RULES AND REGULATIONS
OF THE
GREATER KAWEAH GROUNDWATER
SUSTAINABILITY AGENCY

Adopted [date]

Eric Osterling, General Manager
Greater Kaweah GSA

Last Rev: 7/22/2022
## Contents

### Article I. General .................................................................................................................................. 5

Section 1.01 Purpose .................................................................................................................................. 5

Section 1.02 Authority ................................................................................................................................ 5

Section 1.03 Groundwater Sustainability Plan ...................................................................................... 5

Section 1.04 Definitions ........................................................................................................................... 5

Section 1.05 Effective Date and Changes .............................................................................................. 6

Section 1.06 Actions Against the GKGSA ............................................................................................. 7

Section 1.07 Rights of Access ................................................................................................................. 7

Section 1.08 Severability of Provisions .................................................................................................. 7

### Article II. Groundwater Monitoring ...................................................................................................... 7

Section 2.01 Well Registration ................................................................................................................. 7

(a) Registration Requirement .................................................................................................................. 7

(b) Change in Owner or Operator ........................................................................................................... 8

(c) Penalty ............................................................................................................................................... 8

Section 2.02 Groundwater Use Measurement .......................................................................................... 8

(a) Criteria for Using Meters .................................................................................................................. 8

(b) Criteria for Using Evapotranspiration Method ............................................................................... 9

### Article III. Groundwater Accounting/Online Dashboard ....................................................................... 10

Section 3.01 Authority ............................................................................................................................. 10

Section 3.02 Online Water Accounting Dashboard ............................................................................... 10

Section 3.03 Categories of Water .............................................................................................................. 10

(a) Surface Water Credits and Debits for Direct Delivery .................................................................. 10

(b) Sustainable Yield Allocation ........................................................................................................... 10

(c) Temporary Tier 1 Allocation ............................................................................................................ 10

(d) Temporary Tier 2 Allocation ............................................................................................................ 10

(e) Groundwater Credits ...................................................................................................................... 11

(f) Recharge and Banking Credits and Debits .................................................................................. 11

(g) Recycled Water ................................................................................................................................ 11

(h) Prohibited Tier 3 Pumping .............................................................................................................. 11
Section 3.04  Priority of Use ..................................................................................................11
Section 3.05  Net Groundwater Consumptive Use Reporting and Debiting ..........................12
  (a) Methodology ............................................................................................................... 12
  (b) Appeals Process .......................................................................................................... 12
Section 3.06  Surface Water Reporting ..............................................................................13
Section 3.07  Recharge and Banking Reporting .................................................................13

Article IV.  Allocation of Water ..........................................................................................13
Section 4.01  Purpose .........................................................................................................13
Section 4.02  Determination of Allocations ......................................................................13
Section 4.03  Greater Kaweah Agricultural Management Area ........................................13
  (a) Sustainable Yield Allocation ...................................................................................... 13
  (b) Temporary Tier 1 and Tier 2 Allocations ................................................................... 14
  (c) Carryover and Transfers ............................................................................................. 15
Section 4.04  Community Management Areas ................................................................19
Section 4.05  Special Uses Management Area ................................................................19
  (a) Sustainable Yield, Tier 1 and 2 Allocations ............................................................... 19
  (b) Consumption ............................................................................................................... 19
  (c) Carryovers and Transfers ............................................................................................ 20
Section 4.06  Appeal Process ............................................................................................20
  (a) Notification of Allocations and Extraction Limits ..................................................... 20
  (b) Protest of Allocations and Extraction Limits ............................................................. 20
Section 4.07  Emergency Ordinances ...............................................................................20

Article V.  Fees & Penalties ...............................................................................................21
Section 5.01  Penalties .......................................................................................................21
  (a) Penalty for Excess Use ............................................................................................... 21
  (b) SGMA Penalties ......................................................................................................... 21
  (c) Civil Remedies ............................................................................................................ 21
  (d) Protest of Penalty Determination ............................................................................... 21
  (e) Submission to Board .................................................................................................. 21
Section 5.02  Groundwater Extraction Fees ......................................................................22
Article I. General

Section 1.01 Purpose

These Rules and Regulations are established by the Board of Directors of the Greater Kaweah Groundwater Sustainability Agency (GKGSA) in order to provide for the sustainable management of groundwater within the GKGSA.

Section 1.02 Authority

Division 6 Conservation, Development and Utilization of State Water Resources Part 2.74, Chapter 5, Section 10725.2 expressly states as follows:

“A groundwater sustainability agency may adopt rules, regulations, ordinances, and resolutions for the purpose of this part, in compliance with any procedural requirements applicable to the adoption of a rule, regulation, ordinance, or resolution by the groundwater sustainability agency.”

Section 1.03 Groundwater Sustainability Plan

Pursuant to Division 6 Conservation, Development and Utilization of State Water Resources Part 2.74, Chapter 5, Section 10725, a groundwater sustainability agency may exercise the powers described in Chapter 5 provided the groundwater sustainability agency adopts and submits a groundwater sustainability plan to the Department of Water Resources. These Rules and Regulations are designed to implement the provisions of the GKGSA Groundwater Sustainability Plan (GSP), and may be amended at any time if necessary to achieve consistency with the groundwater sustainability plan and steps needed to achieve sustainability.

Section 1.04 Definitions

“Coordination Agreement” means the Kaweah Subbasin Coordination Agreement developed and agreed to pursuant to Division 6 Conservation, Development and Utilization of State Water Resources Part 2.74, Chapter 5, Section 10727.6, and any amendments or additions thereto.

“Dairy” or “Dairies” means the production facility of a commercial dairy operation that includes the milk barn, feed area, animal housing, and manure storage as permitted as the Dairy Facility Footprint by the local permitting agencies, including but not limited to, the County, local Air District, and State Water Board.

“GKGSA” means Greater Kaweah Groundwater Sustainability Agency.
“GKGSA GSP” means the GKGSA Groundwater Sustainability Plan developed and submitted to the Department of Water Resources pursuant to Division 6 Conservation, Development and Utilization of State Water Resources Part 2.74, Chapter 5, Section 10727, et al.

“GKGSA Technical Group” means the GKGSA’s Consulting Engineer, the GKGSA’s designated Hydrogeologist, and the GKGSA’s designated Agronomist, or other qualified consultant(s).

“Operator” means an authorized representative of an Owner.

“Owner” means fee title owner of land within the GKGSA boundaries.

“Processing Plants” means TBD.

“SGMA” means the Sustainable Groundwater Management Act, pursuant to Division 6 Conservation, Development and Utilization of State Water Resources Part 2.74, Chapter 5, Section 10720, et seq.

“Temporary Tier 1 Allocation” or “Tier 1” means groundwater consumed in excess of Sustainable Yield and less than Tier 2 in an amount to be determined accordingly to the methodology established herein.

“Temporary Tier 2 Allocation” or “Tier 2” means groundwater consumed in excess of Tier 1 and less than Tier 3 in an amount to be determined accordingly to the methodology established herein.

“Transfer” means a voluntary transfer of an allocation from one Owner to a separate Owner.

“Prohibited Tier 3 Pumping” or “Tier 3” means groundwater consumed in excess of Tier 2.

“Water year” means the 12-month period October 1, for any given year through September 30, of the following year. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1999 is called the "1999" water year.

Section 1.05 Effective Date and Changes

These Rules and Regulations shall become effective upon adoption and may be added to, amended and/or repealed at any time by resolution of the Board of Directors of the GKGSA and such additions, amendments, and/or repeals shall become effective upon their adoptions or as otherwise specified by the Board of Directors.
Section 1.06  Actions Against the GKGSA

Nothing contained in these Rules and Regulations shall constitute a waiver by the GKGSA or estop the GKGSA from asserting any defenses or immunities from liability as provided in law, including, but not limited to, those provided in Division 3.6 of Title 1 of the Government Code.

Section 1.07  Rights of Access

The GKGSA staff and/or others authorized by the GKGSA’s General Manager shall notify and request consent from the Owner of any land prior to their entry. Any such entry must be for the sole and exclusive purpose of conducting GKGSA business.

Section 1.08  Severability of Provisions

If any provision of these Rules and Regulations, or the application thereof to any person or circumstance, is held invalid, the remainder of these Rules and Regulations, and the application of its provisions to other persons or circumstances, shall not be affected thereby.

Article II.  Groundwater Monitoring

Section 2.01  Well Registration

(a) Registration Requirement

All groundwater extraction facilities shall be registered with the Agency within 30 days of the completion of drilling activities or within 30 days after notice is given to the owner or operator of such facility. The Owner or operator of an extraction facility shall register the extraction facility and provide, in full, the information required to complete the form provided by the Agency that including, but not limited to, the following:

i. Name and address of the operator(s).

ii. Name and address of the Owner(s) of the land upon which the extraction facility is located.

iii. A description of the equipment associated with the extraction facility.

iv. Location, parcel number and state well number of the water extraction facility.

 Deleted: owner

 Deleted: owner

 Deleted: owner

 Deleted: <#>Registration Fee¶

¶ A fee shall be paid to the Agency for each groundwater extraction facility registered with the Agency.
(b) **Change in Owner or Operator**

The name of the Owner of each extraction facility, the parcel number on which the facility is located, along with the names of all operators for each extraction facility shall be reported to the Agency within 30 days upon any change of ownership or operators, together with such other information required by the General Manager.

(c) **Penalty**

Failure to register within the timeframe provided herein shall result in an administrative penalty.

**Section 2.02 Groundwater Use Measurement**

**Existing Wells**

In order to enable verification of production, each Owner or operator who uses groundwater must have an accurate method for quantifying use. Use shall be generated based upon one of the following two bases, at the option of the Owner or operator: (1) information provided from flowmeters which have been connected to the relevant well continuously for the preceding year; or (2) evapotranspiration information obtained via satellite technology. Subject to Section 3.05 below, and except as otherwise provided in this Section, each Owner shall have the option to select the methodology used for measuring or estimating the Owner’s groundwater extraction.

If the Owner does not (1) communicate an election to use flowmeters to the GKGSA by October 1 of each water year; and (2) provide all relevant information needed for the GKGSA to verify measurements from each flowmeter 30 days from the end of the prior month, then the GKGSA will default to utilize the evapotranspiration data to determine groundwater consumption for that period. If the Owner desires to change his or her election after October 1, he or she may do so by presenting such request to the General Manager who then shall present for approval to the Board of Directors. Any Owner may only opt to change his or her election once annually.

(a) **Criteria for Using Meters**

The following criteria and information shall be provided to the GKGSA:

i. Manufacturer and Model of flowmeter;
ii. Date Flow Meter Installed;
iii. Diameter of Pipe and Size of Flow Meter;"
iv. Identification of who installed flowmeter and calibrated flowmeter per manufacturer specifications;

v. Inspection records will be required to submit to GKGSA per schedule outlined in the manufacturer specifications.

vi. Pictures to identify flowmeter installed correctly (e.g. adequate straight pipe sections before and after the flowmeter);

vii. Type of crop, age of crop (if perennial), single/double/triple crop (if annual), irrigation methodology (e.g. flood, drip, sprinkler) for the irrigated acres serviced by the water from the flow meter; and

viii. If multiple flowmeters on a farm, a map identifying the locations of the various flowmeters and lands serviced collectively by these flowmeters.

Additionally, the owner of the flowmeter will allow access to staff from the GKGSA to physically inspect the flowmeter, if needed.

For each month following an election under this subsection, the owner shall report to the GKGSA, no later than 30 days following the last day of the month, the quantity of groundwater extracted at each parcel for which the election is made, as measured by the flowmeter(s). Failure to timely report the quantity of groundwater extraction to the GKGSA, in accordance with this Section, for any parcel to which the election applies for any month shall be deemed a withdrawal of the election as to those parcels for those months, in which case groundwater extraction shall be measured by the evapotranspiration method described in the below subsection.

For all wells constructed after the date of the first adoption of the GKGSA Rules and Regulations, flowmeters satisfying the conditions and criteria prescribed by this Section 2.02 shall be the only permissible means for measurement of groundwater extraction.

(b) Criteria for Using Evapotranspiration Method

Groundwater extraction shall be measured according to the evapotranspiration method described in this subsection for any parcels to which a valid election under subsection (a) above has not been made, or for which that election is deemed withdrawn in accordance with subsection (a).

Crop evapotranspiration (ET) is estimated using a combination of remote sensing data and ground-based equipment. The satellite data is entered into a model, which is used to estimate the ET rate and ET spatial distribution of an area in any given time period. When appropriately calibrated to land-based ET and/or climate stations and validated with crop surveys, the satellite-based model provides an estimate of crop ET (i.e., consumptive use).
Article III. Groundwater Accounting/Online Dashboard

Section 3.01 Authority

Division 6 Conservation, Development and Utilization of State Water Resources Part 2.74, Chapter 5, Section 10726.4, expressly authorizes a groundwater sustainability agency to establish accounting rules to allow unused groundwater extraction allocations to be carried over and transferred.

Section 3.02 Online Water Accounting Dashboard

The GKGSA shall establish an online dashboard for Owners to account for total water use within the GKGSA. Owners may allow operators access and control of their account(s).

Section 3.03 Categories of Water

The online dashboard shall account for water through the following seven categories:

(a) Surface Water Credits and Debits for Direct Delivery

As described in Section 3.06, an Owner’s account may be credited or debited with surface water.

(b) Sustainable Yield Allocation

As described in Section 4.03(a), Sustainable Yield may be credited to an Owner’s account. Carryover and transfers as described in Section 4.03(c), may be credited and debited from an Owner’s account.

(c) Temporary Tier 1 Allocation

As described in Section 4.03(b), the account of Owners engaged in irrigation of lands actively used in agricultural production may be allocated an amount for groundwater used above Sustainable Yield, but below Tier 2. Carryover and transfers may be credited and debited from Owner accounts in accordance with Section 4.03(c).

(d) Temporary Tier 2 Allocation

As described in Section 4.03(b), the account of Owners engaged in irrigation of lands actively used in agricultural production may be allocated an amount for groundwater used above Tier 1.
Carryover and transfers may be credited and debited from Owner accounts in accordance with Sections 4.03(c).

(c) **Groundwater Credits**

As described in Section 4.03(c), an Owner’s account may be credited or debited with groundwater credits.

(f) **Recharge and Banking Credits and Debits**

As described in Section 3.07, an Owner’s account may be credited or debited with groundwater recharge or banking activities. Transfers will be recognized by the GSA when authorized by the applicable surface water entity.

(g) **Recycled Water**

An Owner’s account may be credited or debited with recycled water. Prior to a debit or credit proper documentation must be provided and approved by GKGSA staff.

(h) **Prohibited Tier 3 Pumping**

As provided in Sections 4.03(b) and (c), no pumping beyond Tier 2 is allowed. No carryover or transfers are allowed in excess of any Tier 2 Allocation. As further set forth in Section 4.03(c)(iii)(1) and Article V, an Owner who consumes water in excess of all remaining credits shall be liable for a Tier 3 Penalty Rate, reduction in future Tier 1 and Tier 2 Allocations, and shall be subject to any and all other remedies as may be available to the GKGSA in law or in equity.

Section 3.04 **Priority of Use**

Each Owner with multiple categories of credits under these Rules and Regulations shall have the power to elect which of such credits are to be debited or transferred in connection with such consumption, except for Surface Water Credits and Debits for Direct Delivery, Precipitation and Prohibited Tier 3 Pumping. Surface Water Credits and Debits for Direct Delivery and Precipitation will be debited first from an Owner’s account. Prohibited Tier 3 Pumping will only be accounted for after all other available sources of water are exhausted. In order to be effective, Owners must elect priorities no later than thirty (30) days prior to the end of each quarter. If the Owner does not timely elect the priority of allocations to be debited by that date, the default priority will follow in order of Section 3.03(a)-(g) above.
Section 3.05  **Net Groundwater Consumptive Use Reporting and Debiting**

(a) **Methodology**

The amount of net groundwater consumptive use will be calculated monthly, within 30 days of the end of the prior month, using one of the measurement methods described in Section 2.02.

If the **Owner** is using flowmeters, calculations will be prepared by the GKGSA’s Consulting Engineer to determine the net groundwater consumed using the following formula:

\[
\text{Net Consumed Groundwater Used} = \text{Gross Groundwater Pumped (Flowmeter)} - \text{Estimated Return Flow.}
\]

If the **Owner** is using the evapotranspiration method, the net consumed use will be provided by the GKGSA’s qualified consultant.

After the calculation is completed, each month as described in this Section, the net groundwater consumed will be debited from the applicable account.

In the event that a watercourse, including but not limited to canals, ditches, or riparian areas, is located within the boundaries of a parcel, the area of such watercourse shall not be evaluated for any consumed use of groundwater.

(b) **Appeals Process**

Within thirty (30) days of notification of the net consumed groundwater use, any **Owner** may protest the amount or the method. The written protest must be submitted to the General Manager at the GKGSA’s Main Office.

The General Manager shall investigate matters related to the protest, may consult with the GKGSA Technical Group, and may present any relevant information, along with any recommendation, to the Board within sixty (60) days of receipt of the protest. The Board shall act on the written protest and supporting documentation within sixty (60) days of receipt of all relevant information, including the possibility of authorizing a separate methodology not identified in these Rules and Regulations.
Section 3.06 Surface Water Reporting

Any Owner within the GKGSA which utilizes surface water shall cause to be reported from the applicable surface water entity, the diversion of surface water to direct irrigation.

Section 3.07 Recharge and Banking Reporting

An Owner within the GKGSA which is performing recharge or banking activities shall report, or cause to be reported, the diversion of surface water to underground storage to the GKGSA. Prior to crediting or debiting the Owner’s account, the GKGSA shall ensure the request is consistent with any applicable banking or recharge policy. The GKGSA acknowledges that several special districts, organized and existing under the laws of the State of California for the purpose of facilitating the beneficial use of the waters of the State, operate within GKGSA’s boundaries. Several such districts have adopted and implemented banking and recharge policies in order to facilitate the underground storage and beneficial use of surface water. GKGSA shall honor the banking and recharge policies of all such entities within its jurisdictional boundaries.

Article IV. Allocation of Water

Section 4.01 Purpose

Consistent with Division 6 Conservation, Development and Utilization of State Water Resources Part 2.74, Chapter 5, Section 10726, the purpose of this Article is to provide for the sustainable management of groundwater within the GKGSA jurisdictional area and Kaweah Subbasin, and to fulfill the legislative goals and policies of SGMA. Nothing in this Article shall be used to determine or alter water rights.

Section 4.02 Determination of Allocations

Each year prior to, or as soon as practical, October 1, the GKGSA Technical Group shall determine the allocations available for use within the GKGSA’s various Management Areas based on the data and calculations and the approved methodologies provided herein. The General Manager shall cause such determination to be noticed to all affected Owners prior to October 1, or as close as practical.

Section 4.03 Greater Kaweah Agricultural Management Area

(a) Sustainable Yield Allocation
Each year, the GKGSA Technical Group shall establish a use allocation for each agricultural assessor’s parcel within the Greater Kaweah Management Area boundary, as defined in the attached map identified and incorporated by reference as Exhibit A. The allocation for each Owner shall be calculated as follows:

1. Sustainable Yield for the Kaweah Subbasin shall be calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result. Sustainable Yield shall include components such as rainfall, natural infiltration from lakes and streams, and other natural inflows. Sustainable Yield shall not include return flows from imported water not naturally occurring in the subbasin or salvaged water that would have been wasted absent a user’s capacity to capture and save it.

2. GKGSA’s total available Sustainable Yield shall be the sum of the GKGSA’s portion of the total Kaweah Subbasin Sustainable Yield based on gross acreage.

3. The GKGSA’s total available Sustainable Yield will deduct the sustainable yield allocations for the communities. The remaining balance will be divided by the total acreage within the GSA to establish a per acre allocation for each parcel.

4. Each parcel within the Greater Kaweah Management Area will receive allocations in the amount equal to the gross assessor parcel acreage multiplied by the per acre allocation established in Section 4.03(a)(3).

All Sustainable Yield allocations shall be made on an annual basis.

*As additional data becomes available and as projects, monitoring, and management actions are implemented, the Sustainable Yield may be adjusted to reflect the new data. The allocations are not currently based on the aquifer from which the water is pumped, due to lack of data.

(b) Temporary Tier 1 and Tier 2 Allocations

In addition to the Sustainable Yield Allocation, irrigated parcels as of January 31, 2020, which are identified as enrolled in the Irrigated Lands Regulatory Program, other regulatory programs that document historical irrigation use (i.e, Dairy General Order), or as identified by other certified crop map or Land IQ datasets shall be allocated a Tier 1 and Tier 2 Allocation(s) for only so long as permitted under these Rules and Regulations. Once a parcel has been identified as an irrigated parcel, the parcel will remain in the Transitional Pumping Program until the program expires. If a parcel is not identified as an irrigated parcel as of January 31, 2020, an Owner may file a request...
to the GKGSA General Manager to be included in the Transitional Pumping Program. For agricultural development of parcels after January 31, 2020, the Owner may also file a request to the GKGSA General Manager to allow such lands to receive Tier 1 or Tier 2 Allocation(s), which such allocation shall be prorated based on the date of development. GKGSA shall develop forms as needed to assist Owners with the request.

Changes in the total irrigated acres will affect the Tier 1 and/or Tier 2 Allocation(s). To achieve consistency with the GKGSA GSP, the amount of Tier 1 and/or Tier 2 Allocation(s) may vary year to year.

The allocations shall be consistent with the objectives of the GKGSA GSP, and will ramp-down pumping overtime calculated by a percentage of total overdraft as follows:

<table>
<thead>
<tr>
<th>Water Years</th>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Total Allowable Overdraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022-2025</td>
<td>40%</td>
<td>50%</td>
<td>90%</td>
</tr>
<tr>
<td>2026-2030</td>
<td>30%</td>
<td>20%</td>
<td>70%</td>
</tr>
<tr>
<td>2031-2035</td>
<td>20%</td>
<td>20%</td>
<td>40%</td>
</tr>
<tr>
<td>2036-2040</td>
<td>20%</td>
<td>0%</td>
<td>20%</td>
</tr>
</tbody>
</table>

All Temporary Tier 1 and Tier 2 Allocations shall be made on an annual basis.

(c) Carryover and Transfers

(i) Sustainable Yield Allocation

1) Carryover of Sustainable Yield

If an Owner uses less than his or her total Sustainable Yield allocation in a given year, the difference between the allocation amount for that year and the amount of groundwater used and/or transferred for that year shall be carried over to the next year.

If the carryover amount for the year in question continues to remain unused as a groundwater credit, it may be carried over on a five-year rolling basis. The impact of the total quantity of water used in any five-year period shall be consistent with the provisions of the GKGSA GSP.

For the first year of carryover of Sustainable Yield, the amount of carryover shall be reduced by 10%. No further reductions shall occur in subsequent years in which the Owner carries over...
**Sustainable Yield** Portions of Sustainable Yield allocation successfully carried over from the previous year shall be credited to the Owner’s account as groundwater credits.

2) **Transfer of Sustainable Yield**

An Owner may transfer all or a portion of the Sustainable Yield allocation, excepting any portion thereof based upon Precipitation, which has been carried over from a previous year and thereby converted to groundwater credits, provided that the transfer satisfies the conditions below. Transferred Sustainable Yield shall be credited to the transferee’s account as groundwater credits.

1. The proposed transferee will put the allocation to use within the GKGSA;
2. The place of use is no further than three zones from where the transferor’s location of allocation. The transfer agreement is memorialized in writing, using a form provided by the GKGSA; and
3. Owner has elected to use flowmeters to calculate groundwater consumptive use.

Attached hereto as Exhibit C is the Kaweah Subbasin Analysis Zones. The transfer shall be subject to the following leave behind:

<table>
<thead>
<tr>
<th>Total distance of one zone from Transferor Place of Use Allocation</th>
<th>Total distance of two zones from Transferor Place of Use Allocation (e.g., Zone 35 to 32)</th>
<th>Total distance of three zones from Transferor Place of Use Allocation (e.g., Zone 35 to 11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate adjacent Zone from Transferor Place of Use Allocation</td>
<td>Sustainable Yield</td>
<td>0%</td>
</tr>
</tbody>
</table>

No action shall occur on any proposed transfer unless all past due assessments, interest and penalties owed to the GKGSA by either transferee or transferor have been paid prior to the date that the proposed transfer is submitted to the General Manager. An Owner precluded from
transferring may protest to the board, and the board may consider, exceptions to the foregoing on a case by case basis.

Any transfers of Sustainable Yield pursuant to this Section 4.03(c)(i)(2) shall be subject to modification or termination by the GKGSA in the event that the GKGSA determines that the implementation or continued implementation of the transfer in question does or will tend to cause undesirable results.

An Owner will only be permitted to use his or her allocation of Sustainable Yield outside of the GKGSA Boundaries where:

1. The parcel upon which the Owner intends to put the allocation to beneficial use is owned by the same Owner,
2. The allocation will be used within the Kaweah Subbasin and within a groundwater sustainability agency which allows similar use outside its GSA boundaries;
3. The use outside the GSA boundaries is memorialized in writing, using a form provided by the GKGSA;
4. Both the GKGSA and the groundwater sustainability agency of where the water is put to beneficial use are informed of the agreement.

(ii) Temporary Tier 1 and Tier 2 Allocations

1) Carryover of Tier 1 and Tier 2

If an Owner uses less than his or her total Tier 1 or Tier 2 Allocations, the difference between the allocation amount for the relevant period and the amount of the Tier 1 or Tier 2 Allocation used and/or transferred during that period year shall be carried over to the next year. The carryover amount shall be reduced annually by 10%. Portions of Tier 1 and Tier 2 allocations successfully carried over from the previous year shall be credited to the Owner’s account as groundwater credits.

If the carryover amount for the year in question continues to remain unused as a groundwater credit, it may be carried over on a five-year rolling basis. The impact of the total quantity of water used in any five-year period shall be consistent with the provisions of the GKGSA GSP.

Example:

<table>
<thead>
<tr>
<th>Water Year</th>
<th>Carryover Year 1</th>
<th>Carryover Year 2</th>
<th>Carryover Year 3</th>
<th>Carryover Year 4</th>
<th>Carryover Year 5</th>
</tr>
</thead>
</table>

Deleted: The transfer
Deleted: will only be permitted
Deleted: Tier 1 and Tier 2
Deleted: transfer parcel
Deleted: proposed transferee will put the
Deleted: transfer agreement
Deleted: the transferee
Deleted: Sustainable Yield
Deleted: owner’s
2) **Transfer of Tier 1 and Tier 2 Allocations**

An **Owner** may transfer 80% of his or her Tier 1 Allocation to another **Owner**, or 60% of his or her Tier 2 Allocation, if all of the following conditions apply:

1. The proposed transferee will put the allocation to use within the GKGSA;
2. The proposed transferee will extract the transferred water within three miles of where the transferor would have extracted the water had he not transferred; and
3. The transfer agreement is memorialized in writing, using a form provided by the GKGSA identifying the quantity and signed by both parties.
4. Owner has elected to use flowmeters to calculate groundwater consumptive use.

Attached hereto as Exhibit C is the Kaweah Subbasin Analysis Zones. The transfer shall be subject to the following leave behind:

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>Immediate adjacent Zone from Transferor Place of Use Allocation</th>
<th>Total distance of two zones from Transferor Place of Use Allocation (e.g., Zone 35 to 32)</th>
<th>Total distance of three zones from Transferor Place of Use Allocation (e.g., Zone 35 to 11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>10%</td>
<td>20%</td>
<td>50%</td>
</tr>
<tr>
<td>Tier 2</td>
<td>10%</td>
<td>20%</td>
<td>50%</td>
</tr>
</tbody>
</table>

No action shall occur on any proposed transfer unless all past due assessments, interest and penalties owed to the GKGSA by either transferee or transferor have been paid prior to the date that the proposed transfer is submitted to the General Manager. A transferee may not subsequently transfer the allocation to another individual or entity. An owner precluded from transferring may protest to the board, and the board may consider, exceptions to the foregoing on a case by case basis.
Any transfers of Tier 1 or Tier 2 pursuant to this Section 4.03(c)(ii)(2) shall be subject to modification or termination by the GKGSA in the event that the GKGSA determines that the implementation or continued implementation of the transfer in question does or will tend to cause undesirable results.

(iii) Prohibited Tier 3 Pumping

1) No Carryover or Transfers

No carryover or transfer of Tier 3 extractions is allowed. In addition to penalties associated with Tier 3 extractions as defined herein, the quantity of Tier 3 water consumed shall be deducted from the owner’s Tier 1 and 2 Allocation account the following year(s). If the Owner’s Tier 1 and 2 Allocation account is depleted, further enforcement actions may be taken by the GKGSA. An Owner may protest any penalties or restrictions he or she incurs as a result of this Section.

Section 4.04 Community Management Areas

[to be determined]

Section 4.05 Special Uses Management Area

A separate management area (“Special Uses Management Area”) shall be established for the purpose of accounting for certain water uses. The area shall be comprised of lands where dairies and processing plants, are situated (hereinafter “Special Use Parcels”).

(a) Sustainable Yield, Tier 1 and 2 Allocations

All Special Use Parcels shall receive credits in the same manner as parcels within the Greater Kaweah Agricultural Management Area, as described in Section 4.03.

(b) Consumption

The Assessor’s Parcel(s) that include the production facility shall be debited for the area of the production facility within that parcel, as described below. If there is a remaining balance of said Assessor’s Parcel(s), the consumptive use will be debited pursuant to Section 2.02.

(i) Dairies
The consumptive use of groundwater within the Special Uses Management Area for Dairies shall be achieved by the methodology contained in the attached Exhibit B, “Net Groundwater Consumption Within A Dairy Facility Area”. Alternatively, an Owner may elect to use flowmeters as described in Section 3.05(a).

(ii) Processing Plants

[TBD]

(c) Carryovers and Transfers

All Special Use Parcels shall be permitted to carry over and transfer groundwater extraction credits as permitted by Section 4.03 of these Rules and Regulations.

Section 4.06 Appeal Process

(a) Notification of Allocations and Extraction Limits

The General Manager shall provide written notice to each Owner and if requested, the operator, of the groundwater allocations described herein.

(b) Protest of Allocations and Extraction Limits

Within thirty (30) days of the date identified in the written notification described in Section 4.05(a), an Owner may protest the extraction allocations and extraction limits identified in the notification. The written protest must be submitted to the General Manager at the GKGSA’s Office.

The General Manager shall investigate matters related to the protest, may consult with the GKGSA Technical group, and may present any relevant information, along with any recommendation, to the Board within sixty (60) days of receipt of the protest. The Board shall act on the written appeal and supporting documentation within one hundred and twenty (120) days of receipt of all relevant information.

Section 4.07 Emergency Ordinances

Nothing in this Article shall prevent the GKGSA from, in the event of an emergency, from enacting emergency regulations or ordinances to prevent harm to Owners within the GKGSA.
Article V.  Fees & Penalties

Section 5.01  Penalties

(a)  Penalty for Excess Use

If any Owner within the Greater Kaweah Agriculture Management Area exceeds his or her Sustainable Yield allocation, he or she shall be liable for penalties as follows: (1) liability rate in an amount to be determined annually by the Board, for each Tier 1 and Tier 2 Allocation acre-foot consumed; and (2) additional liability rate, in an amount to be determined annually by the Board, for each Tier 3 acre-foot consumed.

(b)  SGMA Penalties

Any Owner, operator or other person who violates the provisions of these Rules and Regulations is subject to the criminal and civil sanctions set forth in SGMA.

(c)  Civil Remedies

Upon the failure of any person to comply with any provision of this Rules and Regulations, the GKGSA may petition the Superior Court for a temporary restraining order, preliminary or permanent injunction, or such other equitable relief as may be appropriate. The right to petition for injunctive relief is an additional right to those, which may be provided elsewhere in these Rules and Regulations or otherwise allowed by law. The GKGSA may petition the Superior Court to recover any sums due to the GKGSA.

(d)  Protest of Penalty Determination

Within 30 days of the date identified in the written notification described in Section 4.05(a), an Owner or registered operator may appeal a penalty determination in writing. The written appeal must be submitted to the General Manager, at the GKGSA’s Main Office.

(e)  Submission to Board

Upon receipt of an appeal, the General Manager may request additional information or evidence from the appellant. The General Manager shall then submit the appeal, along with any relevant information and any recommendation, to the Board. The Board may, in its discretion, either issue a decision based upon the written appeal and supporting documentation, or hold a hearing concerning the matter.
Section 5.02  **Groundwater Extraction Fees**

The Board may propose fees, including groundwater extraction fees, consistent with Division 6 Conservation, Development and Utilization of State Water Resources Part 2.74, Chapter 5, Section 10730 through 10730.6, and the California Constitution. The Owner shall pay to the GKGSA all Groundwater Extraction Fees within 30 days of the date of any invoice submitted by the GKGSA.

Section 5.03  **Real Property Assessments**

The Board may propose land-based assessments consistent with Division 6 Conservation, Development and Utilization of State Water Resources Part 2.74, Chapter 5, Section 10730, and the California Constitution.

Section 5.04  **Notification and Appeal of Penalties**

Each year, the General Manager shall provide written notification to each Owner if requested by Owner of all penalty rates. The notification shall include the water accounting used to determine both the penalties for excess consumption.

(a) **Payment of Penalties**

The Owner shall pay to the GKGSA all penalties within 30 days of the date of any invoice submitted by the GKGSA.

(b) **Protest of Penalty Determination**

Within 30 days of the date identified in any invoice submitted by the GKGSA an Owner may appeal a penalty determination in writing. Owner must still submit payment within thirty (30) days of the invoice. The written appeal must be submitted to the General Manager, at the GKGSA’s Office.

The General Manager shall investigate matters related to the appeal, and may present any relevant information, along with any recommendation, to the Board within sixty (60) days of receipt of the appeal. The Board shall act upon the written appeal and supporting documentation within one hundred and twenty (120) days of receipt of all relevant information.

**Article VI. Surface Water Recharge in the Underground**

Section 6.01  **Groundwater Recharge**
Owners may use existing facilities to store surface water underground within the GKGSA boundaries. An Owner who stores surface water pursuant to this Section may subsequently put such water to his or her own beneficial use within the GKGSA boundaries, or may transfer the water to another Owner for use within the GKGSA boundaries. The use of stored water pursuant to this Section must be achieved utilizing on-farm activities. All water stored pursuant to this Section must be used within the GKGSA boundaries. Each Owner who stores surface water pursuant to this Section shall provide accurate, verifiable records of the quantity and source of surface water stored for recharge, confirmed by the district or entity that supplied the surface water. The Owner shall adhere to any rules promulgated by any district or entity supplying the surface water. Surface water stored and documented in compliance with the requirements of this Section shall be credited to the relevant Owner’s account as a surface water credit. Each Owner shall be solely responsible for locating, purchasing, accessing, or otherwise acquiring surface water for the purposes of recharge pursuant to this Section. This policy applies to all non-districted lands and districted lands which choose to adhere to this Article VI.
EXHIBIT A
Greater Kaweah Agricultural Management Area Boundary
Exhibit B
Net Groundwater Consumption Within A Dairy Facility Area

[end of document]
NET GROUNDWATER CONSUMPTION WITHIN A DAIRY FACILITY AREA
# TABLE OF CONTENTS

OVERVIEW of NET GROUNDWATER CONSUMPTION WITHIN A DAIRY FACILITY 1

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>II. Explanation of the SGMA Water Accounting Requirements</td>
<td>1</td>
</tr>
<tr>
<td>III. Efficient Water Usage on Dairy Facilities</td>
<td>3</td>
</tr>
<tr>
<td>IV. Summary of Dairy Production Facility Water Imports</td>
<td>4</td>
</tr>
<tr>
<td>V. Summary of Dairy Production Facility Water Exports</td>
<td>5</td>
</tr>
<tr>
<td>VI. Computation of Dairy Facility Net Groundwater Consumption</td>
<td>6</td>
</tr>
<tr>
<td>VII. Summary</td>
<td>8</td>
</tr>
<tr>
<td>VIII. Study for Validation</td>
<td>8</td>
</tr>
</tbody>
</table>
OVERVIEW OF NET GROUNDWATER CONSUMPTION WITHIN A DAIRY FACILITY

I. Introduction

Dairy Operations are a vital component of the overall agriculture economy within the San Joaquin Valley of California, and efficient water management is a key element of successful dairy operations.

The recent implementation activities of the Sustainable Groundwater Management Act (SGMA) require an accurate accounting for the net groundwater consumed within dairy operations. Therefore, all dairy facility water imports and exports must be accurately measured and reported. Compliance with SGMA requires that the net groundwater consumed by a dairy facility cannot exceed the “Sustainable Yield” per acre limit for groundwater consumption as defined by the dairy facility’s Groundwater Sustainability Agency (GSA).

Dairy facilities use a significant amount of water as an integral component of the dairy’s milk and beef production process. However, as the analysis in this document shows, dairy facilities consume very little water. Almost all the water used within a dairy facility is recycled to be consumed on the farm for growing crops (crop ET).

II. Explanation of the SGMA Water Accounting Requirements

The Sustainable Groundwater Management Act (SGMA) is enforced by the rules and regulations of a Groundwater Sustainability Agency (GSA) formed to represent landowners in a designated area. Although there is variation in GSA implementations of the SGMA requirements, a common thread is the creation of GSA-managed water accounts for landowners. These water accounts allow landowners to manage their GSA water allocations in the same way they would manage a bank account.

Here’s how it works: The GSA deposits water credits (in units of acre-feet) into each landowner’s GSA water account every year. The number of water credits deposited is determined solely by the number of acres owned by the landowner and on local hydrology
and surface water availability. Water credits are withdrawn from the landowner’s water account based on water consumed by crops grown on the landowner’s property. If the landowner requires more water credits for the landowners’ crops than allocated by the GSA, the landowner may purchase additional water credits from the GSA and deposit these into his water account. But the GSA limits how many additional water credits the landowner can purchase. The landowner is prohibited from using more water credits than are deposited in the GSA water account and may be penalized if water credit withdrawals exceed deposits.

How is crop water consumption measured? There are two ways. The first method is to meter the groundwater-pumped irrigation water applied to the crop. Then measurements and additional calculations are required to determine how much of the applied irrigation water was returned to the groundwater source. The difference is the net water consumed by the crop, and it is called evapotranspiration (ET). The second (and simpler) method is to allow the GSA to measure the ET water consumption of crops directly using satellite data.

How is dairy facility water consumption measured? Satellite data cannot be used solely to measure the net water consumption of dairy facilities. However, dairy records (meter readings that measure water use, feed deliveries, milk shipments, beef shipments) can be used to calculate net dairy facility groundwater consumption. These calculations, supported by dairy records, can be used to show compliance with SGMA regulatory requirements. In general, this is how industries and communities that recycle water compute net water consumption to show regulatory compliance.

The computation of a dairy facility’s net groundwater consumption requires a separate boundary to be drawn around the perimeter of the dairy facility. All water imports that cross this boundary (which includes all pumped groundwater) are metered, measured, recorded, or otherwise counted. Similarly, all water exports that cross this boundary are also counted.
The difference between the water imports and exports are the net water consumed by the dairy facility. However, SGMA requires that the computations show the net groundwater consumption at a dairy facility. Therefore, water imports and exports are divided into two categories; those whose source is groundwater, and those whose source is not groundwater.

Then, the net groundwater consumption for a dairy facility is computed by subtracting the groundwater exports from the various water imports.

The remaining sections of this report explain in detail the quantity and sources of water imported to the dairy facility, and the quantity and destinations of water exported from the dairy facility. From these water sources, the net groundwater water consumption is computed for a typical Dairy Production Facility in the Central Valley of California.

### III. Efficient Water Usage on Dairy Facilities

At dairy production facilities, utilizing water efficiently to prevent unnecessary groundwater pumping and losses to evaporation is important for SGMA compliance. Following is a general, not exclusive, list of practices and equipment often used by dairies to improve the efficient use of water and to keep groundwater pumping and evaporation losses to a minimum.

- **Air Cooling for Refrigerator Compressors:** Water-based refrigeration compressors are replaced with air cooling fans. This reduces groundwater pumping.

- **Solenoid Valve for Stage 1 Plate Cooler:** An open/close valve that cycles with the milk pump is added to the stage 1 plate cooler water source to reduce water usage. This reduces the amount of water flowing through the plate cooler to match the flow of milk rather than running water continuously through the plate cooler. This reduces groundwater pumping.

- **Barn Flush Timer / Automation:** A timer is added to minimize the number of barn flushes during each milking. This prevents workers from flushing more often than necessary. Flush water is water collected and recycled from the plate cooler.
after the water is used to cool the milk. Therefore, preventing the amount of water used for flushing from exceeding plate cooler water usage reduces groundwater pumping.

- Sensors on Soakers: Add sensors to soakers to only operate when a cow is standing next to the soaker. This reduces groundwater pumping.

IV. Summary of Dairy Production Facility Water Imports

Water must be imported to the dairy facility for dairy animals to drink, maintain body fluids, metabolize nutrients, and produce milk. Water is also used on dairy facilities for cleaning equipment, flushing concrete surfaces, cooling milk equipment, cooling the milk cows, and washing the milk cows.

However, the water imports to a dairy facility are efficiently used. For example, the water imported for cooling the milk is captured and then reused for washing the cows and cleaning equipment. This same water is then recaptured and reused again for flushing concrete surfaces. This is important to keep in mind when counting water usage on a dairy facility. Much of the imported water is used two or three times before the residual water is exported to the farm.

Therefore, care must be taken to avoid double-counting dairy facility water usage. As mentioned previously, double counting the various internal uses of dairy facility water is avoided when a separate boundary is drawn around the perimeter of the dairy facility. Only water that crosses this boundary is counted as an import or export for the purpose of computing net dairy facility consumption.

Dairy Facility Water Import Sources:

1. **Pumped Groundwater**: Groundwater is pumped to a pressure tank that is the source for all water used on the dairy facility. Excess water is drained to wastewater storage pond(s).

2. **Precipitation**: Dairy facilities are designed (and regulated) to divert all rainfall runoff into the wastewater storage pond(s).
3. **Feed Imports**: All feed consumed by the animals is imported from sources outside the dairy facility. All imported feed is tested for water content, which generally ranges from 10% to 80%. Some feed is sourced from forages grown on the lands adjacent or near to the dairy (e.g., corn silage, wheat silage, alfalfa). The remaining feed consists of grains purchased from the Midwest, alfalfa which is often purchased from other states, and many by-products purchased from local agricultural crops (e.g., Cottonseed, Almond Hulls, Citrus, Grape Pomace, Whey). The water imported through the feed is consumed by the cattle. A portion of this water is excreted by the cow and diverted to the wastewater storage pond(s).

**V. Summary of Dairy Production Facility Water Exports**

As previously mentioned, most of the water imported to a dairy facility is not consumed. It is used and then exported. The exported water destinations are listed below.

**Dairy Facility Water Export Destinations:**

1. **Farm Ground for Crop Irrigation**: The wastewater collected in the wastewater holding pond is exported to adjacent or nearby farm ground for crop irrigation through pipelines or utilizing tanker trucks. The wastewater application replaces groundwater pumping because the wastewater application to crops offsets water that would otherwise be pumped from groundwater. However, it is important to understand that the dairy’s wastewater is consumed by the crops and not recharged. Wastewater application is regulated by the California Regional Water Quality Control Board (CRWQCB) and wastewater application rates are reported annually to the CRWQCB under the dairy’s Nutrient Management Plan.

2. **Evaporation**: As water is used on the dairy facility for various purposes (cow washing, lane flushing, etc.), evaporation occurs. This evaporation is counted as a destination for water exported from the dairy facility.

3. **Milk Shipments**: Each day, the milk produced on a dairy facility is picked up by truck and hauled to a processing plant. Shipped liquid milk, which is primarily water, is counted as a destination for water exported from the dairy facility.
4. **Beef Shipments:** When dairy animals get old, sick, injured, or die, these animals are hauled offsite to beef or rendering plants. The water content within these animals is counted as a water export from the dairy facility.

5. **ET Consumption from Vegetative Growth.** Dairies usually have little water-consuming vegetation growth (landscaping) within the production facility. Therefore, the water exported to this destination is assumed to be negligible.

6. **Domestic Water Use:** The majority of the domestic water use is diverted to septic systems and leach lines, thus recycled back into the groundwater system. However, the water exported to this destination is assumed to be negligible.

### VI. Computation of Dairy Facility Net Groundwater Consumption

The computation of the net groundwater consumed per acre for a dairy facility is illustrated in the example below. The example assumes a dairy facility housing 1,000 Animal Equivalents on 30 acres (e.g., Freestall dairies house milk cows different than an open lot and housing type will vary the area of the facility). The water imports and exports are for a period of one year. Typical dairy volumes for groundwater pumping, other water imports, and water exports are assumed. The example of the dairy in the chart below shows that the net groundwater consumption for a typical dairy is likely to be negligible.
### Dairy Water Calculator - Production Facility Net Consumption

**Assumption:**
- Animal Equivalents (AE): 1,000
- Production Facility: 30 acres

**WATER IMPORTS TO DAIRY FACILITY**

<table>
<thead>
<tr>
<th>Water Pumped from Groundwater:</th>
<th>per Animal Equivalent (gal/day)</th>
<th>per Animal Equivalent (gal/yr)</th>
<th>Total Pumped Groundwater (gal/yr)</th>
<th>Total Pumped Groundwater (ac-ft/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>36,500</td>
<td>36,500,000</td>
<td>112.01</td>
</tr>
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</table>

**Water from Feed Imports:**

<table>
<thead>
<tr>
<th>Usage (tons/yr)</th>
<th>Moisture Content (%)</th>
<th>Equivalent Water (gal)</th>
<th>Equivalent Water (ac-ft/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12,000</td>
<td>65%</td>
<td>1,747,200</td>
<td>5.36</td>
</tr>
<tr>
<td>1,000</td>
<td>10%</td>
<td>22,400</td>
<td>0.07</td>
</tr>
<tr>
<td>7,500</td>
<td>35%</td>
<td>588,000</td>
<td>1.80</td>
</tr>
</tbody>
</table>

**Water from Precipitation:**

<table>
<thead>
<tr>
<th>Usage (tons/yr)</th>
<th>Moisture Content (%)</th>
<th>Equivalent Water (gal)</th>
<th>Equivalent Water (ac-ft/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 inches (average)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.00 ac-ft/yr</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**TOTAL WATER IMPORTS:**

<table>
<thead>
<tr>
<th>Usage (tons/yr)</th>
<th>Moisture Content (%)</th>
<th>Equivalent Water (gal)</th>
<th>Equivalent Water (ac-ft/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>139.25 ac-ft/yr</td>
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**WATER EXPORTS FROM DAIRY FACILITY**

<table>
<thead>
<tr>
<th>Usage (tons/yr)</th>
<th>Moisture Content (%)</th>
<th>Equivalent Water (gal)</th>
<th>Equivalent Water (ac-ft/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wastewater Pumped to Crops: 98.36 ac-ft/yr</td>
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<tr>
<td>Water Lost to Evaporation/Transpiration (ET): ET (estimated from LandSAT): 12 inches/yr (includes storage pond evaporation, feed, flush) 30.00 ac-ft/yr</td>
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<td></td>
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<tr>
<td>Water Shipped as Milk Production: Volume of Milk 3,499,401 Gallons per year 10.74 Ac-ft/yr</td>
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<td></td>
</tr>
<tr>
<td>Water Shipped as Beef: Cull Rate 42% Number per year 420 Average Weight 1,000 lbs Average Weight 120 gallons/animal 0.154 Ac-ft/yr</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL WATER EXPORTS:**

<table>
<thead>
<tr>
<th>Usage (tons/yr)</th>
<th>Moisture Content (%)</th>
<th>Equivalent Water (gal)</th>
<th>Equivalent Water (ac-ft/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>139.25 ac-ft/yr</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUMMARY**

<table>
<thead>
<tr>
<th>Usage (tons/yr)</th>
<th>Moisture Content (%)</th>
<th>Equivalent Water (gal)</th>
<th>Equivalent Water (ac-ft/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Water Imports from Groundwater: 112.01 ac-ft/yr</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Total Water Exports to Crops: 98.36 ac-ft/yr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Groundwater Consumption 13.66 ac-ft/yr 0.46 ac-ft/yr/acre</td>
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<td></td>
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</tbody>
</table>
VII. Summary

Dairy production facilities don’t consume much groundwater. This is despite the fact that dairies use a significant amount of water during the milk and beef production process. However, when all water imports to the dairy facility are considered, and when the fact that dairy wastewater exports reduce groundwater pumping for growing crops is considered, the conclusion is the net water used in the dairy facility is minimal.

On a net basis, dairy production facilities consume little (if any) groundwater. Based on this analysis, the recommendation is to apply 6” of Consumed Water to a Dairy Production Facility.

This conclusion is surprising but verifiable. Meters can be installed to measure groundwater pumped into the dairy, and to measure wastewater exported from the dairy. Milk volume shipped from the dairy can be verified with creamery records, and beef weights verified with purchase receipts. The water content of feed ingredients imported to the dairy can be verified with nutritionist laboratory test reports, and the tonnage verified with sales invoices. Precipitation data totals are widely available, and weather data to confirm evaporation rates are published daily.

The dairy milk and beef production process uses groundwater, adds nutrients to it, then (in effect) returns the water in lieu to offset the need to pump additional groundwater for crop irrigation.

VIII. Study for Validation

To validate the conclusion of this analysis, a study is currently underway to confirm the results, with data to be collected on a quarterly basis and reported annually. For the various dairies selected for the study, meters are installed on the pumped groundwater import source and on the dairy’s wastewater export destination. Dairy records will be collected to confirm other water sources and destinations. Over the next several years, as data is collected, the analysis within this report can be refined to better predict dairy
facility net water consumption and understand variations between different dairy operations.
Exhibit C
Kaweah Subbasin Analysis Zones