

**BEFORE THE OREGON WATER RESOURCES DEPARTMENT**

IN THE MATTER OF AN INVESTIGATION	)	
IN AID OF DISTRIBUTION PURSUANT	)	<b>DETERMINATION ON STATUS</b>
TO ORS 540.210	)	<b>OF RELEASES OF WATER</b>
	)	<b>STORED UNDER</b>
Klamath Irrigation District	)	<b>DETERMINED CLAIM KA 294</b>
<i>Petitioner,</i>	)	
	)	
Bureau of Reclamation	)	
<i>Reservoir Owner.</i>	)	

To: Staff of the Oregon Water Resources Department

**I. BACKGROUND**

Pursuant to the order of the Marion County Circuit Court dated October 13, 2020 <sup>1</sup> ((*Klamath Irrigation District v. Water Resources Department* (20CV15606) the Oregon Water Resources Department (Department) determines whether water that is passing through the Link River Dam as of the date of this Determination is water stored pursuant to Determined Claim KA 294.

The Department will continue to provide updates as to the status of water released from UKL whenever circumstances change materially and at least monthly throughout 2021. Determination #1 was issued on January 22, 2021, Determination #2 on February 23, 2021, and Determination #3 on March 30, 2021. This is the fourth determination for 2021 (Determination #4).

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<sup>1</sup> The October 13, 2020 order directed the Watermaster to:

“\* \* \* immediately stop the distribution, use and/or release of Stored Water from the UKL [Upper Klamath Lake] without determining that the distribution, use and/or release is for a permitted purpose by users with existing water rights of record or determined claims to use the Stored Water in UKL.

The term “existing water rights of record” has the meaning provided in ORS 540.045(4). The term “determined claim” has the meaning provided in Section 1, chapter 445, Oregon Laws 2015 (which is published in the Oregon Revised Statutes as a note following ORS 539.170).

## II. REGULATION OF DETERMINED CLAIMS

ORS 540.145 authorizes the Water Resources Commission to adopt rules to “secure the equal and fair distribution of water in accordance with the rights of the various users” which rules “shall apply to all water rights that have been established \* \* \* “[u]nder an order of the commission or the Water Resources Director in proceedings for the determination of relative rights to the use of water \* \* \*.” The rules of the Commission authorizing the distribution of Determined Claims in the ACFFOD<sup>2</sup> to secure the equal and fair distribution of water in accordance with the rights of the various users are provided in Oregon Administrative Rules (OAR) Chapter 690 Division 250.

A “reservoir” includes a modified natural lake such as Upper Klamath Lake (UKL), in which water is collected for beneficial use or purpose.<sup>3</sup> “Legally stored water” means any “water impounded in a reservoir under the provisions of an established right to store water.”<sup>4</sup> Use of legally stored water is governed by the water rights that may call on that source of water and is limited to that amount of water that may be put to beneficial use without waste.<sup>5</sup> Any legally stored water that is in excess of the needs of the water rights calling on that stored water is considered “natural flow” which may be diverted according to the next water right in priority or is once again public water subject to appropriation.<sup>6</sup>

## III. FINDINGS OF FACT

### A. KA 294 and KA 1000

1. The Bureau’s Klamath Project (Project) was established in accord with federal legislation and state legislation in 1902 and 1905, respectively. The Bureau built and owns the facilities, known

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<sup>2</sup> The term “ACFFOD” refers to the Amended and Corrected Findings of Fact and Order of Determination. The ACFFOD is the Director’s order of determination regarding claims filed in the Klamath Adjudication and is currently under review in the Klamath County Circuit Court. Pursuant to ORS 539.170 while the ACFFOD is pending before the circuit court, the “division of water from the stream involved in the appeal shall be made in accordance with the order of the director.”

<sup>3</sup> OAR 690-250-0010(13); Modifications of the outlet of UKL along with the construction of the Link River Dam around 1916 allow the UKL to be operated and managed as a reservoir between the elevations of 4136 and 4143.3.

<sup>4</sup> OAR 690-250-0010(10).

<sup>5</sup> OAR 690-250-0010(3); *Bennett v. City of Salem*, 192 Or 531, 543 (1951)(An appropriator is never entitled to divert more water than is actually put to beneficial use, reasonable transmission losses excepted); *In re Water Rights of Deschutes River and Tributaries*, 134 Or 623, 644 (1930)(“The right of a prior appropriator is paramount, and the right is limited to such an amount of water as is reasonably necessary for such use and project as may be fairly within contemplation at the time the appropriation is made); *Tudor v. Jaca*, 178 Or 126, 143 (1945) *citing Bolter v. Garrett*, 44 Or 204 (1904) for the proposition that the use of water appropriated “must not only be beneficial to the lands of the appropriator, but it must also be reasonable in relation to the reasonable requirements of subsequent appropriators.”

<sup>6</sup> OAR 690-250-0150(4); *Jones v. Warm Springs*, 162 Or 186, 195 (1939) (Water discharged to the natural stream with no intent to recapture it becomes part of the natural stream and is subject to reappropriation).

as the works in the Project area. UKL is a modified natural lake and is one of the three reservoirs in the Project which also comprises eight dams, five major pumping plants, 19 canals, and other works.

2. The Bureau is the sole owner of Determined Claim KA 294. KA 294 provisionally authorizes the Bureau to store a maximum annual volume of 486,828 acre feet (AF) of water in UKL between elevations 4136 feet and 4143.3 feet, relative to the Bureau's Klamath Basin Datum.
3. The volume of water stored in UKL above elevation 4136 is estimated based on an elevation capacity curve, or rating, provided by the Bureau, and using the weighted mean lake level as reported by the United States Geological Survey (USGS). The most recent rating provided by the Bureau indicates the maximum storage volume for KA 294 (486,828 AF) is met when the lake elevation is at 4142.48 feet.<sup>7</sup>
4. The KID and 20 other Klamath Project Water Users (together the KPWU) and the Bureau are co-owners of Determined Claim KA 1000. KA 1000 provisionally authorizes the diversion of natural flow from UKL and water stored in UKL pursuant to KA 294 for beneficial use by the KPWU both upstream and downstream of the Link River Dam.<sup>8</sup> KA 1000 does not specify what amount of water must be taken from natural flow as opposed to stored water and does not prohibit the taking of water from both sources simultaneously.
5. Pursuant to KA 1000, KID may divert up to 1,150 cubic feet per second (cfs) through the A Canal for irrigation during the irrigation season March 1 through October 31, with a priority date of May 19, 1905.
6. The Link River Dam is a federally owned dam located on the Link River. The storage and release of water pursuant to KA 294 from UKL is through the Link River Dam.
7. Downstream of the Link River Dam, and pursuant to KA 1000, there are 34 authorized points of diversion from the Klamath River. Many of these diversions have an authorized season of use from March 1 to October 31 and two irrigation districts also maintain an additional season of use from November 1 to February 28. These 34 points of diversion have a total authorized instantaneous maximum diversion rate of 1,572.51 cfs.

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<sup>7</sup> The weighted mean lake level of UKL is monitored and reported by the USGS. Four separate lake stage gages are operated and maintained by the USGS, and the data from each gage are entered into an equation to calculate the weighted mean lake elevation. The provisional lake elevation data are available at the website: [https://waterdata.usgs.gov/or/nwis/uv/?site\\_no=11507001&agency\\_cd=USGS](https://waterdata.usgs.gov/or/nwis/uv/?site_no=11507001&agency_cd=USGS)

<sup>8</sup> KA 1000 erroneously refers to KA 293, but this is a typographical error.

## ***B. Determining Water Stored in UKL Pursuant to KA 294***

### **1. Calculating Storage Release**

8. The equation the Department is using to calculate stored water releases is:

$$\{eqn 1\} \text{ Storage Release} = \text{Link River Flow} - (\text{UKL Inflows} - \text{UKL Diversions}_{R_{KA1000}R})$$

with the storage release in excess of water rights then calculated as:

$$\{eqn 2\} \text{ Excessive Storage Release} = \text{Storage Release} - \text{Downstream Diversion}_{R_{KA1000}R}$$

If either equation results in a zero or negative value, then no storage release unrelated to water rights is occurring.

#### **Description of the variables used in the equation:**

**Link River flow** data are available from a USGS stream gage (USGS 11507500) operated on the river.

**UKL inflows** represent the total amount of *natural flow* coming into the lake from surface water, groundwater, and precipitation. Some of these inflows are measured directly (e.g., Wood and Williamson River stream gages) while others must be estimated (e.g., groundwater inflows) as explained below.

**UKL Diversions<sub>R<sub>KA1000</sub>R</sub>** : The largest UKL Diversion, the A Canal, is monitored by a gage accessible at this link:

<https://www.usbr.gov/pn-bin/wyreport.pl?site=acho&parameter=qj&head=yes>

There are 12 authorized points of diversion from UKL above the Link River Dam included in KA 1000. Additionally, there are 10 state certificated water rights and 8 non-KA 1000 determined claims each exceeding 1 cfs for the use of natural flow from UKL. These 18 non-KA 1000 water rights and determined claims have a combined total of 23 authorized points of diversion from UKL. Because many of these points of diversion do not have measuring devices installed, their diversion rates are estimated using the authorized diversion rate on the determined claim or water right.<sup>9</sup>

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<sup>9</sup> Efforts are underway to develop a more sophisticated mechanism of estimating these numerous smaller users that divert water directly from UKL, including inventorying each POD and working with the landowner to install measuring devices.

**Downstream Diversions**<sup>RKA1000 R</sup>: Gages monitor three of the KA 1000 diversions below UKL; the Lost River Diversion Channel (LRDC), the North Canal, and the Ady Canal. There are 34 authorized points of diversion identified under the KA 1000 below the Link River Dam and approximately 61 other diversions from the Klamath River downstream of the Link River Dam not associated with KA 1000. The ungaged diversions and individual pump diversions are currently estimated (see footnote 4). On April 15, 2021, the Klamath Drainage District began diverting water into the North and Ady Canals. The Ady Canal was shut off one day later, and as of the date of this Determination, the North Canal continues to divert.

## 2. Calculating Inflows

9. To manage the water rights and determined claims and distinguish between natural flow and stored water, the Department must quantify gross inflows to UKL. Table 1 contains measured inflows (all reported in cubic feet per second) between March 28, 2021 and April 28, 2021.
10. Stream tributaries constitute one component of inflow that contributes to UKL. Tributary inflows include the Williamson River, Wood River, Sevenmile Creek, Crystal Creek, Thomason Creek, and Fourmile Creek. These streams and their tributaries are listed as sources on KA 294.<sup>10</sup>
11. Groundwater contributions and direct precipitation are also estimated inflow contributions that contribute to UKL. Table 1 includes estimates groundwater inflow<sup>11</sup> and direct precipitation into the UKL.<sup>12</sup>

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<sup>10</sup> Gaged inflow streams include the Williamson and Wood Rivers, and Sevenmile Creek. On November 5, 2020, the Department issued a FINAL ORDER MEASURING DEVICES to the Bureau requiring installation of measuring devices on Sevenmile Creek, Thomason Creek, Fourmile Creek, and Crystal Creek. On December 30, 2020, the Bureau requested reconsideration of this order, and on February 23, 2021, the Department notified the Bureau that it is reconsidering its order. At the time of the issuance of this order, the Department is working with the Bureau to evaluate the viability of installing gages on Crystal Creek and Fourmile Creek.

<sup>11</sup> Groundwater contributions are based on USGS estimates and adjusted for current hydro-climate conditions.

<sup>12</sup> Groundwater contributions and precipitation estimates are based on the previous month's lake water balance, which is subsequently adjusted based on reconciliation with the current monitoring period UKL water balance.

DATE	USGS Gage 11504115 Wood River	USGS Gage 11504290 Sevenmile at Dike Rd	USGS Gage 11502500 Williamson	GW Inflow Estimate	Fourmile, Crystal Creek & Other Ungaged Tributaries	Precipitation	Total Inflow to UKL
3/28/2021	369	83	566	224	62	0	1300
3/29/2021	383	79	562	224	62	0	1310
3/30/2021	362	78	560	224	62	0	1290
3/31/2021	364	65	573	224	62	0	1290
4/1/2021	367	80	588	224	62	0	1320
4/2/2021	318	73	582	224	62	0	1260
4/3/2021	315	82	580	224	62	0	1260
4/4/2021	319	87	582	224	62	0	1270
4/5/2021	316	84	591	224	62	0	1280
4/6/2021	328	81	598	224	62	0	1290
4/7/2021	356	80	600	224	62	0	1320
4/8/2021	347	64	597	224	62	0	1290
4/9/2021	342	73	590	224	62	0	1290
4/10/2021	346	67	592	224	62	0	1290
4/11/2021	343	84	584	224	62	0	1300
4/12/2021	346	83	592	224	62	0	1310
4/13/2021	350	74	595	224	62	0	1310
4/14/2021	345	35	595	224	62	0	1260
4/15/2021	343	28	594	224	62	0	1250
4/16/2021	347	25	600	224	62	0	1260
4/17/2021	352	34	593	224	62	0	1270
4/18/2021	353	39	595	224	62	0	1270
4/19/2021	362	45	604	224	62	0	1300
4/20/2021	364	5	612	224	62	312	1580
4/21/2021	356	21	619	224	62	0	1280
4/22/2021	356	21	614	224	62	0	1280
4/23/2021	354	0	602	224	62	78	1320
4/24/2021	355	7	600	224	62	310	1560
4/25/2021	363	2	599	224	62	600	1850
4/26/2021	364	37	610	224	62	58	1360
4/27/2021	356	39	644	224	62	0	1330
4/28/2021	350	26	662	224	62	0	1320

**Table 1 Measured inflows into UKL in cubic feet per second. Note: OWRD gages were located and installed to monitor instream determined claims.**

### 3. Calculating Inflows in Relation to Outflows

12. The total UKL inflow estimate is reconciled against the change in UKL contents and the outflows based on a water balance of the lake performed periodically, expressed as the following equation:

$$\{eqn 2\} \text{ Reconciled UKL Inflows} = \text{Change in UKL Contents} + \text{UKL outflows}$$

Adjustments to the estimated ungaged inflow components are made based on this reconciliation to ensure the UKL water balance is satisfied (Table 2).

**Description of the variables used in the equation:**

The **change in UKL contents** is based on contents derived from the USBR elevation capacity table using the average UKL elevation from four USGS lake level gages.

**UKL outflows** consist of lake evaporation, outflows through the Link River and A- Canal, and 23 other authorized diversions greater than 1 cfs directly from the UKL. Lake evaporation is currently estimated using weather station data from two nearby AgriMet sites.<sup>13</sup> Flow through the Link River and A- Canal are measured with gages. The other diversions from the UKL are currently estimated.

<b>Water Balance Summary Table</b>		
Start Date		3/28/2021
End Date		4/28/2021
Number of Days in Reporting Period		32
	AC-FT	<i>Equivalent CFS</i>
<b>Change in Contents (+ = increase)</b>	<b>-18,890</b>	<b>-298</b>
Gaged Inflows	63,366	998
Ungaged Inflows <sup>1</sup>	3,923	62
Groundwater Inflow <sup>2</sup>	14,218	224
Precipitation Inflow	2,692	42
<b>Total Inflow</b>	<b>84,198</b>	<b>1,327</b>
Evaporation	-33,673	-531
Link River Outflow	-69,281	-1,092
A Canal Diversions	0	0
Adjacent UKL Land Diversions	-135	-2
<b>Total Outflow</b>	<b>-103,088</b>	<b>-1,624</b>
<b>UKL Water Balance</b>	<b>0</b>	<b>0</b>
<sup>1</sup>	Adjusted to close water balance	
<sup>2</sup>	Updated from Hubbard using Spring Cr&Fall R as hydro-climate index	

**Table 2: Water balance table in reconciliation process.**

<sup>13</sup> The Department estimates evaporation by a Penman-Monteith equation that uses weather data from two USBR AgriMet weather stations just north and south of UKL. Evaporation estimates are adjusted for local lake conditions based on comparisons of the Penman-Monteith derived estimates with concurrent evaporation data on UKL from a study completed by USBR in 2015.

13. The evaporation estimate is charged against the storage account, thus increasing the accounting of what has been stored since the beginning of the year, and decreasing the amount remaining to be stored under the 486,828 acre-foot storage limit in KA 294.

14. Table 3 represents the Department’s calculations of inflows into UKL versus lake outflows for the time period between March 28, 2021 and April 28, 2021

DATE	Lake Elevations (FT) and Storage (AC-FT)				Lake Inflows (CFS)	Lake Outflows (CFS)					Flow Distribution Calculation						
	UKL Lake Elevation (USBRKB Datum)	UKL Storage	Stored since Jan 1, 2021	KLA 294 Remaining to Store (Max 486,828 AF)	Total Inflows into UKL	Evap	Link River Flow	A- Canal Diversion	KA 1000 Diversions from Adjacent UKL Lands	Non KA 1000 Diversions from Adjacent UKL Lands	Live Flow Available to Pass Link R Dam	Stored Water Released from Link R Dam	Gaged KA 1000 below LRD	Ungaged KA 1000 below LRD	Non KA 1000 Diversions below LRD	KA 1000 Storage Deliveries blw LRD	Stored Release in Excess of WRs
3/28/2021	4140.81	339,820	147,432	116,780	1300	597	740	0	0.0	0.0	1300	0	0	0	0	0	0
3/29/2021	4140.84	342,319	150,865	113,346	1310	471	872	0	0.0	0.0	1310	0	0	0	0	0	0
3/30/2021	4140.83	341,486	150,881	113,331	1290	428	615	0	0.0	0.0	1290	0	0	0	0	0	0
3/31/2021	4140.83	341,486	151,927	112,284	1290	528	640	0	0.0	0.0	1290	0	0	0	0	0	0
4/1/2021	4140.83	341,486	153,094	111,118	1320	588	1060	0	0.0	0.0	1320	0	0	0	0	0	0
4/2/2021	4140.82	340,653	153,255	110,957	1260	501	1210	0	0.0	0.0	1260	0	0	0	0	0	0
4/3/2021	4140.82	340,653	154,107	110,104	1260	430	1190	0	0.0	0.0	1260	0	0	0	0	0	0
4/4/2021	4140.82	340,653	155,215	108,997	1270	559	1040	0	0.0	0.0	1270	0	0	0	0	0	0
4/5/2021	4140.81	339,820	155,375	108,837	1280	501	960	0	0.0	0.0	1280	0	0	0	0	0	0
4/6/2021	4140.80	338,987	155,505	108,706	1290	486	943	0	0.0	0.0	1290	0	0	0	0	0	0
4/7/2021	4140.79	338,154	155,776	108,436	1320	556	1060	0	0.0	0.0	1320	0	0	0	0	0	0
4/8/2021	4140.79	338,154	156,738	107,474	1290	485	1190	0	1.3	1.9	1287	0	0	0	0	0	0
4/9/2021	4140.77	336,488	156,229	107,983	1290	583	1190	0	1.3	1.9	1287	0	0	0	0	0	0
4/10/2021	4140.76	335,655	156,382	107,830	1290	497	1200	0	1.3	1.9	1287	0	0	0	0	0	0
4/11/2021	4140.76	335,655	157,425	106,787	1300	526	1190	0	1.3	1.9	1297	0	0	0	0	0	0
4/12/2021	4140.75	334,834	157,814	106,398	1310	610	1020	0	1.3	1.9	1307	0	0	0	0	0	0
4/13/2021	4140.76	335,655	159,931	104,280	1310	654	744	0	1.3	1.9	1307	0	0	0	0	0	0
4/14/2021	4140.74	334,012	159,553	104,659	1260	638	830	0	1.3	1.9	1257	0	0	0	0	0	0
4/15/2021	4140.72	332,368	158,890	105,322	1250	495	885	0	1.3	1.9	1247	0	20	0	0	0	0
4/16/2021	4140.72	332,368	160,123	104,088	1260	622	1170	0	1.3	1.9	1257	0	165	0	0	0	0
4/17/2021	4140.69	329,903	160,123	104,088	1270	605	1360	0	1.3	1.9	1267	93	190	0	0	93	0
4/18/2021	4140.68	329,081	160,123	104,088	1270	646	1330	0	1.3	1.9	1267	63	183	0	0	63	0
4/19/2021	4140.68	329,081	160,123	104,088	1300	618	1340	0	1.3	1.9	1297	43	176	0	0	43	0
4/20/2021	4140.68	329,081	161,322	102,890	1580	604	1290	0	1.3	1.9	1577	0	173	0	0	0	0
4/21/2021	4140.67	328,260	161,948	102,263	1280	730	1240	0	1.3	1.9	1277	0	175	0	0	0	0
4/22/2021	4140.63	325,006	159,940	104,271	1280	628	1230	0	1.3	1.9	1277	0	172	0	0	0	0
4/23/2021	4140.61	323,385	159,534	104,677	1320	613	1220	0	1.3	1.9	1317	0	165	0	0	0	0
4/24/2021	4140.60	322,574	159,358	104,854	1560	320	1210	0	1.3	1.9	1557	0	170	0	0	0	0
4/25/2021	4140.59	321,763	158,877	105,334	1850	167	1220	0	1.3	1.9	1847	0	173	0	0	0	0
4/26/2021	4140.60	322,574	160,240	103,972	1360	278	1260	0	1.3	1.9	1357	0	159	0	0	0	0
4/27/2021	4140.60	322,574	161,205	103,007	1330	487	1260	0	1.3	1.9	1327	0	108	0	0	0	0
4/28/2021	4140.59	321,763	161,440	102,771	1320	528	1220	0	1.3	1.9	1317	0	68	0	0	0	0

**Table 3: Calculations of inflows versus outflows for UKL.**

15. Currently, the total gaged and ungaged inflows plus the estimated groundwater inflow to UKL exceeds the amount of water passing through the Link River Dam. Therefore, the water passing through Link River Dam is natural flow as opposed to Legally Stored Water (Table 3.)

#### IV. ULTIMATE FINDINGS OF FACT

1. As of the date of this determination, water passing through the Link River Dam constitutes natural flow as opposed to water legally stored pursuant to KA 294.



**V. CONCLUSION**

1. No Legally Stored Water is presently passing through the Link River Dam.

**VI. DETERMINATION**

As of the date of this Determination #4, water passing through the Link River dam is natural flow. The Department and the Watermaster District 17 will continue to monitor conditions in the UKL throughout 2021 and will issue a status determination on a monthly basis or as conditions change. When the Department determines that Legally Stored Water in excess of the needs of KA 1000 is passing or may pass through the Link River Dam, it will issue an order directed to the Bureau as required by the order of the Marion County Circuit Court.

DATED this 30th day of April 2021.



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DANETTE WATSON,  
Watermaster, District 17  
Oregon Water Resources Department