department. April 15, 2016.

OWRD. 2023. Artificial Recharge Recovery Limited License 1927, Oregon Water Resources Department. February 14, 2017.

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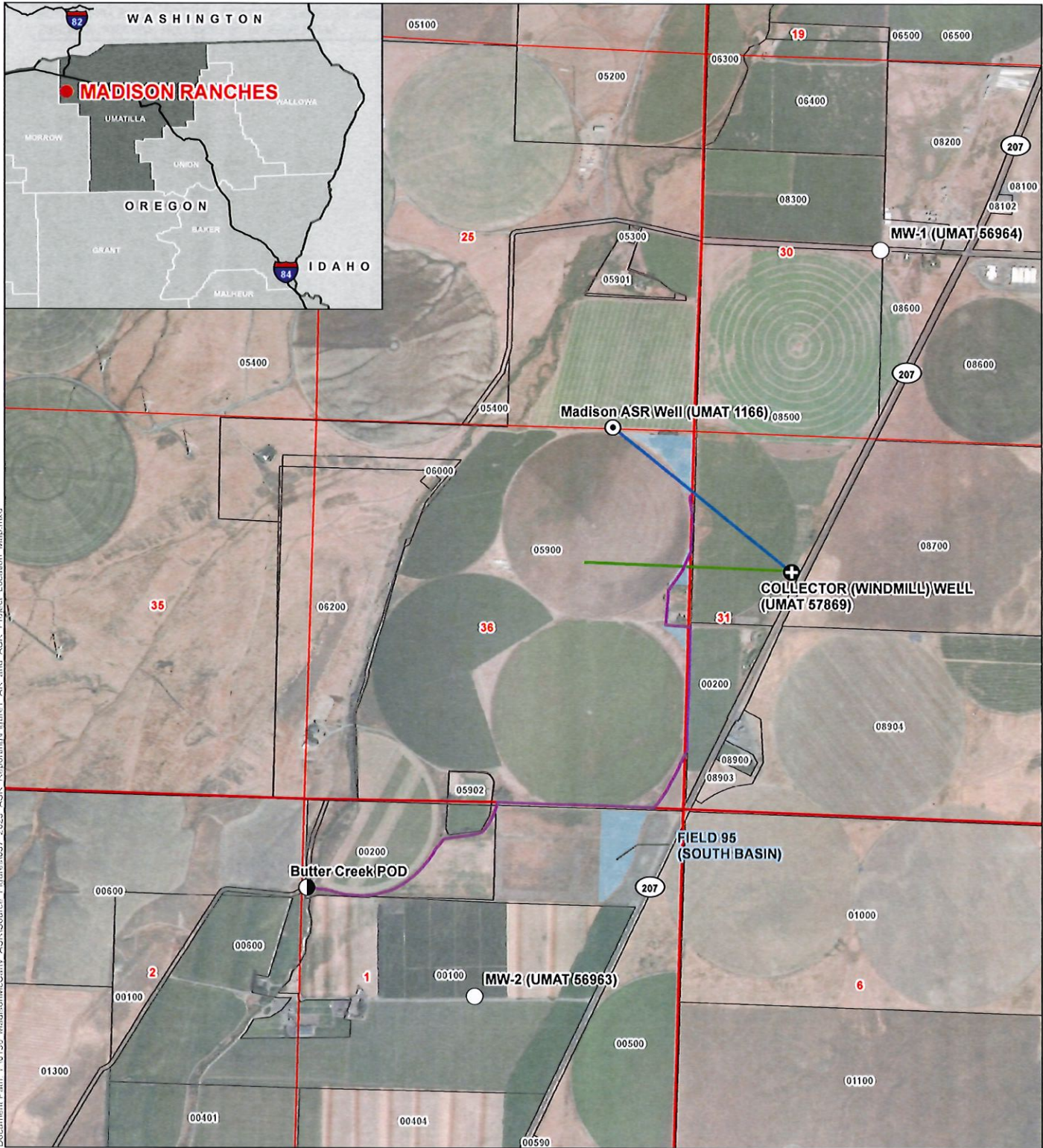
Figures

FIGURE 1
AR Recharge Project
Location Map
Madison Ranches

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Document Path: Y:\0136_MadisonMcCarly_AR\ASR_Reporting\Figure1_AR_and_ASR_Project_Location_Map.mxd

LEGEND

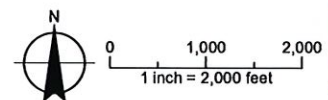
- Monitoring Well
- ⊕ Collector Well Sump
- ⊙ ASR Well
- Butter Creek POD
- Recharge Basin Cells
- ↗ Collector Well Perforated Pipeline
- ↘ Madison AR Conveyance
- ↙ ASR Source Water Conveyance
- Tax Lot

FIGURE 1
AR Recharge Project
Location Map
 Madison Ranches

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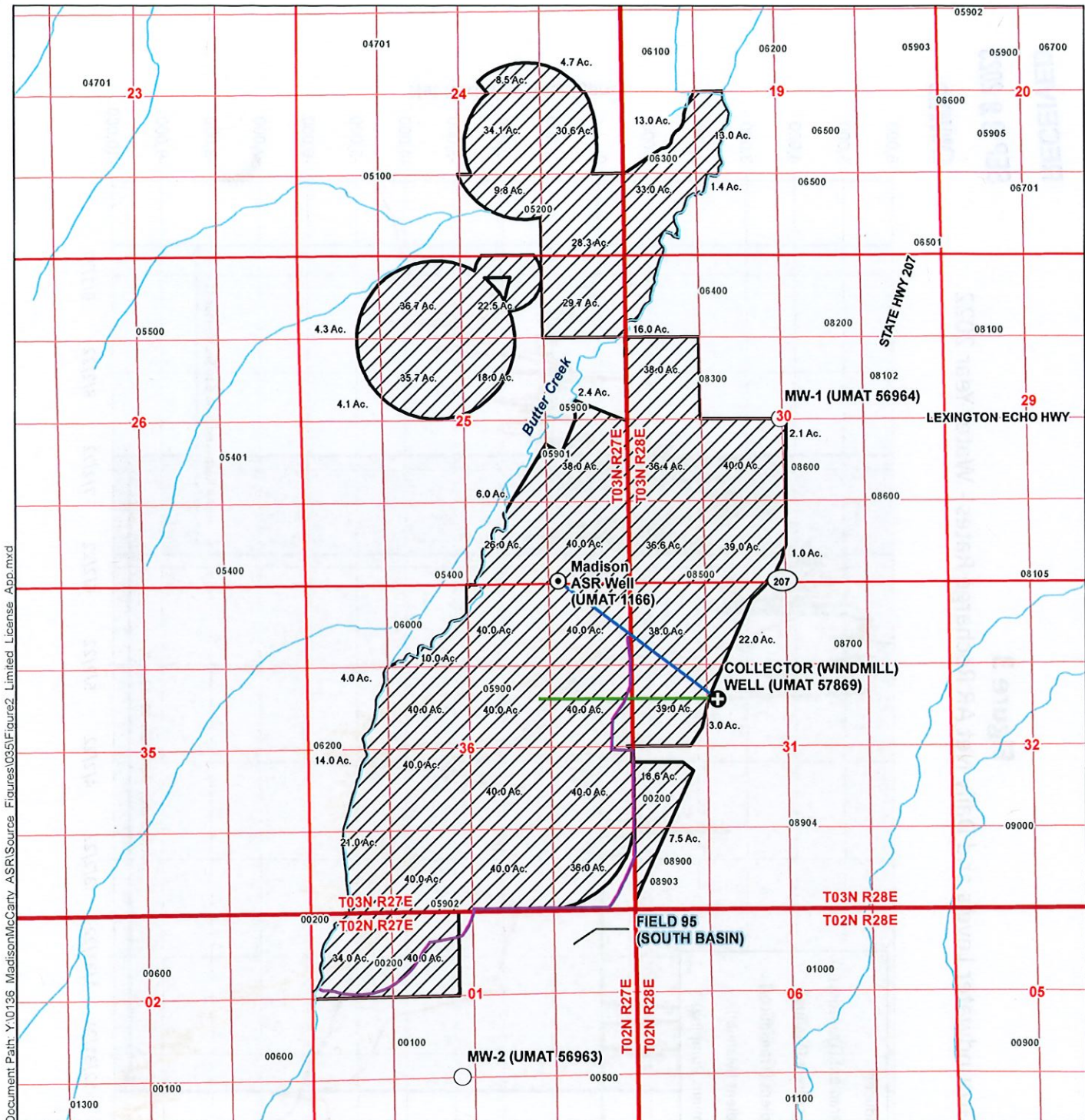
OWRD



Date: April 6, 2023
 Data Sources: BLM, ESRI, OWRD, USGS, Umatilla Co.,
 Maxar Imagery (2020)

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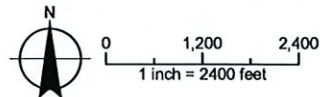
LEGEND

- Monitoring Well
- ⊕ Collector Well Sump
- Point of Appropriation (POA)
- ⊙ ASR Well
- ↔ ASR Source Water Conveyance
- ↔ Madison AR Conveyance
- ↔ Collector Well Perforated Pipeline
- ▨ Supplemental Place of Use (POU)
- ⊕ Recharge Basin Cells
- ▭ Property Owned by Applicant
- ~ Watercourses
- ⊕ Tax Lot

FIGURE 2
Artificial Recharge Recovery
Limited License Application Map
 Umatilla County
 Township 2 & 3 North, Range 27 & 28 East (W.M.)

DISCLAIMER
 This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

Date: June 26, 2023
 Data Sources: BLM, ESRI, OWRD, USGS, Umatilla Co.

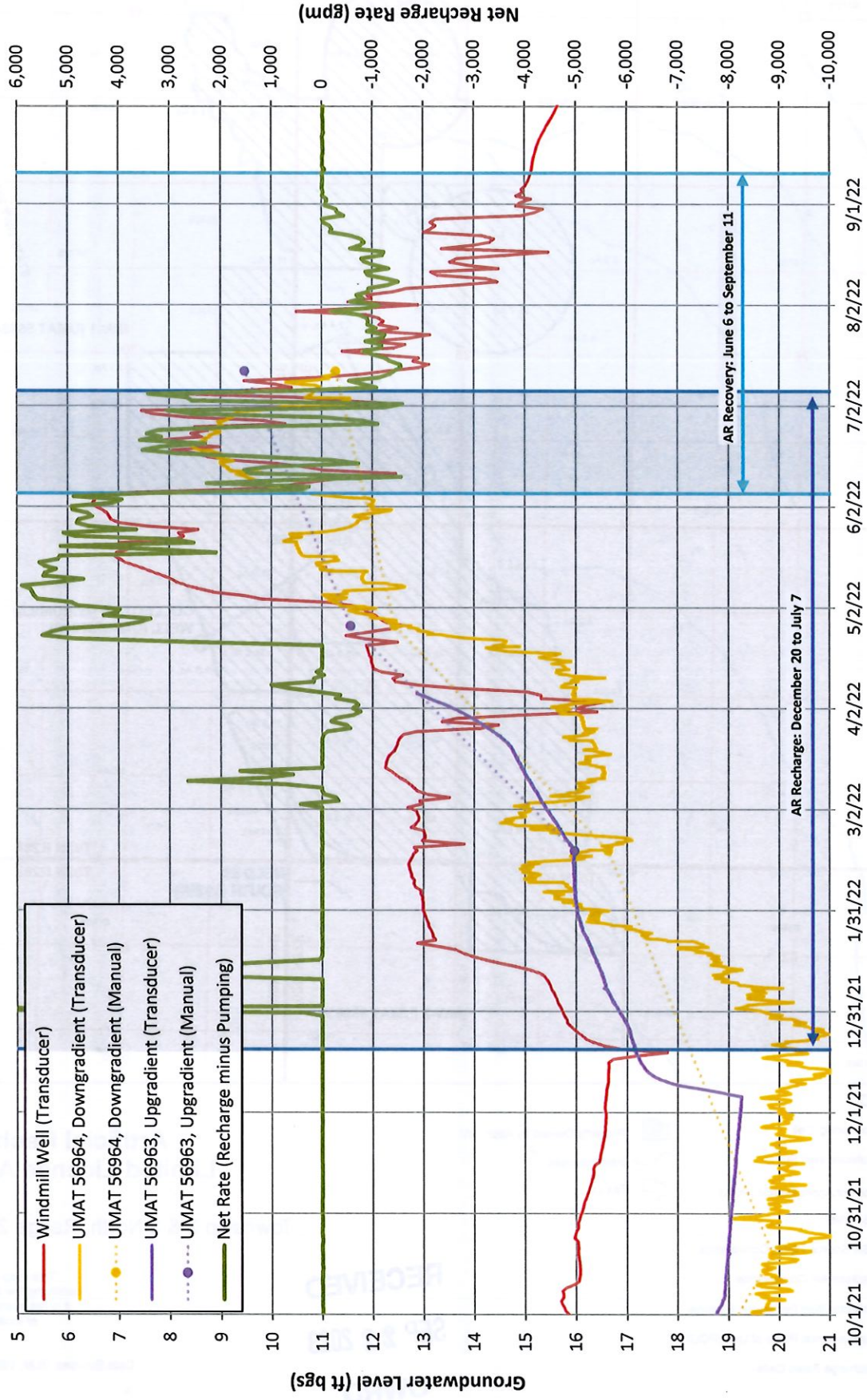


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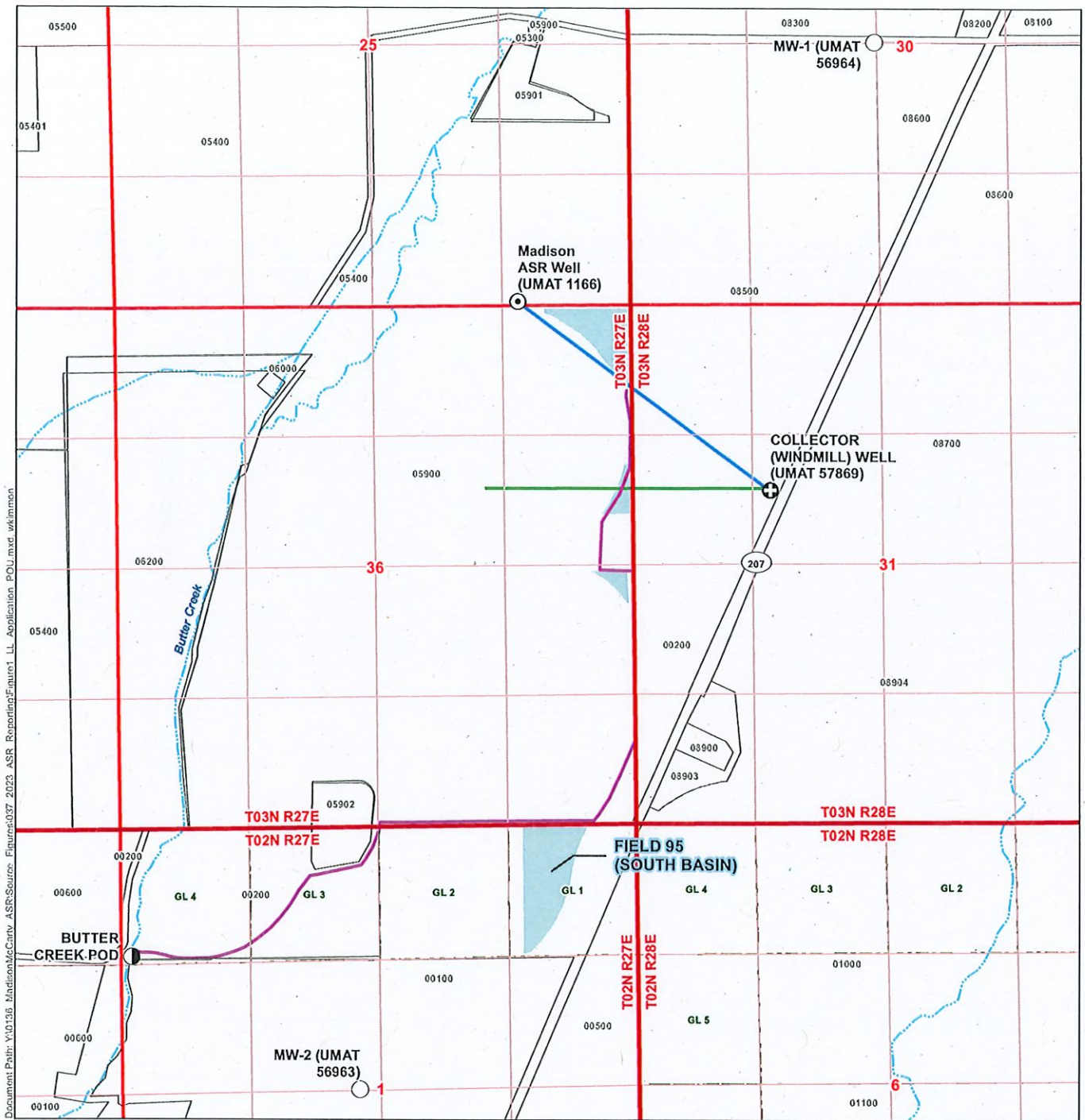
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Figure 3
 Groundwater Levels and Daily Net AR Recharge Rates - Water Year 2022



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LEGEND

- Existing Point of Diversion (POD)
- Monitoring Well
- Collector Well Sump
- ASR Well
- Place of Use (POU) - Existing Recharge Basin
- Collector Well Perforated Pipeline
- Madison AR Conveyance
- ASR Source Water Conveyance
- Watercourses
- Tax Lot

FIGURE 1
Limited License Application
for Artificial Recharge
 Umatilla County
 Township 2 & 3 North, Range 27 & 28 East (W.M.)

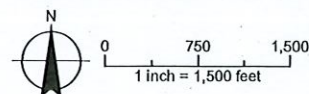
DISCLAIMER

This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

Date: June 22, 2023

Data Sources: BLM, ESRI, OWRD, USGS, Umatilla Co.

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LOCATION DESCRIPTION

Butter Creek POD
 Located 80 feet North and 100 feet West from the NW corner of the SW NW, Section 1, Township 2 North, Range 27 East (W.M.)
Collector (Windmill) Well
 Located 1620 feet South and 1060 feet West from the North 1/4 corner of Section 31, Township 3 North, Range 28 East (W.M.)

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