GENERAL GUIDELINES FOR SUBSTITUTE WATER SUPPLY PLANS FOR SAND AND GRAVEL PITS

(Updated July 26, 2024)

In 1989, the Colorado Legislature passed Senate Bill 120 that affects gravel pits in operation after December 31, 1980. Section 37-90-137(11)(a)(I) of the Colorado Revised Statutes (C.R.S.), requires any gravel pit that exposed groundwater to the atmosphere after December 31, 1980 to replace all out-of-priority depletions of groundwater through a plan for augmentation or substitute water supply plan (SWSP).

SWSPs approved pursuant to section 37-90-137(11) are limited to operations that extract sand and gravel by open mining as defined in section 34-32.5-103(15), and groundwater depletions must be limited to those depletions directly resulting from, or incidental to, extraction of sand and gravel by open mining operations. Depletions resulting from mining other materials (for example, clay, shale, or limestone) cannot be approved under section 37-90-137(11), but may be included in a SWSP approved pursuant to section 37-92-308, or a court approved augmentation plan. As described in section 37-90-137(11)(a)(I), SWSPs may authorize uses of water incidental to open mining for sand and gravel, including processing and washing mined materials; dust suppression; mined land reclamation including temporary irrigation for revegetation; liner or slurry wall construction; production of concrete and other aggregate-based construction materials; dewatering; and mitigation of impacts from mining and dewatering. SWSPs may not replace depletions from uses that occur outside the mining permit boundary, unless the Applicant can demonstrate that the use is directly related or incidental to the sand and gravel mining operation.

This document explains the Division of Water Resources' (DWR) administration of section 37-90-137(11) and should not be construed as a formal policy making procedure. This document provides the suggested format (following Sections I-IV below) and content to include in an SWSP request made pursuant to section 37-90-137(11) for sand and gravel mining operations to assist applicants and help expedite DWR's review.

I. PROJECT DESCRIPTION

1. The request should include a narrative description and/or engineering report summarizing the relevant water resource aspects of the proposed or existing operation including:
    a. The owner of the land where the mining operation is located and the owner's contact information and agreement as described in Item 2, if the land owner is not the Applicant;
    b. water usage and consumption;

c. the proposed plan for replacing out-of-priority depletions, including lagged depletions which may extend beyond the requested approval period for the SWSP;

d. the Division of Reclamation Mining and Safety (DRMS) permit number;

e. the estimated number of years that the gravel pit will be mined;

f. the estimated number of years remaining in the mining operation;

g. the proposed final reclamation for the site;

h. if final reclamation will be a groundwater pond, a statement identifying if the operator intends to file for an augmentation plan, or if the groundwater pond will be lined;

i. the extent and location of any groundwater surface area exposed to the atmosphere prior to January 1, 1981 ("Pre-81 Area");

j. if all or a portion of the site will be lined, the extent of the proposed lined areas and the timing for the installation of the liner, if known;

k. if all or a portion of the site will be lined, a description of drainage structures that will be incorporated into the gravel pit operation to minimize any potential water mounding behind a slurry wall/liner and to allow water to flow back to the stream system;

l. information to demonstrate the ability to replace long term injurious stream depletions that result from mining-related operations including exposure of groundwater.

2. SWSP requests must identify whether the Applicant is the owner of the land where the mining operation is located. If the Applicant is not the landowner, before any SWSP is approved, an agreement must be obtained between the Applicant (or operator or responsible party) and the landowner and their successors to identify who is responsible for the operation and continuance of the SWSP and future augmentation requirements after mining is complete. The agreement must be supplied with the SWSP request.

3. The Applicant should provide mapping (preferably a GIS shape file) showing the water resource aspects of the operation, including the existing or proposed lake(s), streams, wells, ditches, dewatering pumps and trenches, areas to be excavated, points of discharge for the washing and dewatering operations, and slurry walls or liners, both on and off the property, which may affect the timing of lagged depletions. The current, proposed and the ultimate extent of exposed groundwater should also be identified on the mapping. The scale, section, township, range, principal meridian and DRMS permit boundary should be clearly identified on all maps. The Applicant should provide a GIS shape file showing the mining permit boundary as approved by DRMS. The shapefile should be in NAD83 datum, UTM projection, Zone 13N. Additionally, if the Applicant is claiming an exemption for any groundwater exposed to the atmosphere prior to January 1, 1981, the aerial photographs, map, and GIS shape file described in Item 15 must

be provided.

4. The filing fee for a new SWSP for a sand and gravel pit is based on statute and is currently $1,593 regardless of the number of acres exposed[1]. In section 37-90-137(11)(e)(II), this fee for a new SWSP is described to be applicable for the first two years (or shorter time period as proposed by the Applicant). A SWSP requested pursuant to section 37-90-137(11) is limited to situations where the gravel pit operation exposes groundwater. A SWSP is not required in stream basins that are not over-appropriated. The exposure or use of groundwater will require that a well permit application be submitted and a well permit be obtained, whether the stream system is over-appropriated or not. See Item 10 (below) for further details.

5. If multiple sand and gravel mining operations apply for a combined SWSP, a filing fee is required for each mining site as recognized by a unique DRMS reclamation permit number.

6. If the sand and gravel mining operation will not expose groundwater, the operation does not qualify for a SWSP pursuant to section 37-90-137(11). However, a SWSP may be requested pursuant to section 37-92-308. See Figure 1 (attached as the last page of this document) for further details regarding SWSP requirements and statutory offsets available for depletions.

7. If the operator proposes to use groundwater from the gravel pit or another well and those uses are not directly related or incidental to open mining for sand and gravel (including processing and washing mined materials; dust suppression; mined land reclamation including temporary irrigation for revegetation; liner or slurry wall construction; production of concrete and other aggregate-based construction materials; dewatering; and mitigation of impacts from mining and dewatering), the operation does not qualify for a SWSP pursuant to section 37-90-137(11). However, a SWSP may be requested pursuant to section 37-92-308.

8. Pursuant to section 37-90-137(11)(a)(I), no SWSP or augmentation plan shall be required by the State Engineer or the water court if a gravel pit operator or owner of the land being mined has, prior to January 15, 1989, entered into and has continually thereafter complied with a written agreement with a water users' association (e.g., Water Users Association of Water District No. 6 and St. Vrain and Left Hand Water Conservancy District) or water conservancy district (e.g., Middle Park Water Conservancy District, West Divide Water Conservancy District, Basalt Water Conservancy District, and the Bureau of Reclamation project water in Green Mountain Reservoir and Ruedi Reservoir) to replace or augment the depletions in time, location and quantity which result from open mining of sand and gravel. A SWSP or court approved augmentation plan will be required if the depletions from the mining operation exceed that amount covered by the agreement with the water users' association or water conservancy district. The above referenced

1 All filing fees identified in this document are as defined in the Colorado Revised Statutes (rev. 2024) and are subject to change.

agreement must be submitted to the State Engineer's Office and the Division Engineer upon request to show that depletions from the gravel mining operation are being replaced in time, location and quantity. A well permit must be obtained pursuant to section 37-90-137(2) for any gravel pit site included under the above mentioned agreements.

9. The renewal fee for an existing SWSP is based on statute and is currently $257 for each mining site (as identified by a unique DRMS reclamation permit number). A SWSP request may not be considered a renewal if the request is not received by DWR prior to the expiration date of the previously approved SWSP. Additionally, renewals cannot change the replacement sources (with the exception of new replacement sources that do not require consumptive use analyses and do not have return flow obligations). A renewal can increase the quantity of water which is used or consumed and can add uses that were not approved by the original SWSP. SWSPs that have expired, or that change the replacement source(s) (except as described above), may be considered a new SWSP, currently requiring a fee of $1,593 for each mining site (as identified by a unique DRMS reclamation permit number).

10. The fee for a gravel pit well permit application is based on statute and is currently $100. A well permit is required even if the mining operation is located in the basin of a stream system that is not over-appropriated and even if the mining operation is included under a January 15, 1989 agreement as described in Item 8 above. The fee must be paid at the time of application and is not refundable. In accordance with section 37-90-137(11)(g), a single well permit may be obtained for the entire acreage covered by a unique DRMS reclamation permit, regardless of the number of gravel pit lakes within the acreage.

11. After a SWSP has been approved by DWR, any subsequent changes or amendments will require submittal of an engineering report and the filing fee for a renewal (or the filing fee for a new SWSP, if applicable as described in Item 9 above).

II. DEPLETIONS

12. Gross evaporation (free water surface) shall be calculated based upon evaporation atlases in NOAA Technical Report NWS 33 or site-specific information deemed acceptable to the State Engineer. The total gross evaporation estimate from NOAA 33 shall be distributed to all months. The monthly distribution, in percent (%), for elevations below 6500 feet mean sea level is:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3.0	3.5	5.5	9.0	12.0	14.5	15.0	13.5	10.0	7.0	4.0	3.0

The monthly distribution, in percent (%), for elevations above 6500 feet mean sea level is:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.0	3.0	6.0	9.0	12.5	15.5	16.0	13.0	11.0	7.5	4.0	1.5

Evaporation does not need to be replaced for periods when the pond(s) are completely covered by ice, however, if the Applicant claims the pond(s) will be completely covered by ice for any time period, adequate engineering documentation must be submitted to support the claim. The SWSP request may not project ice cover for a time period in which the historical mean monthly temperature is greater than 32 degrees Fahrenheit. Regardless of the projection of ice cover in the SWSP request, the Applicant must replace depletions from the exposed groundwater surface area that may occur during the assumed ice-covered period for any time that the exposed groundwater surface is not completely covered by ice and therefore must have sufficient replacement supplies to cover all evaporative depletions, assuming no ice cover. The Applicant may be required to provide documentation (photos, site inspections, etc.) to confirm that ice cover exists during the projected period.

13. In accordance with section 37-80-120(5), the monthly gross evaporation from the exposed groundwater surface may be reduced by the amount of historical natural depletion to the waters of the state, if any, caused by the preexisting natural vegetative cover on the surface of the area which will be, or which has been, permanently replaced by an open water surface. This offset can only be applied in an area that is subject to a replacement requirement, and cannot exceed the amount of gross evaporation on a monthly basis. This offset is only applicable to sand and gravel mining operations which are approved with a reclamation permit from DRMS. The amount of this offset credit during a given month can only be used to reduce the gross evaporation in that month, and the offset cannot exceed the total potential consumptive use of the native vegetation in that month.

    This offset credit may be based on an analysis of the historically consumed precipitation and/or groundwater (if applicable). This analysis must be based upon published engineering studies acceptable to DWR and must consider site-specific information, including, but not limited to the type of vegetation, growth stage, depth to groundwater, and soil information. Documentation of the vegetative growth shall be based on aerial and perspective photographs depicting the growth. The Applicant shall bear the burden of proving the claimed offset credit. In lieu of an analysis of the historically consumed precipitation and/or groundwater by the preexisting natural vegetative cover, DWR will accept an estimate for the offset credit using effective precipitation (calculated as 70 percent of total precipitation by month). This effective precipitation offset credit may be claimed for areas of exposed groundwater regardless of the type of land use that existed before construction of the gravel pit and exposure of groundwater, including but not

limited to previously irrigated crop land or developed land.

14. In accordance with section 37-80-120(5), any offset credit from the preexisting natural vegetative cover (or effective precipitation) is only applicable to replace evaporation from groundwater exposed to the atmosphere in connection with the extraction of sand and gravel by open mining. The offset credit does not apply to lined gravel pits, except to replace depletions associated with the evaporation of any native groundwater remaining within the lined area.

15. Section 37-90-137(11)(b) allows for a Pre-81 Area exemption for exposed groundwater as follows:

> *"If any groundwater was exposed to the atmosphere in connection with the extraction of sand and gravel by open mining as defined in section 34-32-103 (9), C.R.S., prior to January 1, 1981, no such well permit, plan for augmentation, or plan of substitute supply shall be required to replace depletions from evaporation; except that the burden of proving that such groundwater was exposed prior to January 1, 1981, shall be upon the party claiming the benefit of this exception."*

Depletions that occur due to evaporation from groundwater exposed prior to January 1, 1981 as a result of open mining of sand and gravel (Pre-81 Areas), do not need to be replaced, regardless of whether mining continued or was reactivated after December 31, 1980.[2,3] Except as described below, Pre-81 Areas that are exempted from the requirement to replace evaporative depletions will be tied to the physical location at which the groundwater was exposed prior to January 1, 1981.

The burden of proving that groundwater was exposed prior to January 1, 1981 as a result of open mining of sand and gravel shall be on the operator or property owner claiming the benefit of the exemption. In order to seek the exemption from augmentation of Pre-81 Areas the following information must be provided:

a. An aerial photo taken prior to January 1, 1981 that shows the existence and location of the Pre-81 Area, and a current aerial photo to indicate the current water surface is in the same location as the Pre-81 Area; and

b. a topographical map on which the Applicant has identified the claimed Pre-81 Area, the DRMS reclamation permit number, and the DRMS mining permit boundary as it existed at the time the groundwater was exposed; and

2Refer to Order Regarding Motions for Determinations of Law, dated August 27, 2009 in Division 1 Water Court Case No. 2009CW49, which found that replacement for evaporative depletions is not required for groundwater exposed to the atmosphere prior to January 1, 1981 through open mining of sand and gravel, regardless of whether open mining operations continued or were reactivated on or after that date.
3Depletions that occur due to evaporation from groundwater exposed prior to January 1, 1981 as a result of open mining of sand and gravel do not need to be replaced unless augmentation is determined to be necessary for compliance with an interstate compact.

c. a GIS shapefile containing the Pre-81 Area and the permit boundary as it existed at the time the groundwater was exposed. The shapefile should be in NAD83 datum, UTM projection, Zone 13N; and

d. calculations of the exposed groundwater surface areas shown on the Pre-81 aerial photo and the current aerial photo.

DWR recognizes that re-allocation of Pre-81 Areas to areas exposed after December 31, 1980 was historically approved by DWR through gravel pit SWSPs and/or site specific written authorization. Since January 1, 2011, DWR has no longer allowed Pre-81 Areas to be re-allocated to areas exposed after December 31, 1980. However, if groundwater was exposed at a site after December 31, 1980, and was recognized in writing by DWR, through an approved SWSP or other site specific written authorization, as a re-allocated Pre-81 Area, DWR will continue to recognize that area as a Pre-81 Area. These re-allocated and memorialized Pre-81 Areas will carry the same status as the original groundwater exposed prior to January 1, 1981 and will be permanently tied to the reallocated physical location.

If the Applicant is claiming that DWR approved in writing a reallocation of the Pre-81 Area, the Applicant must provide a copy of the document by which DWR approved the reallocation. Such documentation may include the SWSPs previously approved by DWR and/or other written authorization from DWR for re-allocation. The documentation must include a topographical map that identifies the reallocated Pre-81 Area.

If such information is not provided, the Pre-81 Area will be limited to the amount and location of the Pre-81 Area existing as of December 31, 1980, as documented by the Applicant.

16. Some groundwater pits may have been excavated prior to the 1973 Colorado Open Mining Land Reclamation Act, so a reclamation permit from DRMS was not required to be obtained. These excavations may be eligible as Pre-81 Areas; however, the pit/property owner needs to document that the excavation did occur as a result of a commercial sand and gravel mining operation. Mining of other materials (such as limestone or clay) does not qualify for the Pre-81 Area exemption.

The Pre-81 Area exemption allowed by section 37-90-137(11) was created with the passage of Senate Bill 89-120. The passage of Senate Bill 89-120 was intended to affect commercial sand and gravel pit operators, so to qualify for this exemption, the Pre-81 Area must have been created by a commercial sand and gravel mining operation that did or would have required a DRMS reclamation permit, and not some other situation that overturned sand and gravel for a purpose other than a commercial mining operation, such as use by the landowner on their own land.

If a claim is made that a groundwater pond qualifies as a Pre-81 Area, and the groundwater pond does not have a DRMS permit because it was created before the 1973 Colorado Open Mining Land Reclamation Act, the pond/property owner needs to provide the following information to document that the groundwater pond

qualifies as a Pre-81 Area:

a. An aerial photo taken prior to January 1, 1981 that clearly shows the location of the Pre-81 Area, and a current aerial photo to indicate the current water surface is in the same location as the Pre-81 Area; and

b. calculations of the exposed groundwater surface area(s) shown on the Pre-81 aerial photo and the current aerial photo; and

c. documentation to demonstrate that groundwater was exposed as a result of commercial sand and gravel mining operations. Such documentation may include, but is not limited to:

   i. a gravel mining company's lease to mine the property; and/or a contract with an entity such as the Colorado Department of Transportation (CDOT) to use sand and/or gravel for a construction operation off the property; and/or

   ii. a special use permit or other approval issued by the county for a sand/gravel mining operation; and/or

   iii. contracts or other records to indicate the mined aggregate included sand and gravel and that the aggregate was sold and moved off-site; and/or

   iv. historical documents such as newspaper articles describing the commercial sand and/or gravel mining operation.

Depending on the type of documentation that is provided, more than one type of documentation identified under Item 16.c. (above) may be required. In some cases, a statement (in the form of a sworn affidavit) from a person that had personal knowledge of the sand and gravel mining operation and can confirm for what purpose the mined aggregate was sold and moved off-site may be considered sufficient documentation for Item 16.c.

17. Water consumption by the mining operation (including associated well structures) including, but not limited to, processing and washing mined materials; dust suppression; mined land reclamation including temporary irrigation for revegetation; liner or slurry wall construction; production of concrete and other aggregate-based construction materials; dewatering, including the “first fill” and “intermittent fill” as described in Item 19 below; and mitigation of impacts from mining and dewatering must be measured or calculated. The engineering report must clearly describe all assumptions and calculations that were used to determine the water consumption. All diversions shall be considered 100 percent consumptive unless the Applicant can document otherwise.

18. The amount of water lost with the removal of the mined material must be calculated as described in the table below. This table specifies the percent of product mined which is considered water weight (i.e. water lost in product). The volume of groundwater lost with the mined material (V, in acre-feet), shall be calculated as:

$$V = \frac{Tons\ of\ mined\ material \times (2000\ lbs/ton) \times \%\ groundwater}{Specific\ Weight \times (43560\ ft2/1\ acre)}$$, where:

The Specific Weight of water is 62.4 lbs/ft^3; and

The % groundwater, by weight, is obtained from the table below.

Mining Scenario	Not Washed	Washed
Material mined above the groundwater table.	Material has a 2% moisture content, but 0% is charged because the moisture is not a groundwater diversion.	After washing, material has a 4% moisture content (saturated), but 2% is charged because only 2% is from the soil profile and the other 2% is from groundwater used for washing.
Material mined below the groundwater table.	Material has a 4% moisture content (saturated), and 4% is charged because all of the water is a groundwater diversion.	After washing, material has a 4% moisture content (saturated), and 4% is charged because that entire 4% is a groundwater diversion.
Material mined below the groundwater table, but in a dewatered state.	Material has a 2% moisture content, and 2% is charged because the moisture is from a groundwater diversion.	After washing, material has a 4% moisture content (saturated), and 4% is charged because that entire 4% is a groundwater diversion.

Note: percentages are by weight

19. Water consumption by the mining operation shall also include water removed from the tributary stream system by the "first fill" or an "intermittent fill" of the gravel pit. The "first fill" or "intermittent fill" is the water that fills an unlined gravel pit and occupies the volume previously occupied by the removed sand, gravel, or other solid material. For pits that are "dry mined" through dewatering, the first fill normally occurs at the conclusion of mining; an additional fill may occur if the pit is allowed to fill seasonally, only to be dewatered again, as part of the mining operation. For pits that are dewatered and mined in a dewatered state, once dewatering stops, all water that fills the pit must be accounted for as a depletion. For "wet mined" pits, the "first/intermittent fill" occurs continuously during mining. The first/intermittent fill for any administrative period shall be calculated as:

$V_{fif} = V_{mm}$ x (1 – porosity) - V_{lp}, where:

V_{fif} = Volume of water in first fill or **intermittent fill**

V_{mm} = The total volume of "**m**ined **m**aterial" below the water table that has been filled with groundwater

Porosity = The ratio of the pore volume to the total volume of the mined material

V_{lp} = Volume of water calculated as **l**ost in **p**roduct

Since V_{mm} may be a negative number in the case that the volume of backfill occurring in the pit is greater than the volume of mined material, it is possible that V_{fif} will be a negative number, or a credit to the total amount of water consumed by the mining operation. This credit will be allowed only up to the amount that will offset all other consumptive use at the mining operation. Use of the credit beyond that amount must be done through a water court approved plan for augmentation.

20. The SWSP request must specifically address whether dewatering will occur at the site. If the site will be dewatered, the expected rate and volume of dewatering must be specified along with the lagged depletions which will occur due to the dewatering process. The Applicant shall replace all out of priority depletions caused by the dewatering operation. Accretions may be claimed as a source of replacement water to offset depletions that occur due to the mining operations and the dewatering process, if the Applicant can account for the amount, location, and timing of these accretions. Dewatering accretions can be used only to replace depletions from mining operations as described in the SWSP, or for mining depletions that result from a pit at another location, operated by the same operator, as described in the SWSP. If dewatering accretions are to be used to replace depletions that result from a pit at another location, the delivery or exchange of such water and assessment of appropriate transit losses is subject to the approval of the Division Engineer. All site dewatering must be accounted for in a method satisfactory to the Division Engineer and Water Commissioner. Adequate measuring devices may be required in order to adequately account for the dewatering. If dewatering is occurring at the site, the gravel pit well permit application must specifically identify dewatering as a use.

21. If the proposed final reclamation of the mining operation, as approved in the DRMS permit, does not include backfilling or lining to eliminate all groundwater exposed within the mining boundaries, the SWSP request must include information to demonstrate how the Applicant will ensure all out-of-priority depletions resulting from the mining site will be replaced, including the depletions that will accrue to the stream system after expiration of the SWSP. The Applicant's calculations must account for expected depletions due to evaporation from any exposed groundwater and the effects of the first fill that will occur when any dewatering operations at the site cease and the excavated mining site is allowed to fill.

All sand and gravel mining operators must comply with the requirements of the Colorado Land Reclamation Act for the Extraction of Construction Materials and the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for

the Extraction of Construction Materials for the protection of water resources. DRMS requires that the mine operator provide information to demonstrate they can replace long term injurious stream depletions that result from mining operations. The required information can be categorized into three general categories:

a. File a financial warranty with DRMS that will ensure backfilling of the pit to cover the exposed ground water to a depth of two feet above the mean high ground water level; or

b. obtain a court approved augmentation plan prior to exposing groundwater; or

c. file a financial warranty with DRMS to cover the cost of installing a clay liner or slurry wall that meets DWR's requirements for preventing groundwater exposure.

The SWSP request must identify which of the three options will be utilized to comply with the DRMS requirements. If the Applicant will utilize a bond with DRMS, the SWSP request must indicate the amount of the bond and show that the bond is adequate to line or backfill the water surfaces that will be exposed during the SWSP approval period.

An alternative approach to obtain approval from DWR that acknowledges compliance with DWR's requirements pursuant to section 37-90-137(11) may be utilized, in which case the SWSP request must include information to document a permanent water source that will be dedicated to the SWSP to ensure that all depletions (including from an unforeseen abandonment of the site by the Applicant), will be replaced in order to prevent injury to other water rights. Except for existing SWSPs that currently accept unchanged irrigation water rights, the dedicated water must be decreed for augmentation purposes, and the historical consumptive use of the water to be dedicated must be documented through a water court decree or engineering report. The dedication must be a legally binding agreement. The dedication process is subject to modification if the State Engineer determines additional or different requirements are necessary to ensure replacement of out of priority depletions.

If the mining operation includes dewatering, the SWSP request filed at least three years prior to completion of dewatering must include information that specifies how the post-dewatering depletions, including refilling of the pit, will be replaced, in time, place and amount. In the event that the operator of the pit abandons the site prior to final approval of an augmentation plan or prior to replacement of all delayed depletions, the dedicated water or the bond held by DRMS will be used to ensure that out-of-priority, injurious depletions will not occur at the site or that depletions will be replaced.

22. Timing of depletions may be calculated using Glover techniques or numerical modeling. The State Engineer's Office may require that special procedures be used to analyze depletions and injury on intermittent streams.

23. For gravel pits that are lined to the standard described in the August 1999 State Engineer's Lining Criteria for Gravel Pits (1999 SEO Guideline) and for which the liner has been approved by DWR, the following requirements apply:

    a. The Applicant must provide replacement for all out of priority depletions of native groundwater remaining within the lined area that evaporates or is consumed, except for the water removed in the mined product.

    b. The native groundwater may be removed (dewatered) from within the lined area and returned to the stream system, or to the aquifer via groundwater recharge without the need to provide replacements, so long as the native groundwater is not consumed. The exception to this is when the Applicant has replaced "first fill" water as provided by this document, in which case the Applicant may consume 100 percent of the water that was replaced. If the native groundwater is exposed or beneficially used, a well permit must be obtained. This will require a SWSP or augmentation plan in an overappropriated stream system.

24. If construction of a slurry wall/liner is proposed as part of the gravel pit operation, the Applicant is obligated to consider the potential for water mounding behind the slurry wall/liner, and if drainage structures are needed to ensure water can flow back to the stream. The SWSP request must describe if drainage structures will be incorporated into the gravel pit operation to minimize any potential water mounding behind the slurry wall/liner and allow water to flow back to the stream system. The SWSP request must also describe any consideration that was given to the operation of recharge projects or other water rights in the vicinity that could be impacted by excessive mounding, or impedance of water returning to the stream system.

III. REPLACEMENT SOURCES

25. Replacement water to replace out-of-priority depletions must be available either directly or by exchange in the proper quantity, quality, place and time to ensure that existing water rights are not injured. In order to obtain approval of a SWSP, the Applicant must demonstrate the replacement water is or will be physically and legally available as needed to prevent injury to other water rights. This includes ensuring that replacement water is able to be provided to a downstream call at times when there is an intervening water right "sweeping" or diverting the entire flow of the river, through either securing an alternate source of replacement water, a bypass agreement with the sweeping structure, or another method acceptable to DWR. If leased supplies will be relied on for replacement purposes, a copy of the lease or leases must be provided with the SWSP request. If the SWSP cannot replace all out-of-priority depletions without the use of the leased replacement source(s), the SWSP will not be approved without submission of leases covering the proposed period of use.

26. SWSPs commonly utilize the following sources of water to compensate the stream system for depletions resulting from evaporation and mining losses: A) direct flow water rights, B) reservoir storage, C) nontributary groundwater, D) foreign

(transmountain) water, and E) leased, fully consumable effluent. The Applicant shall provide water right decrees and other pertinent information to document that the proposed replacement water source may be used for replacement purposes under the SWSP, or the SWSP may need to include a request for a change of water right. Any proposed change of water right must include an acceptable engineering report documenting the historical consumptive use of the subject water right and the terms and conditions required to assure historical return flows are maintained in time, location and amount as needed to prevent injury to other water rights. The Applicant shall also provide signed lease agreements or recorded non-encumbered ownership documents authorizing use of the proposed replacement sources. Although the SWSP may be approved on a temporary basis using leased or nontributary groundwater as the replacement water source, DWR may object to the use of these sources in a proposed decreed plan for augmentation. The decision to accept these sources as adequate to protect the senior water rights may be determined by the Water Court in which the proposed plan for augmentation is filed.

27. For SWSPs that propose short-term leases as a replacement source, the Applicant must demonstrate that an adequate source of replacement water will be available to replace all lagged depletions from the gravel pit operation, including those that accrue to the stream after the expiration of the SWSP.

28. Nontributary groundwater, foreign (transmountain) water, or other fully consumable sources may be used for replacement purposes in the SWSP, provided adequate engineering and documentation are supplied. Use of nontributary groundwater must comply with the Colorado Revised Statutes, the pertinent decrees and, if applicable, the Statewide Nontributary Ground Water Rules. The Applicant must meet all relinquishment requirements before using nontributary groundwater. Nontributary groundwater used as replacement water under the first use of the water must be permitted for augmentation or replacement purposes. All replacement water must be made appurtenant to the site by dedicating it solely for the purposes of replacement at the site for the duration of the SWSP, unless otherwise requested by the Applicant and approved by the SWSP.

29. Since only the Water Court has the authority to approve changes in water rights, those SWSPs approved by DWR that involve a change of use may not be able to claim the period of time while operating under the approved SWSP for historical consumptive use credit under a change of water right sought through the water court.

30. Analysis of historical consumptive use shall be based upon the modified Blaney-Criddle method or other acceptable consumptive use determination methods. If the subject water right was quantified and changed in a prior court decree, it is suggested that the previous determination be utilized in the SWSP. The dry-year yield of the changed water right must be considered to demonstrate the replacement source will be adequate to replace the anticipated out-of-priority depletions from the proposed mining operation. The Water Court may impose less

stringent conditions on the plan for augmentation based on a different study period. Any occurrence of subirrigation must be documented and considered in the historical use analysis. Documentation of historical irrigation may be based on aerial photographs, sworn affidavits, court decrees, well permit files, and DWR diversion records. Estimates of irrigation efficiencies, ditch conveyance efficiency, and subirrigation must be identified in the historical use analysis and must be based on acceptable engineering references and standards.

31. An engineering report must be provided to document the claimed amount of historical consumptive use of the water right to be changed based on an analysis of the actual historical use of the water right for its decreed purpose during a representative period that includes wet, dry, and average years. The historical consumptive use analysis must be based on a detailed (year-by-year) and monthly time step analysis. The actual monthly historical diversions must be used and compared to the monthly crop irrigation requirements determined based on actual weather data (not long term averages). The engineering report must identify the return flow factors for surface and subsurface return flows.

32. The land to be dried up must be dried-up and monumented to the satisfaction of the Division Engineer before any historical consumptive use credits are available for use. A copy of the dry-up covenant and a map designating the dried-up lands must be included with SWSP request. Maintenance of historical return flows from the formerly irrigated lands will be required if necessary to prevent injury to other water rights. The timing of historical return flows may be calculated using Glover techniques or numerical modeling.

33. SWSPs may use reservoir water released to the stream at the proper time and in the proper amount. Reservoir storage and releases are generally required to offset winter depletions. An analysis of the consumptive use of the reservoir water (if reservoir water is not decreed for augmentation purposes) must be performed similar to that performed for a direct flow water right.

34. An excavation that intercepts groundwater is considered a well; therefore, the excavation may not be used for water storage unless the excavation is lined to the standard described in the 1999 SEO Guideline.

35. The SWSP may include the introduction of water into recharge sites located at desirable distances from the stream using the sources discussed previously or water diverted under free river conditions in accordance with the State Engineer's Written Instruction 2015-02. Recharged water would reach the stream on a delayed schedule and would be creditable against stream depletions caused by the gravel mining operation at the time, in the amount and at the location where the accretions reach the stream. DWR must specifically approve the recharge operation in the SWSP approval unless the recharge accretion schedule has been previously approved in a plan decreed by the water court. Unless the recharge accretion schedule has been approved in a plan decreed by the water court, the Applicant can only claim credit for water that accrues to the stream system as a

result of water that was delivered to recharge during the approval period of the SWSP. If the recharge site consists of a groundwater pit that was exposed due to sand and gravel mining, then the Applicant may calculate the volume of water lost to evaporation within the recharge site based on net evaporation. If the recharge site was constructed on the mining site, but was not a mined pit, then the volume of water lost to evaporation within the recharge site must be calculated based on gross evaporation. The timing of recharge accretions may be calculated using Glover techniques or numerical modeling.

36. Transportation loss charges, if applicable, will be assigned for any source of replacement water.

37. In accordance with amendments to section 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 a substitute supply of water is of a quality to meet 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.

IV. OPERATION OF SWSP

38. Each SWSP request shall include a detailed accounting sheet providing monthly estimates of the following items: water surface area, gross evaporation, net evaporation (if applicable), amount of mined material, water removed with the mined sand and gravel, water used for concrete batching, diversions for dust control, diversions for vegetation establishment, and any other water use, total lagged depletions impacting the river, replacement source releases, physical flow available at the surface water right headgate, historical consumptive use credit estimate, historical return flows, rate and volume of dewatering, replacement sources, and transit loss charges. Not all items in this list will be applicable to every proposal. Likewise, certain proposals may require additional accounting. A draft accounting form shall be submitted with the SWSP request. The SWSP request shall provide the name, address, telephone number, and email address of the contact person who will be responsible for the accounting and operation of the SWSP. DWR will hold the permit designee of the operation (as filed with DRMS) responsible for compliance, but reserves the right to also pursue the landowner for eventual compliance.

39. Accounting and reporting of depletions and replacements shall be made monthly to the division engineer and water commissioner. More frequent accounting may be required by the division engineer to protect other water users. Replacement of depletions may be aggregated and the release schedule adjusted at the division engineer's discretion for maximum benefit of the stream system.

40. Adequate flow measuring and recording devices and measurements may be required to implement the SWSP. Measurements may include, but shall not be limited to, all diversions from the pit (excluding evaporation), water released from

reservoirs or other sources for replacement water, and the diversion and turn back of ditch diversions.

41. A SWSP will not be approved unless the Applicant has also applied for a gravel pit well permit for the subject pit. A gravel pit well permit will not be issued until the SWSP is approved. Additionally, if another well is located within 600 feet of any proposed drilled well that is not owned by the Applicant, or the perimeter of the proposed free water surface that would exist if the pit is not dewatered, a waiver of objection from the well owner(s) must be obtained. If the Applicant cannot obtain a waiver of objection from the owners of wells located within 600 feet of the free water surface, the State Engineer's Office shall notify the well owners in accordance with section 37-90-137(2)(b)(II)(A), C.R.S. If objections are received, a hearing will be held before the State Engineer to determine if circumstances in the particular instance warrant issuance of the well permit. As part of the SWSP request, the Applicant shall specify whether any wells, constructed in the same source, are located within 600 feet of any proposed diversions including free water surface of the mining operation. If such wells exist, the Applicant shall provide waivers from the well owners or provide names and mailing addresses of the well owners. The Applicant shall also clarify if they are seeking a 600-foot spacing review for the entire DRMS permit boundary or some portion thereof. If the Applicant is seeking a 600-foot spacing evaluation for a portion of the DRMS permit area then a map must be provided showing that area and prior to any diversion outside of the designated area, including evaporation, a new well permit will be required.

42. If the SWSP and the gravel pit well permit are approved for less than the final size of the groundwater pond or for less than the maximum use of groundwater, a new gravel pit well permit will be required each time the SWSP is approved for a greater use. However, DWR will consider the final buildout of the gravel pit when issuing the initial permit and, where possible, condition the well permit such that it will remain valid as the operations and SWSP obligations expand.

43. In accordance with Rule 17 of the Water Well Construction Rules (2CCR 402-2), after initial exposure of groundwater, the Applicant shall submit site plan and cross-sectional drawings to DWR. These drawings are required to maintain a valid well permit and are accepted in lieu of the Well Completion Report. The drawings must show the extent of intended excavation, the maximum depth of the pit, the initial static water level, and specify the date of initial groundwater exposure to the atmosphere.

44. The exposure of groundwater in a gravel pit is subject to Rule 9.3.3 of the Water Well Construction Rules (2CCR 402-2) regarding minimum construction and location standards, and Rule 17 regarding reporting requirements.

45. A Well Abandonment Report form must be filed if a site with a gravel pit well permit is either backfilled or lined such that groundwater is no longer exposed at the site. The most recent version of the reporting form can be obtained from the

eForms section of the DWR website.

46. The State Engineer may revoke a SWSP or add additional restrictions to its operation if at any time the State Engineer determines that injury to other vested water rights has occurred or will occur as a result of the operation of the SWSP.

47. The duration of the SWSP will be evaluated on a case-by-case basis by the State Engineer. While mining continues, individual SWSPs may be approved or renewed for more than one year. Criteria for approving the renewal of a SWSP for extended years include the approved term and conditions of mining by DRMS, the senior water rights impacted, the source and reliability of replacement water, the operating history of the Applicant, and any other criteria which affects the operational viability of the SWSP.

48. Approval of a SWSP does not relieve the Applicant and/or landowner of the requirement to obtain a Water Court decree approving a permanent plan for augmentation or mitigation to ensure the permanent replacement of all depletions, including long-term evaporation losses and lagged depletions after gravel mining operations have ceased. If reclamation of the mine site will produce a permanent water surface exposing groundwater to evaporation, an application for a plan for augmentation must be filed with the Water Court at least three years prior to the completion of mining to include, but not be limited to, long-term evaporation losses and lagged depletions. If a lined pond results after reclamation, replacement of lagged depletions from mining and dewatering shall continue until there is no longer an effect on stream flow.

49. The Applicant will be responsible for all lagged depletions that occur due to operation of the sand and gravel mining operation, including lagged depletions from evaporation, operational uses, reclamation and dewatering, and including any lagged depletions that occur after expiration of a SWSP.

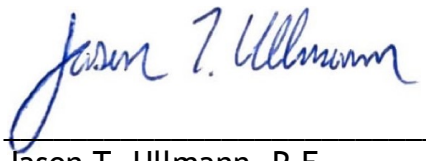
50. For a gravel pit whose mining operations have ceased and that no longer have any exposed groundwater: With the approval of the State Engineer, upon replacement of 95 percent of the depletions that remained to be replaced when mining and reclamation activities consuming groundwater (including evaporation) ceased, the Applicant may aggregate the remaining five percent of the lagged depletions for replacement in one final month or distributed across a final SWSP approval period.

51. In any SWSP approval, 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 or related to the SWSP. This decision shall not bind the State Engineer to act in a similar manner in any other requests 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.

Approval

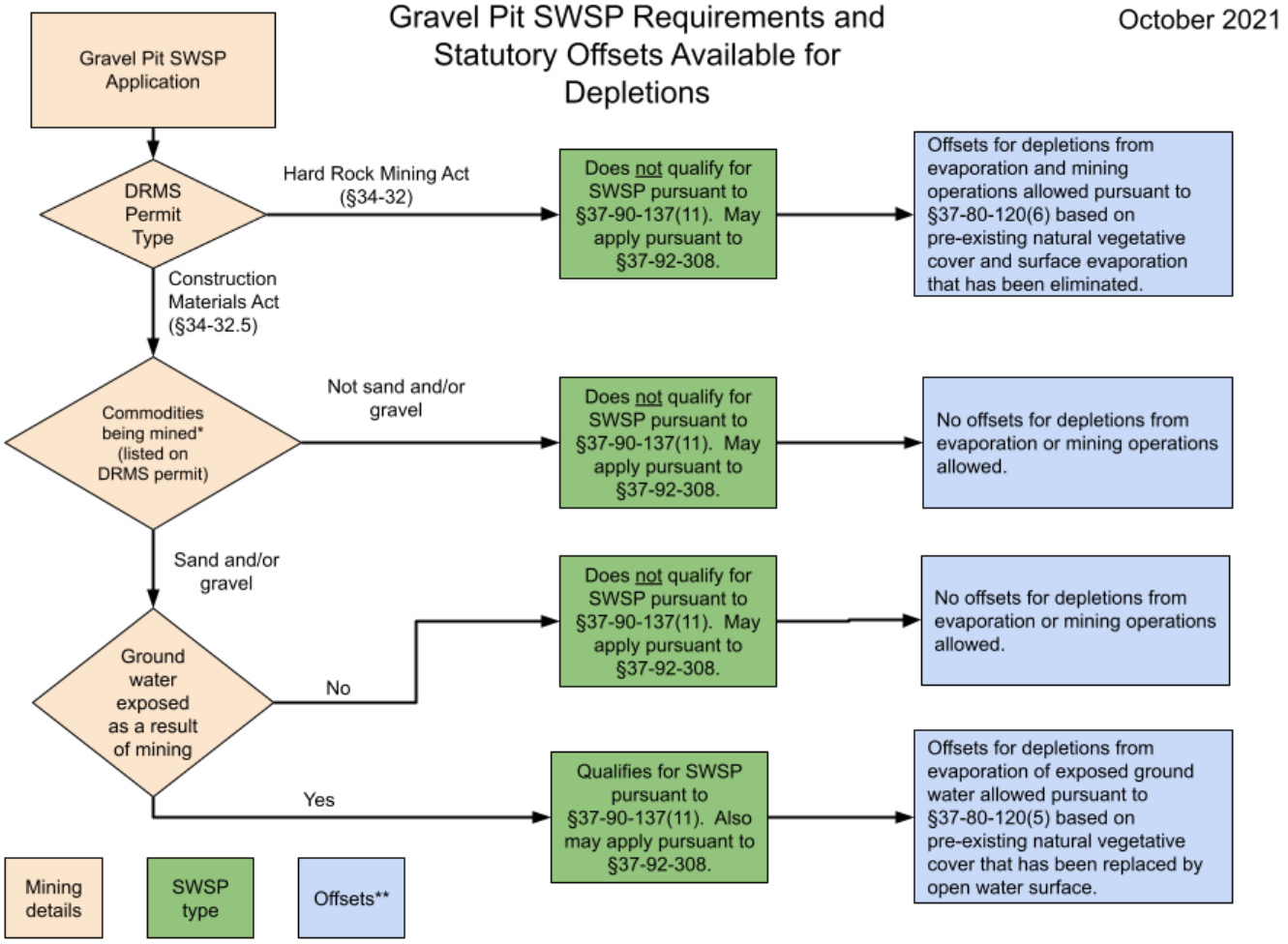
This document may only be modified or revoked in writing by the State Engineer.

This document was previously updated on April 1, 2011, and was further updated on July 26, 2024 to improve clarity and provide additional guidance details.



Jason T. Ullmann, P.E.
State Engineer/Director

Figure 1



*Mining specified as "open mining as defined in §34-32.5-103(15)". See footnote 1 in Guideline 2019-1 for details on this statutory reference.
**See DWR Guideline 2019-1 for further details on statutory offsets allowed for depletions.