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Stormwater Management Plan (SWMP)

for Construction Activities
(COR-030000)

for Sand and Gravel Operations
Stormwater Only (COR-340000)

ANIMAS GLACIER GRAVEL PIT
Durango, La Plata County, Colorado

Prepared For:
Oldcastle SW Group, Inc. dba Four Corners Materials
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APPENDICES

1.0 STORMWATER MANAGEMENT PLAN CERTIFICATIONS

Operator Name:	Four Corners Materials
Operation Location:	Approximately 3 miles southwest of Durango, Colorado
Mailing Address:	P.O. Box 1969 CR 521, Bayfield, CO 81122
Facility Contacts:	Matt R. Carnahan, Resource & Environmental Manager
Office Phone:	970-247-2172
Cell Phone:	970-759-1555
	Aaron Atkinson, Aggregate Operations Supervisor
Cell Phone:	505-419-8493

We certify under penalty of law that this document and all attachments were prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name: Matt R. Carnahan

Print Title: Resource & Environmental Manager

Signature: _____

Date: _____

Print Name: Aaron Atkinson

Print Title: Aggregate Operations Supervisor

Signature: _____

Date: _____

2.0 INTRODUCTION

This Stormwater Management Plan (SWMP) was prepared to be in compliance with the requirements of the Colorado Discharge Permit System (CDPS):

- General Permit for Stormwater Discharges Associated with Construction Activities (COR-030000) issued by the Colorado Department of Public Health and Environment (CDPHE). The General Permit was issued by the CDPHE on May 31, 2007, and expires on June 30, 2012.

- General Permit for Stormwater Discharges Associated with Sand and Gravel Mining and Processing (COR-340000) issued by CDPHE on August 31, 2007, and which expires on September 30, 2012.

As a reference, copies of the General Permit (Construction) and the General Permit (Sand and Gravel Mining) are included as Appendix A.

This plan describes and ensures the implementation of Best Management Practices (BMPs) which will reduce the pollutants in stormwater discharges associated with Four Corners Materials (FCM) construction and industrial operations activities within the property boundaries for the Animas Glacier gravel pit located near Durango, La Plata County, Colorado. After construction of the haul road, stormwater retention pond and initial berms is complete, FCM intends to file for coverage under the CPDES General Permit for Stormwater Discharges Associated with Sand and Gravel Mining and Processing (COR-340000) for facility operations. The SWMP will be further updated at that time to reflect requirements under that permit or the permit which is effective after September 2012.

Any changes to site-specific information included in this SWMP will require an amendment that describes the revisions to the description of potential pollutant sources, pollution prevention measures, etc. A copy of this SWMP and all relevant records will be kept for a period of at least three years after production ceases and reclamation is complete. Any amendments will be inserted in Appendix B as a modification to the SWMP.

3.0 SITE DESCRIPTION

3.1 Project Name

Animas Glacier Gravel Pit

3.2 Project Operator

Oldcastle SW Group, Inc. dba Four Corners Materials
Contact: Kyle M. High, General Manager
Phone: 970-247-2172

Field Contact: Aaron Atkinson, Aggregate Operations Supervisor
Cell Phone: 505-419-8493

3.3 Site Description

3.3.1 Property Location

The facility is located approximately four miles south of Durango, Colorado, within the property boundaries of the Animas Glacier gravel pit. The property encompasses over 125 acres situated in portions of Section 7U, T34N, R9W, and Section 12U, 34N, R10W NMPM. A site map is included in Appendix C.

3.3.2 Nature of the Operation's Activity

The purpose of this operation is to mine and process sand and gravel and also to batch concrete and to produce asphalt road materials.

3.3.3 Proposed Sequence of Construction Activities

This sequence for major construction activities will be logged in the Superintendent's daily log and is as follows:

- Clearing: Extent of areas to be disturbed by the proposed mining and processing activities will be confined to the property boundaries and access roads as defined on the attached drawings. Vegetation removal will be limited to the areas being developed and mined. Any of the existing vegetation on the site will be removed only if necessary. Clearing will be initiated as soon as all permitting is completed.

- Grading: Excavation limits for the site will be restricted to within the property boundaries and will be reviewed prior to any grading or stripping. Sediment control barriers will be placed around disturbed areas. Grading will also be necessary along access routes, within the same timeframe as the clearing.

- Road Installation: Some grading of access roads will be necessary to safely access the site. A permanent access road to the site will be constructed from CR 213 when approved.

- Site Stabilization: The areas disturbed during mining will be stabilized in accordance with Best Management Practices (BMPs) either as soon as possible or as needed during phased mining operation. Stabilizing work will include reseeding disturbed areas, placement of erosion control blankets and/or other erosion or sediment control BMPs detailed in this SWMP.

3.3.4 Area of Disturbance

The total area of this operation encompasses up to approximately 125 acres. Most of the anticipated long-term disturbance will be within the former Bureau of Reclamation's (BOR's) Borrow Area B, where some of the processing facilities will be constructed, and in the proposed Animas Glacier gravel pit area. As mining is completed within a cell area, reclamation will be initiated as soon as possible. Up to an additional 2 acres could be disturbed along a one mile long gravel access road into the operation area. No part of this project area is, or will be, constructed with impervious surfaces.

3.3.5 Soil Types and Estimated Runoff Coefficient

The pre-mining soils are generally described as clay loam to gravelly-sandy loam. These soils are: Farfa clay loam, 1 to 3 percent slopes; Farfa clay loam, 3 to 8 percent slopes; Ustic Torriorthents-Ustollic Haplargids complex, 12 to 60 percent slopes. Generally, the mesa top is covered with the two Falfa loam soils which are eolian material deposited on glacial outwash debris. Their potential for erosion is moderate. The steeper slopes are generally covered with the Ustic/Ustollic soils and also generally cover the glacial outwash materials along the edges of the mesa, and the hazard of erosion is high.

The estimated runoff coefficient before development and mining was 0.10 to 0.30. The estimated post-mining runoff coefficient will be 0.18 to 0.22.

3.3.6 Existing Vegetation

Existing vegetation on the proposed pit area consists mainly of sagebrush, various native grasses, serviceberry, oak, pinyon trees, juniper trees, and various weeds. The reclaimed area to the north is covered with wheat grass, fescue, and other native grasses.

3.3.7 Location and Description of Potential Pollutant Sources

Following are potential pollutant sources that may have an impact on stormwater quality:

- Ground disturbing activities: Ground surface disturbing activities could take place anywhere within the property boundaries shown on the site map.

- Loading/unloading areas: Loading and unloading operations can take place only in the areas where large transports can operate, which will most likely be in the lay-down yard near the ponds or on established roads. Locations of any suitable load/off load areas, other than on established roads, will be shown on the site map as they are identified.
- Outdoor storage of chemicals or equipment: No extraordinary chemicals, etc. will be stored within the operation area. Chemicals associated with mining and processing (such as flocculants and dust palliatives), equipment maintenance (paints and cleaning agents), and petroleum based products (lubricants and solvents) will be stored under protective cover and within appropriate containment.
- Sand and gravel processing: Mining, transporting, crushing, washing, and sorting of materials.
- Waste treatment, storage or disposal:
    - Solid waste will be stored in plastic bags or in a bulk disposal container and removed from the site by a contractor on a regular basis and then disposed of at a licensed disposal facility. All extraordinary waste materials will be removed for disposal by a licensed waste management contractor.
    - All oil and filters from equipment maintenance shall be removed from the construction sites and recycled by a bulk petroleum supplier or authorized recycler.
    - Soils that have been significantly contaminated with a petroleum product due to an equipment breakdown or a spill will be removed and temporarily placed in 55 gallon drums until it can be disposed of at a licensed disposal facility.
- Stockpiles of overburden, raw materials, intermediate products, byproducts, finished products or waste products: Stockpile locations will be noted on the site map, and stockpiles will be bermed to prevent stormwater runoff from leaving the open/active area of the gravel pit.
- Future concrete batch plant and asphalt batch plant: A concrete and asphalt batch plant will eventually be implemented at the facility. Locations of the batch plants will be added to the site map. Any process water associated with these activities will be prevented from commingling with stormwater and entering the retention pond. The SWMP will be updated accordingly when the batch plants are brought into service.
- Areas for recycled asphalt or concrete: Future uses of the facility may include areas for recycled concrete. If so, the SWMP will be updated accordingly, and the location of recycled concrete will be noted on the SWMP site map. Any process water associated with storage of recycled concrete will be prevented from commingling with stormwater and entering the retention pond.

- Equipment or vehicle washing: Infrequently, concrete delivery equipment will be washed out at the designated washout location, along with associated concrete finishing equipment and tools.
- Vehicle and equipment maintenance and fueling:
  - Fueling operations of mining and processing equipment will normally take place in the property area, except for equipment that can easily return to offsite service stations each day, such as pickups, vans and service vehicles. Other incidental fueling may take place at locations where diesel powered water pumps and/or generators are being utilized.
  - Bulk fuel tanks and other bulk petroleum based products (hydraulic oil, engine oil, gear lube, etc.) will be stored in the pit operation area within lined secondary containment structures or within double-walled tanks.
- Haul roads: There will be major bulk hauling as part of operations. Sand/gravel, concrete and asphalt will be the most common materials to be hauled. Existing access routes and established haul roads will be used to haul these materials, and these roads are shown on the current site map.
- Off-site vehicles tracking: Off-site tracking can occur at the exit point onto the paved roadways. There will be approximately one mile of graveled road from the scales to the nearest pavement. Track out areas will be constructed, if deemed necessary. This location(s) will be added to the site map, if they are installed.

3.3.8 Location and Description of Allowable Non-Stormwater Discharges

This facility will be operated with engineered controls as a *zero discharge* facility, and there will be no non-stormwater discharges from the active area of operations, including springs, uncontaminated pumped groundwater, potable water discharges, foundation drains, water from crawl space pumps, construction dewatering, concrete washout, and irrigation return flow. Concrete washout and construction dewatering are the only allowable discharges onto the ground surface, as long as these discharges are not allowed to leave the facility property.

3.3.9 Names of Receiving Waters and Wetlands

There are two drainages adjacent to the property. The first drainage to the west is Basin Creek, which has recently been modified by Bureau of Reclamation (BOR) with drop structures to reduce sedimentation from potential discharges from Lake Nighthorse. Basin Creek discharges to the Animas River (HUC# 14080104), south of Durango, Colorado.

The second area is a network of unnamed drainages that flow through several road drainage ditches and culverts to the south. These drainages eventually discharge into the Animas River, south of Durango, Colorado. There are no wetlands, wells or other bodies of water within the Animas Glacial gravel pit operation area.

3.3.10 Total Maximum Daily Loads (TMDLs)

There are no total maximum daily loads (TMDLs) associated with Basin Creek, however, TMDLs do exist for the Animas River near Durango, Colorado. According to the USEPA watershed database (http://www.epa.gov/waters/ir/index.html), TMDLs from 2006 for the Animas River (COSJAFO5b) include ammonia, cyanide, fecal coliform, silver, and total residual chlorine (TRC). Based upon a review of construction and industrial operations proposed at the facility, FCM does not anticipate any potential impacts to existing TMDLs associated with the Animas River near Durango, Colorado.

4.0 SITE MAP

The site map will be amended as changes occur in design, development, mining or maintenance of the site. The site map of the facility is provided in Appendix C.

The site map provides the following information:

- *Site boundaries*
  All mining, processing and batching activities are limited to within the property boundaries; which are shown on the site map. Haul roads will also be included on the site map.
- *All area of ground surface disturbance*
  The limits of the area of ground surface disturbance have been identified on the site map.
- *Area of cut and fill*
  There are no significant areas of permanent areas of cut and/or fill other than along the access road.
- *Areas used for storage of building materials, equipment, soil or waste*
  There will be areas for long term storage of building materials, equipment, soil and possibly some non-toxic waste.
- *Locations of any dedicated asphalt or concrete batch plants*
  There will be dedicated asphalt and/or concrete batch plants located at this site, which will be shown on the site map as final plans are formulated.
- *Locations of all structural BMPs*
  Proposed erosion and sediment control structures are identified on the site map and will be updated as needed.
- *Locations of non-structural BMPs - as applicable*
  Non-structural BMPs, such as preservation of existing vegetation, temporary seeding (TS), permanent seeding (PS), mulching, soil retention blankets (SRB), vegetative buffer strips, surface roughening (SR) or soil scarification (e.g., contour ripping) and sod stabilization, will be shown on the site map.
- *Springs, streams, wetlands, and other surface waters*
  Existing topography and features are identified on the SWMP site map.

5.0 STORMWATER MANAGEMENT CONTROLS

5.1 SWMP Administrators

The SWMP Administrators will be Matt R. Carnahan and Aaron Atkinson of Four Corners Materials. The SWMP Administrators are responsible for developing, implementing, maintaining, inspecting, reporting and revising the SWMP. The activities and responsibilities of the Administrators shall address all aspects of the SWMP.

5.2 Identification of Potential Pollution Sources

Table 2 provides a list of typical materials that will be used, activities that will be performed as part of operations, and the potential pollutants sources that may impact stormwater. The locations of these potential pollutant sources are identified on the site map.

5.3 Best Management Practices (BMPs) for Stormwater Pollution Prevention

Structural and non-structural practices for minimizing impacts to stormwater are described below. Potential pollutant sources and proposed BMPs are included in **Table 1.**

5.3.1 Structural Practices for Erosion and Sediment Control

Descriptions and locations of structural site management practices which will minimize erosion and sediment transport; such as retention ponds, drainage swales, temporary seeding, soil roughening, straw bales, sediment control logs, silt fences, sediment traps, rock filter berms, and temporary slope drains, are listed in this plan.

<u>Stormwater Retention Pond</u>

The stormwater retention pond will be situated within the area of the former Borrow Area B of the Ridges Basin Dam project located in the northern portion of the property. In order to satisfy the requirements of the Sand and Gravel Mining and Processing Permit for stormwater, the proposed gravel pit will not allow stormwater to discharge from the mining site into the Basin Creek Drainage. To ensure that there will not be any discharge from the active area of mining, FCM will only open a limited amount of land at a time (10 acres of disturbance). The open mining area will be routed to a retention pond, which will be sized to contain a 100-year storm event. During a 100-year storm event, a 20 acre site (assumed 10 acres of active mining and 10 acres of reclamation area) will generate up to 480,200 cubic feet of runoff, which is equal to roughly 11 acre-feet of water. Therefore, FCM proposes to construct a retention pond with no less than 12 acre-feet of available volume to ensure that a 100-year storm will produce zero runoff from the "open" portion of the gravel pit. The pond is proposed to be cut below grade with slopes no more than 3:1. Based on the project's anticipated water usage, it

will be able to utilize storm water from the retention pond to suppress dust, wash gravel, and mix concrete, etc. Note that no process water from active areas of mining and processing will be allowed to enter the retention pond. Details of the retention pond construction are included on Sheet D-2 of the engineering plans.

Drainage Swales

Stormwater from native or undisturbed areas on the property (to the south) will be routed around the open mining areas through grass-lined Drainage Swale "A", in order to avoid co-mingling of un-impacted storm water with stormwater from the open/active area. Grass-lined drainage swale "B" is located along the inside of the western perimeter berm and channels stormwater from the open/active area into the retention pond. Swale "C" is an overflow drainage swale leading from the retention pond to the existing grouted riprap drainage rundown. All three swales will be grass-lined swales and have rock check dams to slow stormwater velocities and increase effectiveness of grass-seeding. The swales have been designed to be 12 feet wide and 2 feet deep with side slopes of 4:1. Details are included in Sheet O-1 of the engineering plans.

Structural BMPs to minimize erosion and sediment transport that will be implemented where necessary at the project site are provided in **Table 1**. Locations of structural BMPs are shown on the site map. BMP installation details are provided in Appendix D.

5.3.2 Non-Structural Practices for Erosion and Sediment Control

Non-structural BMPs, such as preservation of existing vegetation, temporary seeding, permanent seeding, mulching (hydro-mulch or straw), and soil retention blankets (SRBs), vegetative buffer strips, and sod stabilization will be implemented where appropriate. Locations of these non-structural BMPs will be shown on the site map as applied or installed.

1. **Preservation of existing vegetation** – Limiting areas of disturbance and preserving existing vegetation will be implemented in order to minimize water and/or wind erosion. This will be accomplished through: contractor education; site planning and scheduling, and preservation of natural barriers.

2. **Temporary stabilization**-
    a. For areas where final grading or surface disturbance has been completed but 1) temporary or permanent seeding cannot be immediately established due to seasonal planting limitations or 2) that will be constructed on within a few months, either one or a combination of the following practices will be employed:
        i. The surface will be roughened;
        ii. A mulch, such as crimped straw, wood chips or hydro-mulch, will be applied ; or
        iii. A tactifier will be applied.

These areas will be monitored to assess if additional measures will be needed during the interim period.

3. **Permanent stabilization** – Areas where final grading of surface disturbance have been completed will be stabilized by either one or a combination of the following methods:
   a. Drill seeding, hydro-seeding and/or hydro-mulching;
   b. Permanent vegetation – native plants;
   c. Mulch – wood or straw;
   d. Sod
   e. Soil retention blankets
   f. Outlet/drainage protection – riprap or rock

Hydro-mulch consisting of wood cellulose fibers will be mixed with water and a tactifier agent and applied at a rate of no less than 2,000 pounds per acre with a hydraulic mulcher.

Straw mulch will consist of clean, weed free straw. The straw will be applied at a rate of approximately two tons per acre and will be anchored mechanically by crimping or with the aid of tactifiers. Anchoring by crimping will be the preferred method for all areas with a slope equal to or less than 3:1.

All of the above seeding criteria are subject to change and approval by the Colorado Division of Reclamation, Mining and Safety representative.

5.3.3 Phased BMP Implementation

The types of structural and nonstructural BMPs that could be implemented during each phase of construction are provided below.

- **Clearing and Grubbing**

1. Temporary berms
2. Temporary diversion swales that are seeded
3. Rock filter berm or check dams
4. Grubbing limits will be established prior to any site disturbance and will be clearly marked and visible.
5. Existing vegetative ground cover will be preserved until such a time that the construction schedule dictates removal of the ground cover.

- **Grading**

1. Temporary berms
2. Temporary diversion swales that are seeded
3. Rock filter berm or check dams
4. Slope stabilization – soil retention blankets

5. Temporary stabilization – temporary seeding, mulching (i.e., hydro-mulching, crimped straw, or wood chips), tactifier, and soil retention blankets
6. Surface roughening

- **Utilities and Infrastructure Installation (Temporary Only)**

1. Temporary berms
2. Temporary diversion swales
3. Temporary slope drains
4. Inlet protection – straw bale, silt fence, sediment control log, gravel bag, and filter fabric
5. Sediment control logs
6. Silt fence
7. Straw bale barriers
8. Rock filter berms or check dams
9. Slope stabilization – soil retention blankets
10. Temporary stabilization – temporary seeding, mulching (i.e., hydro-mulching, crimped straw, or wood chips), tactifier, and soil retention blankets
11. Surface roughening
12. Grubbing limits will be established prior to any site disturbance and will be clearly marked and visible.
13. Existing vegetative ground cover will be preserved until such a time that the production schedule dictates removal of the ground cover.

- **Final grading**

1. Inlet protection – silt fence, sediment control lo, gravel bag, filter fabric
2. Outlet protection – rock and soil retention blanket
3. Sediment control logs
4. Rock check dams
5. Temporary stabilization –temporary seeding, mulching (i.e., hydro-mulching, crimped straw, or wood chips), tactifier, and soil retention blankets
6. Surface roughening

- **Final Stabilization**

1. Vegetated drainage swales with rock check dams (if needed)
2. Slope stabilization – soil retention blankets
3. Permanent vegetation – bedding plants, shrubs, trees
4. Mulching – straw, hydro-mulch, rock
5. Sod stabilization
6. Permanent seeding

5.3.4 Materials Handling and Spill Prevention

The following is a description of the materials handling and spill prevention procedures to be implemented during construction activities.

- A licensed sanitary waste management contractor will service the portable sanitary facilities on a regular basis. Portable toilets shall be secured either to the ground or to a trailer to prevent spillage.

- All equipment used on the project will be monitored for leaks. Major equipment maintenance or repairs will be conducted offsite, if at all possible. If maintenance or repairs must occur onsite, work will be conducted in a manner such that secondary containment, i.e., drip pans, will be used to catch spills or leaks when removing or changing liquids and all equipment maintenance waste (including used oil, grease containers, filters, etc.) will be hauled offsite for disposal at a permitted waste facility.

- Fueling and equipment maintenance will usually be performed at sites designated on the site map or as approved by the superintendent. Fueling operations will not be left unattended. "Topping off" of fuel tanks will be discouraged. Appropriate and adequate spill response materials will be available in the fueling area and on the service trucks. Used materials will be disposed of properly offsite after use. Workers shall be aware of their location and trained in their use.

- Fuel storage tanks, drums and/or containers will be stored in the fuel containment cell located within the plant/yard area, as outlined in the Spill Prevention, Control and Countermeasure (SPCC) Plan.

- A material inventory will be maintained for all chemicals used on site. Material Safety Data Sheet (MSDS) will be available for any chemical substance used on site. It is not anticipated that reportable quantities of acids, solvents, paints, chemicals or other liquid materials will be stored or used for the purpose of sand and gravel production. These materials will be stored out of the weather, if at all practicable. Any chemicals or products used on site will be kept in the original labeled containers. Damaged or otherwise illegible labels will be replaced.

- In the event of a spill, the principal steps in responding to the spill are:

    1. Stop the source of the spill or leak.
    2. Contain the spill or leak.
    3. If release involves a reportable quantity, report spill to appropriate regulatory authority.
    4. Clean up the spill or leak.
    5. Dispose of materials contaminated by the spill, according to manufacturer's instructions and / or according to Federal, State, or local requirements.