COLORADO
Division of Water Resources
Department of Natural Resources

August 5, 2019

Jennifer S. Lindahl, P.E.
Bishop-Brogden Associates, Inc.
333 W. Hampden Avenue, Suite 1050
Englewood, CO 80110

Re: Larimer Pits Substitute Water Supply Plan (Plan ID 2915; WDID 0402525)
DRMS File No. M-1974-069 (WDID 0403005)
Sections 15, 16, 17, T5N, R69W, 6th P.M.
Water Division 1, Water District 4, Larimer County

Approval Period: August 5, 2019 through July 31, 2021
Contact information for Ms. Lindahl: 303-806-8952; jlindahl@bbawater.com

Dear Ms. Lindahl:

We have reviewed your letter dated July 17, 2019, requesting approval of the above referenced substitute water supply plan ("SWSP") in accordance with § 37-90-137(11), C.R.S., to replace depletions at the Larimer Pits sand and gravel mining operation, operated by Loveland Ready-Mix Concrete Inc. ("LRM" or "Applicant"). The required filing fee of $1,593.00 has been submitted (receipt no. 3692899).

SWSP Operation

LRM's Larimer Pits site is located in portion of Section 15, 16, and 17, T5N, R69W, 6th P.M., Larimer County, as shown in the attached Figure 1. The original site consisted of 20 gravel pits, five of which were completed prior to 1981, seven that are augmented under Case No. W-7412, four that have been backfilled, two that have been lined and decreed for storage, and five unlined pits that are partially augmented under Case No. 00CW142. The augmentation plan decreed in Case No. 00CW142 is limited to replacing depletions associated with evaporation from exposed surface areas and mining uses at Pit Nos. 13, 14, 15, 18 and 20. During this plan period, LRM plans to discontinue dewatering at the unlined Pit No. 20, which will result in depletions due to lagged dewatering depletions no longer being offset by the water returned to the stream system, and from the "first fill" of the pit. Replacement water will be provided by the water stored in the lined Loveland Ready-Mix Ponds 1 and 2 ("LRM Ponds 1 and 2").

Depletions

Depletions resulting from evaporation and on-going production at the Larimer Pits site will continue to be replaced by the augmentation plan decreed in Case No. 00CW142. Additional depletions at the site will result from the discontinuation of the dewatering at Pit No. 20 and from the "first fill" of the pit through groundwater infiltration or delivery of out-of-priority surface water diversions. It is only the lagged dewatering depletions and "first fill" requirements that are proposed to be replaced under this SWSP.

The discontinuation of dewatering at Pit No. 20 will result in lagged depletions to the stream, as water will no longer be delivered to the Big Thompson River at a constant rate. LRM estimates that the pit has been dewatered at an average rate of approximately 100 gpm, or approximately 13.3 acre-feet per month.

The "first fill" is the water that fills an unlined pit or pond and occupies the volume previously occupied by the removed sand, gravel, or other solid material. For the purposes of this SWSP, you have proposed to calculate the "first fill" volume as the total volume of the pit. LRM estimates that Pit No. 20 has a surface area of 7 acres and a depth of 24 feet. This results in a maximum capacity of 168 acre-feet (the actual volume will likely be less as this calculation assumes that the side slopes are vertical). LRM plans to allow Pit No. 20 to gradually fill by infiltration of groundwater once the dewatering pump is removed. At an estimated initial infiltration rate of 100 gpm, the lagged depletions from the first fill of the pit are anticipated to last approximately 21 months if no free river or surface water deliveries are utilized.

The IDS Alluvial Water Accounting System (AWAS) analytical stream depletion model, which uses the Glover method, was used to calculate the lagged depletions to the Big Thompson River. The following parameters were used in the model: transmissivity (T) = 34,264 gallons per day per foot, specific yield (SY) = 0.2, the aquifer width (W) = 2,105 feet, and the distance from the centroid of the exposed groundwater surface area to the river (X) = 1,071. The total lagged depletions were determined to be 245.7 acre-feet for this plan period.

The attached Table 1 shows the monthly breakdown of lagged depletions for the plan period of August 2019 through April 2021.

Replacements

LRM obtained a conditional storage right for LRM Ponds 1 (WDID 0403714) and 2 (WDID 0403715) for a combined total of 550 acre-feet in Water Court Case 98CW143. LRM Ponds 1 and 2 were awarded a priority date of November 13, 1998 and may be used for augmentation, exchange and substitute supply, recreation, fish propagation and wildlife habitat. The ponds may also be used to store LRM's additional Barnes Ditch credits changed in Case No. 00CW143 and are used to replace non-irrigation season depletions under its augmentation plan decreed in Case No. 00CW142. LRM currently has approximately 410 acre-feet of water in storage in LRM Ponds 1 and 2, of which approximately 246 was stored under its storage decree and is not required to replace depletions within Case No. 00CW142.

The LRM Ponds 1 and 2 are located within the Larimer Pits property boundary as shown in Figure 1, and make releases to the Big Thompson River upstream of the location of lagged depletions resulting from Pit No. 20 and upstream of the Rist and Goss Ditch headgate. There are no intervening rights between the location of the reservoir releases and the ditch headgate, and transit loss should be minimal. The lagged dewatering depletions and water that is stored out of priority through infiltration will be replaced by releases from storage in LRM Ponds 1 and 2. Daily inflows into Pit No. 20 will be less than LRM's available release rates of its augmentation water in LRM Ponds 1 and 2, which LRM currently estimates to be 2 cfs. If for any reason sufficient water is not able to be replaced by LRM's storage releases, LRM will also have the ability to release all out-of-priority inflows from Pit No. 20 by continuing to dewater to the level reached while in priority or augmented.

During times of a downstream call, releases will be made from LRM Ponds 1 and 2 in the amounts shown in Table 1.

LRM has also requested the ability to deliver water through the Rist and Goss Ditch into Pit No. 20 at times of free river or if augmentation supplies are available at a high enough daily rate, dependent on available ditch capacity. Water delivered to Pit No. 20 during periods of free river does not require replacement, and will have the result of reducing the quantity of water that must be replaced under the "first fill". If water is released from LRM Ponds 1 and 2 to the Rist and Goss Ditch and delivered into Pit No. 20, that water must be used in accordance with the decree entered in Case No. 98CW143. Any deliveries through the ditch will be coordinated with the water commissioner prior to diversion.

Conditions of Approval

I hereby approve this SWSP, in accordance with § 37-90-137(11), C.R.S., subject to the following conditions:

1. This SWSP shall be valid for the period of August 5, 2019 through July 31, 2021, unless otherwise revoked or superseded by decree. If lagged dewatering and "first fill" depletions will extend beyond the plan's expiration date, a renewal request must be submitted to this office with the statutory fee (currently $257) prior to the expiration date but no later than **June 1, 2021**. If a renewal request is received after the expiration date of this plan, it may be considered a request for a new SWSP and the $1,593 filing fee will apply.
2. Well permit no. 69035-F was obtained for the current use and exposed pond surface area of the gravel pit in accordance with § 37-90-137(2) and (11), C.R.S.
3. The total surface area of the groundwater exposed at Pit No. 20 must not exceed 7.0 acres.
4. The amount of depletions during this plan period must not exceed 245.7 acre-feet, estimated as 77.7 acre-feet for lagged dewatering depletions, and 168.0 acre-feet for lagged "first fill" depletions.
5. Total consumption at the Pit No. 20 must not exceed the aforementioned amount unless an amendment is made to this plan.

6. Approval of this plan is for the purposes as stated herein. This office must first approve any additional uses for the water.
7. The replacement water that is the subject of this plan cannot be sold or leased to any other entity. As a condition of subsequent renewals of this SWSP, the replacement water must be appurtenant to this site until a plan for augmentation is obtained.
8. All releases of replacement water must be sufficient to cover all out-of-priority depletions in time, place, and amount and must be made under the direction and/or the approval of the water commissioner. Notice must be provided and approval made by the water commissioner at least 48 hours prior to the release of replacement water, or as required by the water commissioner.
9. If approved by the division engineer, the release of replacement water may be aggregated to maximize beneficial use. The water commissioner and/or the division engineer shall determine the rate and timing of any aggregated release.
10. Conveyance loss for delivery of augmentation water is subject to assessment and modification as determined by the water commissioner or division engineer.
11. Adequate accounting of depletions and replacements must be provided to the division engineer in Greeley (DNR_Div1Accounting@state.co.us) and the water commissioner (Jean Lever at Jean.Lever@state.co.us) on a monthly basis or other interval acceptable to both of them. Submitted accounting shall conform to the Administration Protocol *"Augmentation Plan Accounting, Division One – South Platte Basin"* (attached).
12. The name, mailing address, and phone number of the contact person who will be responsible for operation and accounting of this plan must be provided on the accounting forms to the division engineer and water commissioner.
13. The state engineer may revoke this SWSP or add additional restrictions to its operation if at any time the state engineer determines that injury to other vested water rights has or will occur as a result of the operation of this SWSP. Should this SWSP expire without renewal or be revoked prior to adjudication of a permanent plan for augmentation, the Applicant will still be liable for the depletions caused by the lagged dewatering depletions and from the "first fill" of the pit.
14. In accordance with amendments to § 25-8-202-(7), C.R.S. and "Senate Bill 89-181 Rules and Regulations" adopted on February 4, 1992, the State Engineer shall determine if the substitute supply is of a quality to meet the requirements of use to which the senior appropriation receiving the substitute supply has normally been put. As such, water quality data or analyses may be requested at any time to determine if the requirement of use of the senior appropriator is met.
15. The decision of the state engineer shall have no precedential or evidentiary force, shall not create any presumptions, shift the burden of proof, or serve as a defense in any water court case or any other legal action that may be initiated concerning the SWSP. This decision shall not bind the state engineer to act in a similar manner in any other applications involving other SWSPs or in any proposed renewal of this SWSP, and shall not imply concurrence with any findings of fact or conclusions of law contained herein, or with the engineering methodologies used by the Applicant.

Should there be any further comments or questions, please contact Michael Hein in Greeley at 970-352-8712 or Javier Vargas-Johnson of this office.

Sincerely,

Jeff Deatherage, P.E.
Chief of Water Supply

Attachments: Figure 1
Table 1
Administration Protocol *"Augmentation Plan Accounting, Division One – South Platte River"*

Cc: Michael Hein, Lead Assistant Division Engineer, Michael.Hein@state.co.us
810 9th Street, Ste. 200, Greeley, CO 80631, (970) 352-8712

Jean Lever, Water Commissioner, Water District 4, Jean.Lever@state.co.us

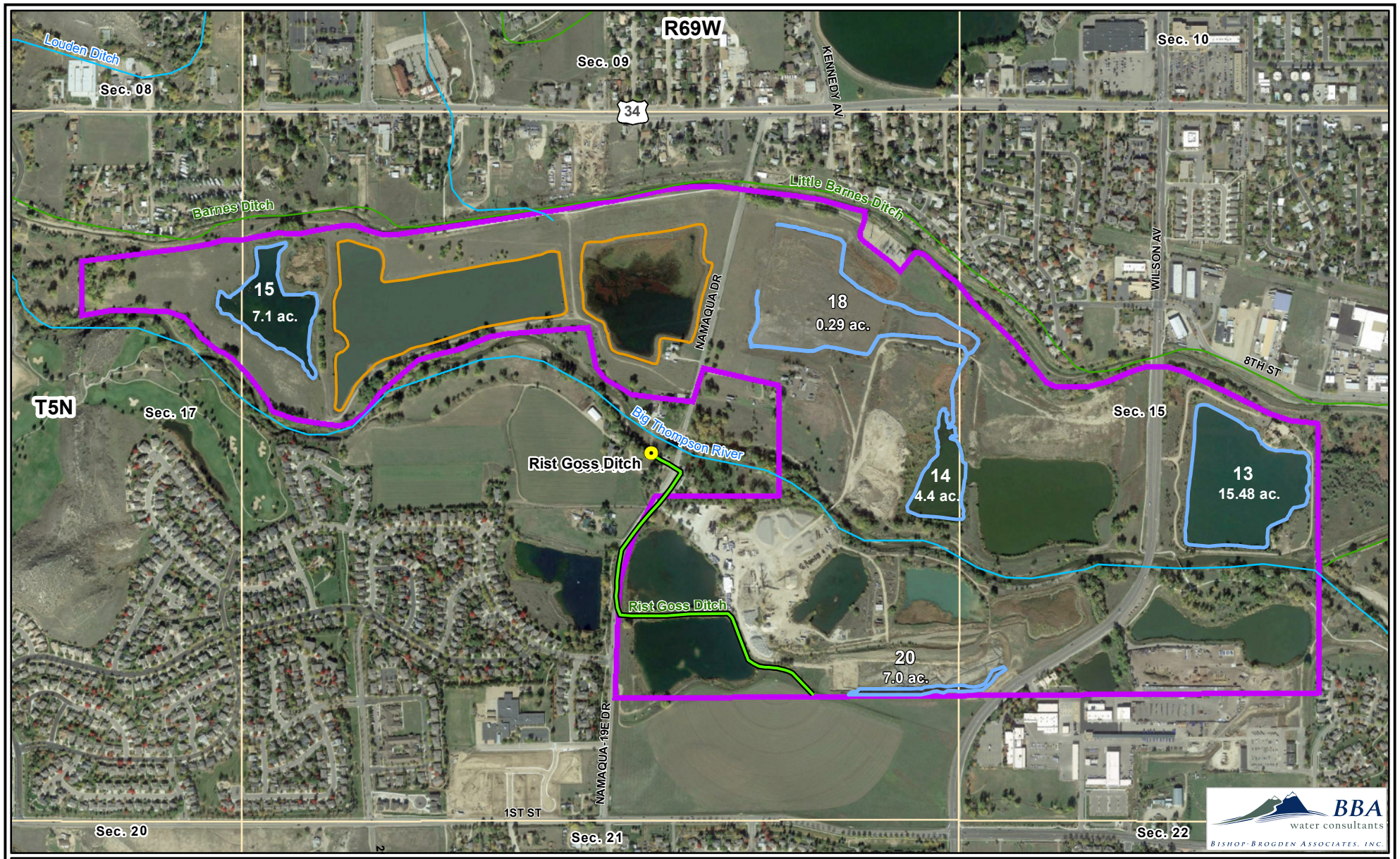
Louis Flink, Tabulation/Diversion Records Coordinator, Louis.Flink@state.co.us

Amy Eschberger, Division of Reclamation Mining and Safety,
Amy.Eschberger@state.co.us

Table 1
Loveland Ready-Mix Concrete
Pit 20 Pond Filling Projected Stream Depletion Summary
(Acre-Feet / Month)

Month	Lagged Dewatering Depletions	Lagged Pond Filling Depletions	Total Augmentation Requirement
1	13.0	0.2	13.3
2	12.7	0.6	13.3
3	12.2	1.1	13.3
4	11.5	1.8	13.3
5	10.4	2.9	13.3
6	8.9	4.4	13.3
7	6.4	6.8	13.3
8	2.6	10.7	13.3
9	0.0	13.3	13.3
10	0.0	13.3	13.3
11	0.0	13.3	13.3
12	0.0	13.3	13.3
13	0.0	13.2	13.2
14	0.0	12.9	12.9
15	0.0	12.5	12.5
16	0.0	12.0	12.0
17	0.0	11.1	11.1
18	0.0	9.9	9.9
19	0.0	8.1	8.1
20	0.0	5.2	5.2
21	0.0	1.7	1.7
22	0.0	0.0	0.0
Total	77.7	168.0	245.7

Notes:
Lagged depletion timing based on the IDS AWAS tool and the following aquifer characteristics:
T = 34,264 gpd/ft
s = 0.2
x = 1,071 feet
w = 2,105 feet
Lagged dewatering and pond filling amounts based on observed dewatering rates of 100 gpm.
Total augmentation requirements will be made by releases of augmentation water stored in LRM Ponds 1 and 2.



Legend

- Rist Goss Ditch
- Current Post 1981 Exposed Surface Area (for 13,14, 15, 18, and 20)
- Loveland Ready-Mix Ponds 1 and 2
- Property Boundary

Figure 1
Loveland Ready-Mix Property
Larimer Pits Site

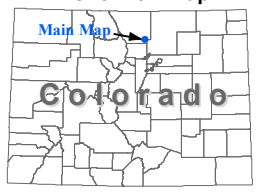
Date: 7/12/2019 | Job No. 9641.01
Aerial Photo Date: 10/14/2017 Google Earth | Data Source: CDSS, USGS, BLM

N
W E
S

1 inch = 1,000 feet

0 500 1,000
Feet

Overview Map



ADMINISTRATION PROTOCOL
Augmentation Plan Accounting
Division One – South Platte River

This protocol establishes the accounting and reporting process required to enable the division engineer's office to confirm that depletions from all out-of-priority diversions are being replaced so as to prevent injury to vested water rights. The accounting must comport with established "cradle to grave" accounting standards, which allow an audit of the information to track exactly how the data is manipulated as it is translated from raw input data to the resultant impact on the river. While this protocol is subordinate to any decreed language addressing specific accounting requirements, it generally addresses the minimum requirements of such accounting.

The accounting must use the standard convention where a depletion is "negative" and an accretion or other replacement source is "positive". The sum of the impacts will then result in either a "negative" or "positive" impact on the stream.

Wells in plans that have a negative stream impact must provide additional replacement water, curtail pumping or both until the impact is no longer negative. Plans with a negative stream impact that fail to curtail pumping will be ordered to stop pumping until such time as the projected impact of the wells is no longer negative.

1. Accounting must be submitted electronically to the water commissioner (call 970-352-8712 to obtain email address) and division engineer at Div1Accounting@state.co.us within 30 days of the end of the month for which the accounting is being submitted.
2. The accounting must provide the **contact information** including name and address for:
    a. the owner(s) of each well
    b. the person responsible for submitting the accounting
    c. the plan administrator and/or the plan attorney.
3. All **input data** must be in one location, such as an "Input" worksheet, etc. The accounting must show all pumping. Input data includes the information listed below.
    a. The required input data for each **well** is:
        i. the monthly meter reading for wells that use a **presumptive depletion factor** (PDF) to determine the associated consumptive use (CU); or
        ii. the monthly CU in acre-feet (AF) for wells that have a decree or approved SWSP that allows the wells to use a **water balance methodology** to determine the CU of the well. The analysis used to determine the CU must be included with the accounting.
        iii. Wells that are decreed as an **alternate point of diversion** (APOD) to a surface water right must report pumping on a daily basis if any of the diversion during the month is claimed as being "in priority". (See *Administration Protocol – APOD Wells* for more details.)

iv. The well meter serial readings for each meter shall be included if there is more than one meter on a well.

b. Each **recharge site** must comply with the *Administration Protocol - Recharge* and must report the:

i. daily volume in AF diverted into the site;

ii. monthly volume in AF released from the site;

iii. monthly net evaporative loss in AF;

iv. volume of water in AF remaining at the end of the month.

c. The accounting must identify each source of **fully consumable replacement water** actually delivered to the location impacted by the depletions. To demonstrate the water was actually delivered to the required location will require the following information:

i. the originating source of the water, date released and volume of water released;

ii. transportation losses to point of diversion or use, if any, using stream loss factors approved by the water commissioner;

iii. the volume of water actually delivered on a daily basis past any surface water diversion that was sweeping the river as corroborated by the water commissioner.

(See *Administration Protocol – Delivery of Water* for more details on delivering water.)

d. For each source of **replacement water that has been "changed"** for use as a source of augmentation, such as changed reservoir shares, ditch bypass credits or credits from dry-up, etc., the following input information must be reported:

i. the basis and volume of the return flow obligation;

ii. the location the changed water was historically used; this will be the location used to determine the timing of the return flow impact on the river.

4. The accounting must include a monthly **projection** of the plan's operation at least through March 31 of the next calendar year.

5. The accounting must include all input and output files associated with **modeling the delayed impact** of diversions. The output from the modeling must report to a summary table that shows, by month, the ongoing depletions associated with pumping, return flow obligations, etc. and accretions from recharge operations.

6. A **net impact** summary must show the out-of-priority depletions, accretions from each recharge site, volume of replacement water actually delivered to the location of the depletions and the resultant net impact on **a daily basis**. If necessary, the net impact must be done by river reach.

   While **modeling** may use a **monthly step function** to determine the depletions from pumping and accretions from recharge, the monthly result must then be **divided by the number of days in the month** in order to **simulate a daily impact**, as water rights are administered on a daily and not monthly basis.

Replacement water must be provided such that the **daily net impact** (using the simulated daily numbers from the modeling) **is not negative**. If a well is out-of-priority for 15 days during a month, replacement must be made only for the 15 days the well is out-of-priority. The replacement must be made, however, on a daily basis as opposed to, for instance, making an aggregated release equal to the volume of the out-of-priority depletions. Likewise, the simulated daily accretion will only count toward replacing the depletion on the days the well is out-of-priority. The accretions that report to the river when the well is in priority cannot be used to replace the out-of-priority depletions.

The **accretions that impact the river when the well is in priority** are not considered "excess" unless the cumulative net impact of the well is not negative for the entire irrigation year to date. (The irrigation year for this purpose is April 1 thru the following March 31.) Until such time as the cumulative net impact is not negative, the accretions must simply be released to the river and cannot be leased to other plans or recaptured. Plans that show a positive cumulative net impact are still required to make replacements on a daily basis; the cumulative analysis only effects whether or not accretions reporting to the river when the well is in priority are considered "excess" and are, therefore, able to be recaptured.

7. The basis for determining that the depletions are **out-of-priority** must be clearly established and all steps in the calculation included in the accounting. The analysis may be done, unless otherwise limited by decree, for each well or groups of wells, provided the most junior water right associated with the group of wells is used as the reference water right for the group's out-of-priority status.

8. Accounting must include **actual information** for the irrigation year through the month for which the accounting is being submitted **AND projections** of the plan operation through March 31 of the next calendar year.

9. The following **naming convention** must be used for all files submitted pursuant to item 1:

   "Plan**WDID**_YYMMDD"

   where: PlanWDID is the WDID assigned by the division engineer's office
   YYMMDD corresponds to the date the accounting is submitted.

   As an example, the assigned WDID for the former GASP plan was 0103333. If accounting using Excel® was submitted for that plan on May 15, 2004, the file name would be:

   "0103333_040515.xls"

   The name of the file must be in the subject line of the email.

10. All accounting must be reported using the **WDID** for the structure, at a minimum. Other information such as well name, permit number, etc. may also be included as desired. <u>All wells must be decreed by the water court, permitted by the state engineer or included in a decreed plan for augmentation</u>. Unregistered and undecreed wells cannot, in the opinion of the division engineer, be effectively administered because of the need to know the location, allowable diversion rate and use of the well - information that is only available from the decree or permitting process.

11. If a well is covered in multiple SWSP's or augmentation plans, the monthly meter readings must be the same in the accounting for each plan covering the subject well. The accounting for every plan covering the well shall state the proportionate pumping amount covered by each plan to assure all out-of-priority depletions are replaced.

12. The following additional accounting is required for sources of replacement water used for more than one plan. The water right owner of the replacement water is responsible for accounting for the total replacement amount and how much each plan is using of that total amount. The accounting for portions of the replacement water by other users must match the accounting of the water right owner. The amount of replacement water used by the water right owner and other users together shall not exceed the total replacement amount available.

    (See *Administration Protocol – Use Of Unnamed Sources For Replacement* for additional requirements concerning required notice and approval of sources of replacement not specifically described in a SWSP or augmentation plan*)*