STORMWATER MANAGEMENT PLAN

(SWMP)

Trails at Aspen Ridge, Stockpiles

El Paso County, Colorado

COLA, LLC

555 Middle Creek Parkway, Suite 380

Colorado Springs, CO 80921

April 2023

2435 Research Parkway, Suite 300

Colorado Springs, CO 80920

Add text:
EPC's EDARP File Number:
CDR2312

STORMWATER MANAGEMENT PLAN (SWMP)

Trails at Aspen Ridge
El Paso County, CO

Applicant (Owner)

COLA, LLC
Tim Buschar
555 Middle Creek Parkway, Suite 380
Colorado Springs, CO 80921

SWMP Prepared By:

Robin Allen, PE
Project Manager
Matrix Design Group, Inc

Qualified Stormwater Manager

Richard van Seenus, QSM
Site Supervisor
COLA, LLC

Contractor Information:

Matrix Design Group, Inc.
2435 Research Parkway, Suite 300
Colorado Springs, CO 80920
(719) 575-0100

Engineer's Statement

This {Grading and Erosion Control Plan or SWMP} was prepared under my direction and supervision and is correct to the best of my knowledge and belief. If such work is performed in accordance with the {Grading and Erosion Control Plan or SWMP}, the work will not become a hazard to life and limb, endanger property, or adversely affect the safety, use, or stability of a public way, drainage channel, or other property.

Printed Name: Robin Allen Date: 4-30-2023

Phone Number: 719-575-0100

PRELIMINARY

NOT FOR APPROVAL

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- SWMP Drawings
- Check Dam Detail
- SWMP Inspection and Maintenance Log
- Soil Survey of El Paso County Area Soils Map
- FEMA FIRM Floodplain Maps
- CDPHE General Permit

1. GENERAL INFORMATION

This Stormwater Management Plan (SWMP) is being submitted on behalf of COLA, LLC. for a tract of land known as the Trails at Aspen Ridge in El Paso County, Colorado. The purpose of this SWMP is to identify potential source areas that may contribute pollutants to stormwater and to identify Best Management Practices (BMP)s that will reduce or eliminate adverse water quality impacts. Development, implementation, and maintenance of this SWMP will provide the general contractor with the framework for reducing soil erosion and minimizing pollutants in stormwater during construction of the project site.

This SWMP has been prepared in accordance with engineering, hydrologic and pollution control practices and will cover this facility only (the extents of the Project construction site) using BMPs to reduce the pollutants in stormwater discharges as described in Section 2 of this SWMP. The SWMP will be administrated by the Qualified Stormwater Manager identified in Section 1.3. The Qualified Stormwater Manager's duties include the following:

1. Implement the SWMP.
2. Oversee installation and maintenance of BMPs as identified in the SWMP.
3. Implement and oversee employee training.
4. Conduct or provide for inspection and monitoring activities.
5. Identify potential pollutant sources and make sure they are included in the SWMP.
6. Identify any deficiencies in the SWMP and make sure they are corrected.
7. Ensure that any changes in construction plans, phasing, or use of BMP's are addressed in the SWMP.

The provisions of this SWMP must be implemented as they are written and updated, from the initiation of construction until final stabilization is complete. The Water Quality Control Division reserves the right to review the SWMP, and to require the permittee to develop and implement additional measures to prevent and control pollution as is needed.

ESQCP states that total site is 95.5ac. Revise to remove discrepancy and/or explain reason for difference - like the 22.3ac other parcel.

1.1 Site Description

The proposed stockpile site is located in Fountain, Colorado, is an undeveloped 73.2-acre site. The proposed stockpile site is owned by the owners of the Trails at Aspen Ridge development to the east of the project site. As part of the Trails at Aspen Ridge Development, excess dirt will be relocated offsite to the proposed stockpile site. The site is located at Latitude: 38.7597 and Longitude: -104.6862 and is bounded to the north and east by Hwy 24 (Powers Rd). Bluestem Prairie Open Space (City of Colorado Springs owned Park) borders the site on the West and the South.

1.2 Site Location

1.3 Project Contact Information

Contact Information / Responsible Parties		
Owner	Tim Buschar COLA, LLC 555 Middle Creek Parkway Colorado Springs, CO 80921	tbuschar@aspenviewhomes.net
Project Manager/Site Supervisor	Richard van Seenus, QSM COLA, LLC 555 Middle Creek Parkway, Suite 380 Colorado Springs, CO 80921	rvanseenus@viewhomesinc.com
Qualified Stormwater Manager	Richard van Seenus, QSM COLA, LLC 555 Middle Creek Parkway, Suite 380 Colorado Springs, CO 80921	rvanseenus@viewhomesinc.com
SWMP Preparer	Robin Allen, PE Matrix Design Group 2435 Research Pkwy Suite 300 Colorado Springs, CO 80920	Robin.Allen@matrixdesigngroup.com 719-575-0100

1.4 Disturbance Area and Import/Export Volume

disturbed area does not match what is listed on Page 2 of ESQCP form.

The following is the total site area and the expected area of disturbance. Any changes to the area of disturbance (current disturbance) must be updated as changes occur.

Total Site Area	73.2 acres	Date: 5/14/2023
Initial Estimate of Disturbance Area	38.5 acres	Date: 5/14/2023
Import/Export Volume Estimate	400,000 CY	☒ Import ☐ Export
Updated Disturbance Area		
Updated Disturbance Area		
Updated Disturbance Area		

1.5 Construction Activities

Activities will include installation of temporary control measures, berms and check dams, clearing and grubbing, road grading, base course installment, final grading, final stabilization, and removal of temporary control measures. No concrete or asphalt construction is anticipated, and there will be no concrete or asphalt batched onsite.

Initial stabilization methods (BMPs) will be installed prior to construction. Following initial BMPs, construction will consist of site clearing and grubbing, roadway grading, stockpiling of soil, followed by reseeding of disturbed areas.

Open space areas will be left undisturbed. Temporary control measures will be removed following placement of mulching, seeding, and vegetation establishment. Berms and check dams will serve as permanent control measures to prevent sediment from leaving the site.

1.6 Construction Sequencing and Phasing

1. Install Initial BMPs
2. Clearing and Grubbing
3. Road Grading and Base Course Placement
4. Stockpile placement
5. Stabilization of disturbed areas
6. Removal of Temporary Control Measures

Construction Phase	Description and Conservation Measures	Estimated Start Date	Estimated Completion Date
Install Initial BMPs	A Vehicle Tracking Pad will be installed at the entrance/exit of the temporary on-site road. All construction traffic must enter/exit the site at approved construction access points.	May 2023	August 2023
Clearing and Grubbing	Clearing and Grubbing of the temporary road will be the initial construction phase. BMPs outlined in Section 2 will be used to control erosion and sediment runoff.	May 2023	August 2023
Road Grading	Silt Fence will be used to erosion and sediment runoff from the temporary road. This is outlined in Section 2.	May 2023	August 2023
Stockpile placement	Erosion and sediment runoff from stockpiles will be controlled by Berms and Check Dams outlined in Section 2.	May 2023	August 2023
Final Stabilization and Removal of Temporary Control Measures	Once construction activity ceases, the area shall be stabilized with permanent landscaping and/or seed and mulch as outlined in Section 2. Final stabilization is complete when all ground disturbing activities are complete and all disturbed areas have either a uniform vegetative cover with an individual plant density of 70% of pre-disturbance levels, permanent hardscaping or paving is in place, or an equivalent permanent alternative stabilization method is implemented. Once stabilization is complete, all temporary sediment and erosion control measures shall be removed.	May 2023	August 2023

1.7 Soils

The United States Department of Agriculture, Natural Resources Conservation Service (NRCS); Web Soil Survey of El Paso County Area, Colorado, published by the United States Department of Agriculture, dated March 2021, was utilized to investigate the existing general soil types within and surrounding the Project area. A soil map for this area is provided in the Attachments. Per the information given within the Soil Conservation Survey, hydrologic soil group "B" characteristics are predominant across the study area (an estimated 75% coverage area) as described in the following table. Type A soils make up the remaining area of the site.

Soil ID Number	Soil type	Soil Description	Estimated Coverage Area	Hydrologic Classification
08	Blakeland Loamy Sand	Surface runoff is moderate, partially draining soil, the hazard of erosion and soil blowing are moderate to high.	76%	B
86	Stoneham Sandy Loam	Surface runoff is low, well draining soil. The hazard of erosion and soil blowing are low to moderate.	24%	A
108	Wiley Silt Loam	Surface runoff is moderate, partially draining soil, the hazard of erosion and soil blowing are moderate to high.	0.3%	B

The 10 acres of stockpiled soil that will be moved is a mixture of Blakeland Loamy Sand, Wiley Silt Loam, Nelson, Mazart and Stoneham Sandy Loam. The percent of each is unknown.

Soil ID Number	Soil type	Soil Description	Hydrologic Classification
08	Blakeland Loamy Sand	Surface runoff is moderate, partially draining soil, the hazard of erosion and soil blowing are moderate to high.	B
86	Stoneham Sandy Loam	Surface runoff is low, well draining soil. The hazard of erosion and soil blowing are low to moderate.	A
108	Wiley Silt Loam	Surface runoff is moderate, partially draining soil, the hazard of erosion and soil blowing are moderate to high.	B
56	Nelson-Tassel fine sandy loam	Surface runoff is moderate, partially draining soil, the hazard of erosion and soil blowing are moderate to high.	D
52	Manzanst clay loam	Surface runoff is moderate, partially draining soil, the hazard of erosion and soil blowing are moderate to high.	C

Runoff coefficients outlined in the City of Colorado Springs Design Criteria Manual and are provided below:

Land Use	5-year	100-year
Pasture Meadow	.08	.35

Runoff Coefficients for Rational Method from the Urban Drainage and Flood Control District (UDFCD 2001) are listed below:

Table 6-6. Runoff Coefficients for Rational Method
(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis-- Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

1.8 Vegetation

The existing vegetation consists of native grasses and scrub oak. Based on site visits and a review of aerial photography, the vegetative cover at Trails at Aspen Ridge is approximately 90%.

1.9 Allowable Non-Stormwater Discharges

Uncontaminated groundwater is not anticipated to be encountered. Groundwater may be discharged onsite, but may not leave the site in the form of surface runoff. Multiple check dams will be used to drop sediment load, and are described in Section 2.3.

1.10 Receiving Waters

Ultimate Receiving Water(s): Fountain Creek
Stormwater Outfalls/Storm Sewer System Discharge:

- Discharge: on site swale
- Location of Discharge: Check dams, downstream side of stockpiles
- Receiving Conveyance: check dams will discharge to the Big Johnson Reservoir

1.11 Stream Crossings within the Project Area

No stream crossings are located within the Project Area.

1.12 Pollution Sources

Pollutants that result from clearing, grading, maintenance, operations, and excavation have the potential to be present in stormwater runoff and are potential sources for stormwater contamination. The following is a description of potential source areas for pollutant that may be released during construction, maintenance, operation, and excavation activities:

Source Area:

1. Disturbed and stored soils, erosion.
2. Vehicle tracking of sediments.
3. Management of contaminated soils.
4. Loading and unloading operations.
5. Vehicle and equipment maintenance, cleaning, and fueling operations.
6. Significant dust or particulate generation activities.
7. Routine maintenance activities involving fuels, solvents, etc.
8. Onsite waste management practices (waste piles, liquid wastes, chemical containers, etc.).
9. Non-industrial waste sources (trash, portable toilets)

The following pollutants may impact stormwater runoff for each of the source areas listed above.

Potential Pollutant	Chemical/Physical Description	Stormwater Impacts	Potential Source Area (listed above)
Cleaning solvents	Colorless, blue, or yellow-green liquid	Perchloroethylene, Methylene chloride, trichloroethylene, petroleum distillates	3, 4, 7, 8
Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	Oil	3, 4, 5, 7, 8
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE	2, 3, 4, 5, 8
Diesel Fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil & grease, naphthalene, xylenes	5, 8
Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	2, 3, 4, 5, 8
Particulates	Dust, airborne particulates	Sediment	1, 2, 4, 5, 6
Biological	Human/animal waste	Bacterial	9

The largest possible sources of non-stormwater pollution will be sediment from trucks during hauling operations. The contractor shall be responsible for sediment control measures in accordance with applicable City, County and state regulations. The contractor will also be responsible for cleanup of any off-site vehicle tracking on paved roads. Other sources of pollution such as vehicle washing, chemical storage or waste disposal are not anticipated. No recognized environmental conditions (REC) have been identified within Project site.

1.13 Spill Prevention and Response Plan

The Spill Prevention and Response Plan (SPRP) is designed to outline requirements for the handling and management of hazardous substances (pesticides, herbicides, fuels, cleaners, etc.) stored or used at the Project area.

Materials Management and Handling

- Chemicals that have the potential to be released in stormwater are to be used only where necessary and, in a manner, consistent with industry-standard uses and handling procedures.
- Ensure all hazardous materials are properly labeled.
- Store, dispense, and/or use hazardous substances in a way that prevents releases.
- Provide secondary containment when storing hazardous substances in bulk quantities (greater than 55-gallons).
- Maintain good housekeeping practices for chemicals stored onsite.
- Complete routine checks of hazardous substance storage areas.
- Provide monthly inspections of hazardous substance storage areas, secondary containment, and
- above ground and/or underground storage tanks.

Spill Containment and Reporting

A release of any chemical, oil, petroleum product, sewage, etc. that has the potential to enter surface water, groundwater, dry gullies, or storm sewers leading to surface water must be reported to the CDPHE immediately (25-8-601 CRS). When a spill is identified, the proper spill response should be implemented:

1. Assess the area for any immediate dangers or health and safety concerns. If any immediate dangers are present, call 911.
2. Contain any spilled materials. Assess the size of the leak and immediate threat of the spill reaching storm drains or permeable surfaces. If there is an immediate threat and no safety concerns, attempt to block the spill from reaching storm drains or other impermeable surfaces.
3. Stop the source of the spill if possible.
4. Cleanup spill in a timely manner. Use adsorbent materials (cat litter) and/or sock booms or rags to clean up the spill. Dispose of used materials appropriately.
5. Report and record spills to Qualified Stormwater Manager. Once the spill has been contained and any immediate threat to storm drains or permeable surfaces has been minimized, contact the Qualified Stormwater Manager. If necessary, a specialized cleanup contractor should be used to clean up the remaining contamination.
6. Follow applicable Colorado Discharge Permit System (CDPS) terms and conditions regarding spill reporting and response.
7. Report spills to the Colorado Department of Public Health and Environment (CDPHE). For nonpermitted activities or in the case of an activity where a permit does not address reporting

of or response to a spill which may cause pollution of surface or subsurface waters of the State, notify the Environmental Release and Incident Reporting Line within 24 hours at (**877) 518-5608**.

Reporting should include:

a. Name of responsible person or name of Qualified Stormwater Manager.
b. An estimate of the date and time of the release.
c. The location of the spill and its source (saddle tank, manhole, storage container, etc.).
d. The type of material spilled (untreated wastewater, petroleum products, etc.).
e. The estimated volume of the spill.
f. The time and date the spill was controlled or stopped.
g. If the spill is ongoing, the estimated rate of flow and when the spill is expected to be controlled/contained Measures being taken to contain, reduce, and/or clean the spill.
h. A list of potentially impacted areas and known downstream water uses that will be or have been notified.
i. The phone number and email of the Qualified Stormwater Manager.

8. Any accidental discharge to the sanitary sewer system must be reported immediately to the local sewer authority and the affected wastewater treatment plant.
9. Written notification following a reportable spill shall be submitted to the CDPHE within five days (5 CCR 1002-31, Section 61.8(5)(d)).

2. BEST MANAGEMENT PRACTICES

Best Management Practices (BMP's) encompass a wide range of erosion and sediment control practices, both structural and non-structural in nature, that are intended to reduce or eliminate any possible water quality impacts from stormwater leaving a construction site. The individual BMP's appropriate for a particular construction site are largely dependent on the types of potential pollutant sources present, the nature of the construction activity, and specific-site conditions.

Most of the BMP's referenced herein are widely used in the construction industry. They generally involve a simple and low-cost approach and can be very effective *when properly installed and maintained.* To prevent soil from washing into the public right-of way or the undisturbed areas of the site, the following is a discussion of BMPs and an indication of which BMPs are expected to be implemented as part of this Project.

BMPs for all slopes, channels, ditches, or any disturbed land area shall be completed before grading or earth disturbance has occurred. All temporary soil erosion control measures and BMPs shall be maintained until site reaches final stabilization and permanent soil erosion control measures are implemented.

The Stormwater Manager may modify the planned BMPs based on construction sequencing, site conditions, and/or other factors. The SWMP should be modified by field notes including dates of modifications and the purpose of the modification. The Grading and Erosion Control Plan should reflect what has been constructed or modified onsite. The Stormwater Manager will be responsible for documenting BMPs (including phasing of BMP implementation).

2.1 Structural BMPs

Structural BMPs are used to minimize erosion and sediment transport and include but are not limited to:

silt fencing, erosion control blankets, wattles/sediment control logs, earth dikes, drainage swales, sediment traps, inlet/outlet protection, straw bales, and temporary or permanent sediment basins. Structural BMPs shall be coordinated with construction activities so the BMP is in place before construction begins. The structural BMPs outlined below are general definitions and guidelines. Project-specific specifications for selected BMPs are detailed in the SWMP Drawings included in the Attachments.

Silt Fencing: A silt fence is a structural sediment control device that typically consists of a geotextile fabric attached to wooden stakes inserted into a ground trench and rising to a vertical height of approximately 18-inches. The silt fence is generally used as perimeter sediment control and as a primary containment around storage areas, staging areas, stockpiles, etc.

Used for this project? ☒ Yes ☐ No

Application notes: Temporary perimeter controls (e.g. silt fences) will be installed *before* any clearing and grading begins. The use of rebar, steel stakes, or steel fence posts to anchor silt fencing is prohibited. Once the site is cleaned and the surrounding disturbed areas are 70% established with vegetation, the silt fences around the Project site can be removed.

Erosion Control Blanket: An erosion control blanket (ECB) is a rolled-fiber product typically made up of straw, coconut, or synthetic fibers that are used to prevent scour erosion, stabilize slopes, and to aid revegetation by providing a protective layer over seeded areas. Turf reinforcement mats are similar to ECBs and are made to withstand greater stress such as traffic, extended life, or continuous and frequent water flow. ECBs are available in both biodegradable and photodegradable varieties.

Used for this project? ☐ Yes ☒ No

Application Notes: Exposed slopes greater than 3:1 can be covered by an erosion control blanket. The use of rebar, steel stakes, or steel fence posts to anchor ECB is prohibited.

Sediment Control Logs: SCLs are log-shaped, rolled straw products encased in a polypropylene monofilament filter fabric. SCLs are used for sediment control usually at the perimeter of a disturbance or as a channel check in low flow areas. Wattle can also be used for slope length reduction.
Used for this project? ☐ Yes ☒ No

Application Notes: SCLs may be used as small check dams in ditches and swales, however they should not be used in perennial streams or high velocity drainage ways.

Inlet Protection (gravel): Storm sewer inlet protection is typically comprised of 1.5-inch angular rock (gravel) wrapped in a chicken wire mesh to form an approximate 6-inch diameter roll in varying lengths. The gravel roll should be firmly secured in front of the inlet opening with a spacing device to prevent the roll from entering the inlet. A sufficiently-sized overflow opening should be left to prevent flooding during high surface water flow volumes. The basic design applies to curb and drop-style inlets.

Used for this project? ☐ Yes ☒ No

Application Notes: Inlet protection measures for existing inlets shall be installed *before* clearing and

grading is initiated.

Check Dams: Check Dams can be composed of 6-12 inch rock (rip-rap) where surface water flow will be encountered. Geotextile socks filled with gravel may also be used as a temporary BMP. This BMP is used to eliminate erosion sediment transport by reducing flow velocity.

Used for this project? ☒ Yes ☐ No

Application Notes: Rip rap protection specified in the SWMP standard details (City of Colorado Springs Stormwater Construction Manual, 2020) will be used within check dams. This will allow sediment to drop out, and collect in the dams, and prevent discharge downstream.

Straw Bale Barriers: Bound straw bale barriers (SBB) are typically used for inlet protection or as drainage swale check dams. Installation of the bales is critical to avoid erosion at the ends of the bales.
Used for this project? ☐ Yes ☒ No

Application Notes: Straw bales shall consisted of certified weed-free straw or hay and shall consist of approximately 5 cubic feet of straw or hay. Straw bales must weigh at least 35 pounds.

Earthen Berms: Earthen Berms can be used as temporary or permanent solutions for sediment and erosion control. The berms are typically designed to control the flow path of runoff by diverting surface water around areas prone to erosion such as steep slopes or other preferential flow pathways.
Used for this project? ☒ Yes ☐ No

Application Notes: Earthen berms will remain in place as a permanent erosion control measure.

Drainage Swales: Swales can be permanent or temporary and are typically designed to control storm water runoff in a non-erosive manner to a destination such as a detention pond or other stormwater collection facility. Swales can also be designed with velocity control devices and can be made of concrete or lined with materials such as rock or grass.

Used for this project? ☒ Yes ☐ No

Application Notes: swales will be installed at the bottom of each stockpile, to divert stormwater to the check dams.

Sediment/Detention Basins: Sediment/Detention basins are designed according to project size and runoff volume and are used for flood control and to aid in temporary retention of runoff to aid in sediment deposition. A release point for runoff water is typically present and consists of an emergency overflow or regulating structure.

Used for this project? ☐ Yes ☒ No

Application Notes: Sediment basins will be installed prior to any other land disturbing activities that rely on basins for stormwater control. Embankment materials shall consist of soil free of debris. Organic material, and rocks or concrete greater than 3-inches diameter and shall have a minimimum of 15% by weight passing a No. 200 sieve. Embankment materials must be compacted to at least 95%

of maximum density.

Vehicle Tracking Control: VTC is used to limit off-site tracking of sediment from disturbed or unpaved areas to paved areas. VTC can include: TRM or mud mats installed at the point of access from unpaved areas (used when traffic is limited or light), a 1.5-inch diameter rock gravel access pad combined with pavement sweeping (used when traffic is limited or light), or a 3+-inch rock with geotextile underlayment combined with street sweeping (used for heavy construction traffic or at the main access point to a development site).

Used for this project? ☒ Yes ☐ No

Application Notes: VTC Entrances to disturbed areas will be constructed *before* clearing and grading begins.

2.2 Non-Structural BMPs

Non-structural BMPs are implemented at the site to minimize erosion and sediment transport and may include temporary or permanent vegetation, mulching, landscaping, geotextiles, sod stabilization, surface roughening, vegetative buffer strips (VBS), and protection/preservation of trees and other mature vegetation. The non-structural BMPs outlined below are general definitions and guidelines. Project specific specifications for selected BMPs are detailed in the SWMP Drawings included in the Attachments.

Permanent seeding: Seeding of disturbed areas provides soil stabilization and helps prevent erosion and sediment transport. Seeding is usually performed by ripping the area, spreading the appropriate seed mix, and applying straw mulch at a rate of two tons per acre over the seeded area. In some cases, a tackifier may be used to anchor the straw mulch. Managing and applying the proper seed mix and following the specified maintenance procedures are very important in promoting timely growth of grasses while minimizing weed growth. This BMP is effective on slopes up to 3:1 and where soil conditions are adequate.

Used for this project? ☒ Yes ☐ No

Application Notes: A mixture developed for elevations 3,000 feet to 8,000 feet will provide natural cover under dryland conditions. Seed for this project will be broadcast spread at a rate of 20 to 25 pounds per acre or drilled at a rate of 15 to 20 pounds per acre. Overseeding will be broadcast spread at a rate of 10 to 15 pounds per acre or drilled at a rate of 5 to 10 pounds per acre. Seed mixture specifications are included in the attached SWMP Drawings. Seed will be mulched with weed-free straw mulch. Temporary seeding may be used on disturbed areas not planned for activity within 30 days. Once construction activity ceases permanently in an area, the area will be stabilized with permanent seed and mulch. Permanent seeding will be used in designated Open Space areas.

Mulching: A layer of suitable mulch is typically applied at a rate of two tons per acre and can be tacked or fastened by an approved method suitable for the type of mulch used. The temporary road will be mulched and seeded. Seeding shall be placed in areas designated as being in an interim state.

Used for this project? ☒ Yes ☐ No

Application Notes: A layer of suitable mulch shall be applied at a rate of two tons per acre to all disturbed portions of the site within 21 days of the completion of grading. If the area is to remain in an interim sate for more than 60 days, seeding BMPs shall be used.

Landscaping: Landscaping includes rock, mulch, sod, trees, bushes, geofabrics, hardscaping, etc. as identified in the final stabilization specifications. Landscaping may be done by the developer or by the property owner.

Used for this project? ☐ Yes ☒ No

Application Notes: Landscaping is not planned for this project.

Surface Roughening: Surface roughening is the mechanical breaking up of soils as a short term method of temporary stabilization in areas where temporary seeding is not practical or in areas where active construction is ongoing. Surface roughening is achieved through ripping or tilling the surface to increase surface area and infiltration.

Used for this project? ☐ Yes ☒ No

Application Notes: Surface roughening using scarifying methods such as disking or dragging bucket teeth over areas of disturbed soils parallel to slope contours.

Vegetative Buffer Strips: VBS are areas of original vegetation kept in place during construction that are preserved and maintained to filter sediment deposited from sheet flow. Maintenance includes cleanup of sediment and re-vegetation of VBS as necessary. Maintaining vegetative buffers is important around sensitive areas such as wetlands, waterways, etc.

Used for this project? ☐ Yes ☒ No

Application Notes: Pre-existing vegetation shall be protected and maintained within 50 horizontal feet of waters of the State unless unfeasible.

2.3 Housekeeping BMPs

Housekeeping BMPs are maintenance practices implemented to keep the site clean, reduce potential chemical or biological exposures, and to minimize the tracking of soils to hard surfaces and airborne particles. Maintenance BMPs include street sweeping, dust suppression techniques, spill prevention and response (Section 1.13), waste management and disposal, and materials handling and management (Section 1.14). Project-specific specifications for selected BMPs are detailed in the SWMP Drawings included in the Attachments.

Street Sweeping: Street sweeping is the practice of removing soil clumps, scraping packed dirt/mud, and sweeping loose soils tracked onto paved surfaces to prevent sediment transport in runoff water. Materials removed as part of this BMP should be deposited in an area contained by perimeter BMPs or disposed offsite.
Used for this project? ☐ Yes ☒ No

Application Notes: Street sweeping methods are not anticipated for this project.

Dust Suppression: Dust suppression BMPs are typically used to minimize the transport of fine particles through the air. Dust suppression techniques may include keeping the site wet using water trucks or other wetting methods or covering of loose soils in disturbance areas. During periods of high wind, the following activities should be monitored: restriction of major grading activities, restriction of soil stockpiling, controlling vehicular speed.

Used for this project? ☒ Yes ☐ No

Application Notes: Water shall be applied during earthwork operations and utilized as required to minimize dust from earth working operations and wind.

Load Covering: Trucks or other vehicles carrying cut or fill materials to or from the site should be covered to prevent accidental loss of material during transport onto public right of ways.

Used for this project? ☒ Yes ☐ No

Application Notes: Loads of cut and fill must be properly covered.

Site Waste Management and Disposal: Construction waste disposal and trash generated by onsite personnel should be collected in dumpsters or similar trash containers and emptied on a regular basis. Construction waste and trash should be kept in a secure area and lidded if required to avoid accidental spreading of waste. Trash containers should be kept on permeable surfaces within perimeter BMPs. Loose trash should be collected daily and disposal services should be on a regular schedule to avoid overfilling of containers. Hazardous materials may not be disposed in trash containers and no waste materials should be buried onsite.

Used for this project? ☒ Yes ☐ No

Application Notes: Trash at the site will be cleared daily and kept in secured and/or covered receptacles. Waste disposal will be managed through a licensed contractor.

Portable Toilet Facilities: A proper amount of portable toilets should be located at the Project Site and should be kept within the perimeter BMPs on permeable surfaces. Portable toilets should be anchored to prevent tipping and should be at least five feet behind curbs and at least 50 feet from any storm sewer inlets. Toilets should also be kept away from preferential flow pathways and from all water bodies. Regularly scheduled maintenance should be in place to empty and clean the receptacles to prevent overflow and waste collecting.

Used for this project? ☒ Yes ☐ No

Application Notes: Portable toilets will be provided and maintained through a private contractor.

Concrete Washout: Concrete washout areas typically consist of an unlined pit in the ground with a vehicle tracking control (VTC) entrance and are designed to capture and contain concrete washout water. In areas with a high groundwater table, poly-lined pits or a portable waste bin may be used. Pits

should be placed to minimize the potential for pollutant discharge. Washout basin deposits (hardened concrete waste) should be removed and properly disposed offsite as solid waste on a regular basis after liquids have evaporated.

Used for this project? ☐ Yes ☒ No

Application Notes: Concrete wash water is not anticipated on this project.

Stormwater Management Plan Non-Applicable Items

SWMP Checklist Number	Description	Comments
12	Spill prevention and pollution controls for dedicated batch plants	Asphalt/concrete batch plants not proposed
14	Location and description of any anticipated allowable non-stormwater discharge (ground water, springs, irrigation, discharge covered by CDPHE Low Risk Guidance, etc.)	Non-stormwater discharge not Anticipated
16	Description of all stream crossings located within the project area or statement that no streams cross the project area	No streams cross the project site area
17f	Location of any dedicated asphalt / concrete batch plants	Asphalt/concrete batch plants not proposed
17i	Springs, streams, wetlands and other surface waters, including areas that require maintenance of preexisting vegetation within 50 feet of a receiving water	No streams cross the project site area
26	Project relies on control measures owned or operated by another entity, a documented agreement must be included in the SWMP that identifies location, installation, and design specifications, and maintenance requirements and responsibility of the control measure(s).	Project does not rely on control measures owned or operated by another entity.

3. FINAL STABILIZATION AND LONG-TERM STORMWATER MANAGEMENT

Once construction activity ceases permanently in an area, the temporary road will be scarified, mulched and seeded. Final stabilization is complete when all ground disturbing activities are complete and all disturbed areas have either a uniform vegetative cover with an individual plant density of 70% of pre-disturbance levels, and berms with check dams are installed and functional. Once stabilization is complete, all temporary sediment and erosion control measures shall be removed. Final Stabilization for this site will consist of a combination of permanent seeding including the following:

Seeding: Disturbed areas around finished areas shall be seeded to re-establish vegetation on the site. Stockpiles will not be seeded. Weather may delay seeding which may be offset by

temporary measures such as earthen berms, wattles, check dams, or other BMPs outlined in Section 2.

Temporary controls: Temporary erosion and sediment control measures should be maintained on un-stabilized areas until landscaping or hardscaping activities are complete. The temporary road shall have silt fence along the southern boundary to prevent sediment from discharging downstream. Temporary controls may be removed once stabilization by reseeding is complete.

Permanent BMPs: Permanent post-construction BMPs should remain onsite after construction activities have been completed and the site is stabilized. These BMPs will include berms, swales, and check dams that will filter any sediment that runs off from stockpiled dirt.

3.1 Inspection and Maintenance

Visual inspections of all cleared and graded areas of the construction site will be performed on a minimum occurrence of once per week and/or within 24 hours of the end of any precipitation or snowmelt event that causes surface erosion. The inspection will be the responsibility of the Qualified Stormwater Manager. An inspection report form has been provided in the Attachments. The inspection will verify that the structural BMPs described in Section 2.1 of this SWMP are functioning properly, in good condition, up to date and continue to minimize erosion. The inspection will also verify that the procedures used to prevent stormwater contamination from construction materials and petroleum products are effective.

The inspection logs will be signed by the Qualified Stormwater Manager. The following inspection and maintenance practices will be used to maintain erosion and sediment controls:

1. Accumulated sediment and debris shall be removed from a BMP when the sediment/debris level reaches one half the height of the BMP or at any time that sediment or debris adversely impacts the functioning BMP.
2. Built up sediment will be removed from silt fencing when it has reached one-third the height of the fence.
3. Silt fences will be inspected for depth of sediment, for tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
4. Check dams will be inspected for depth of sediment and built-up sediment will be removed when it reaches 1 foot in depth.
5. Temporary and permanent seeding will be inspected AND noted for bare spots, washouts, and healthy growth.
6. The stabilized construction entrances will be inspected for sediment tracked on the road, for clean gravel, and to make sure that all traffic uses the stabilized entrance when leaving the site.
7. The maintenance inspection report will be made after each inspection. A copy of the report form to be completed by the Qualified Stormwater Manager is provided in the Attachments.

8. Completed forms will be maintained on-site during the entire construction project. Following construction and the expiration or inactivation of the permit, the completed forms will be retained at the general contractor's office, for a minimum of 3 years.
9. If construction activities or design modifications are made to the site plan which could impact stormwater, this SWMP will be amended appropriately. The amended SWMP will have a description of the new activities that contribute to the increased pollutant loading and the planned source control activities.

3.2 BMP Replacement and Failed BMPs

At a minimum, the contractor shall inspect and keep a log of all BMPs on a weekly basis and after a significant precipitation event. BMPs should be assessed by a qualified inspector to determine if new or replacement BMPs are necessary. Where BMPs have failed, the failure must be addressed as soon as possible to minimize discharge of additional pollutants. As new BMPs are installed and/or replaced, this SWMP should be updated to reflect the change(s).

3.3 Qualified Inspectors

The Qualified stormwater manager will be sufficiently qualified for the required duties per the ECM Appendix I.5.2.A. Qualified inspectors should be knowledgeable in the principals and practices of erosion and sediment control and should have a good working knowledge of the regulation and BMPs included in this SWMP. Inspectors should also be able to anticipate site conditions and assess BMP functionality that could impact stormwater runoff.

3.4 Additional SWMP and BMP Practices

An employee training program should be developed and implemented to educate employees about the requirements of the SWMP. This education program will include background on the components and goals of the SWMP and hands-on training in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste, equipment fueling, and proper storage, washing, and inspection procedures.

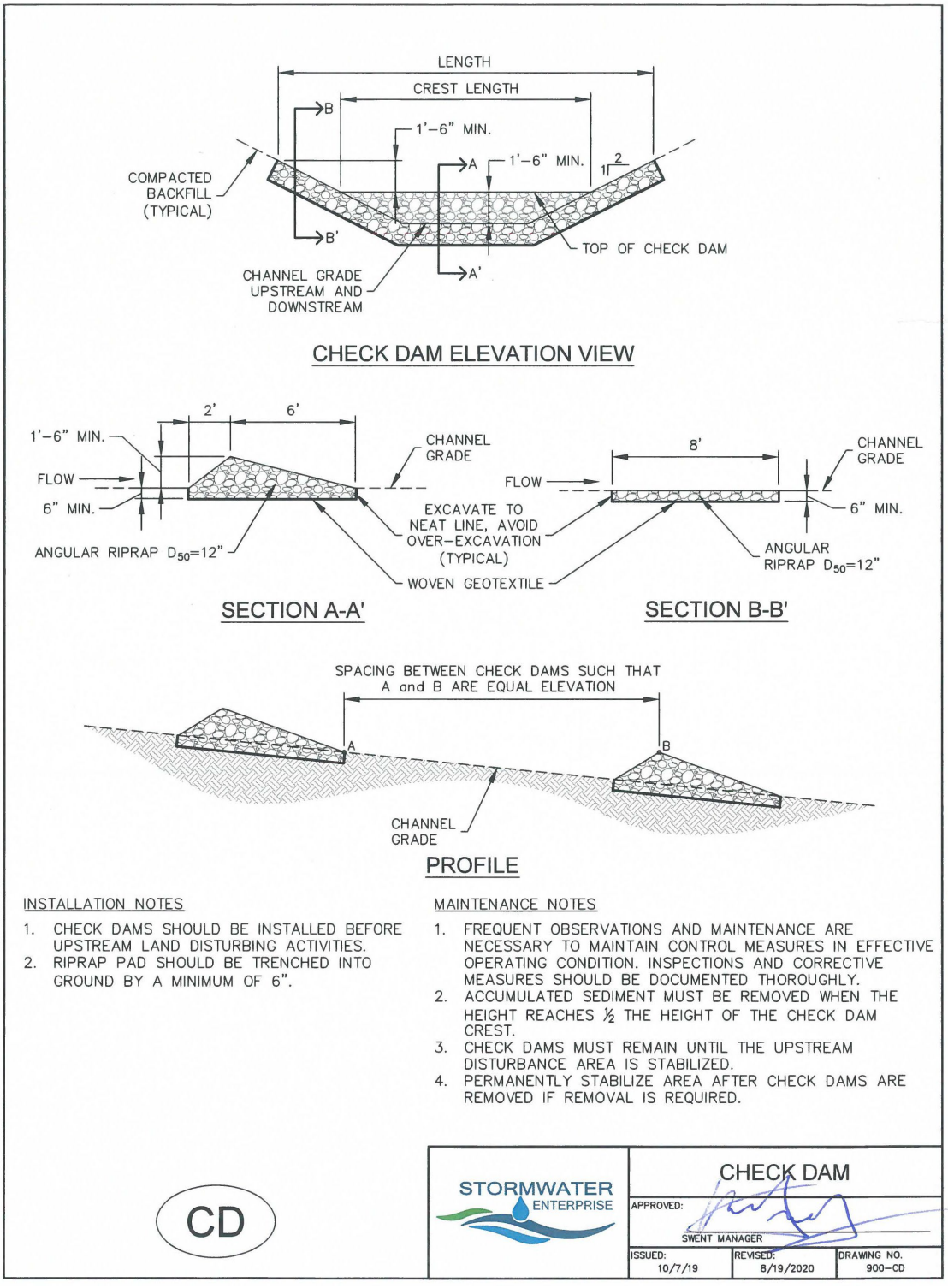
The SWMP should be viewed as a "living document" that is continuously being reviewed and modified as a part of the overall process of evaluating and managing stormwater quality issues at the site. The qualified stormwater manager shall amend the SWMP when there is a change in design, construction, O&M of the site which would require the implementation of new or revised BMPs or if the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with construction activity or when BMPs are no longer necessary and are removed.

This plan was prepared in accordance with the CDPS General Permit. A copy of this permit is provided in the Attachments.

APPENDIX

SWMP Drawings

Check Dam Detail



SWMP Inspection & Maintenance Log

Stormwater Management Plan Inspection and Maintenance Log

Parcel 5500000333

El Paso County, CO

(Record inspections, items found maintenance and corrective actions taken. Also, record any training received by Contractor personnel with regard to erosion control, materials handling and any inspections by outside agencies)

Permit #:	State Permit #:	
Inspection Type: [ ] 7 Day [ ] 14 Day [ ] Post Storm [ ] Other:	Inspection Date:	Inspected by:
Project Name:	Current Weather Conditions:	
Address/Location:	Project Type:	
City Permit Type: [ ] GEC [ ] AGEC	Construction Stage:	
Construction Start Date:	Size of Disturbance (acres):	
GEC Administrator:	GEC Administrator Phone:	
GEC Administrator Email:		

BMP		**Remarks**
1. CHECK DAM		
	Has accumulated sediment and debris been removed permaintenance requirements?	
2. EROSION CONTROL BLANKET		
	Is the erosion control blanket fabric damaged, ineffective, or inneed of repairs?	
3. INLET PROTECTION		
	Is the inlet protection damaged, ineffective, or in need of repairs?	
	Does sediment remain in inlets?	
4. MULCHING		
	Uneven mulch distribution on disturbed areas?	
	Is the mulch application rate inadequate?	
	Any evidence of mulch being blown or washed away?	
	Do areas require additional mulching?	
5. TEMPORARY SEDIMENT BASIN / TRAP		
	Is the sediment basin improperly constructed or inoperable?	
6. SILT FENCE		
	Is the silt fence damaged, collapsed, un-trenched or ineffective?	
	Is there excess sediment against the barrier?	
	Is the silt fence improperly located?	
7. SLOPE DRAIN		

	Is water bypassing or undercutting the inlet or pipe?	
	Is there significant evidence of erosion?	
8. STRAW BALE BARRIER		
	Are the straw bales damaged, ineffective, or un-trenched?	
	Is there excess sediment against the barrier?	
	Are the bales installed and positioned incorrectly?	
9. SURFACE ROUGHENING / SLOPE TRACKING		
	Is the surface roughening inconsistent on slopes?	
	Is there significant evidence of surface roughening erosion?	
10. SEEDING		
	Are the seedbeds unprotected?	
	Has significant erosion occurred in the seeded area?	
	Any evidence of vehicle tracking on seeded areas?	
11. TEMPORARY SWALES		
	Has significant sediment or debris been deposited within theswales?	
	Have the slopes of the swales eroded or has damage occurred to the lining?	
	Are the swales improperly located?	
12. VEHICLE TRACKING		
	Is gravel surface clogged with mud or sediment?	
	Is the gravel surface sinking into the ground?	
	Has sediment been tracked onto any roads?	
	Is inlet protection missing around curb inlets near	
13. DIVERSION STRUCTURE		
	Has the structure been damaged or show signs of	
	Is the structure properly located?	
14. OUTLET PROTECTION		
	Is there evidence of significant erosion?	
15. COMPACTED BERMS		
	Are the berms damaged or ineffective?	
	Is there excess sediment against the berms?	
	Are the berms improperly located?	
16. CONCRETE WASHOUT		
	Has material been removed per maintenance	
	Does structure have adequate signage?	
	Is there adequate tracking-pad material for access,	
	Is there adequate protection around the structure?	
17. SEDIMENT CONTROL LOGS		
	Are the sediment control logs damaged, collapsed,	
	Is there excess sediment against the SCLs?	
	Are the sediment control logs improperly located?	
18. GEC MANAGEMENT		

	Is the GEC Plan and CSWMP accessible on site?	
	Are changes to the GEC documents noted and	
	Are the inspection reports retained in CSWMP?	
	Are corrective actions from the last inspection	
19. MATERIALS AND POLLUTION		
	Are stockpiles being managed properly?	
	Are materials being managed properly?	
	Is solid waste and trash being managed properly?	
	Is street sweeping being managed properly?	
	Are the sanitary facilities being managed properly?	
	Are the vehicles and equipment being managed properly?	
	Are other materials or pollution issues being managed properly?	
	Has any work been performed on the permanent BMP since lastinspection? If Yes, then add	
Other:		
Other:		

INSPECTION CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my 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 my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

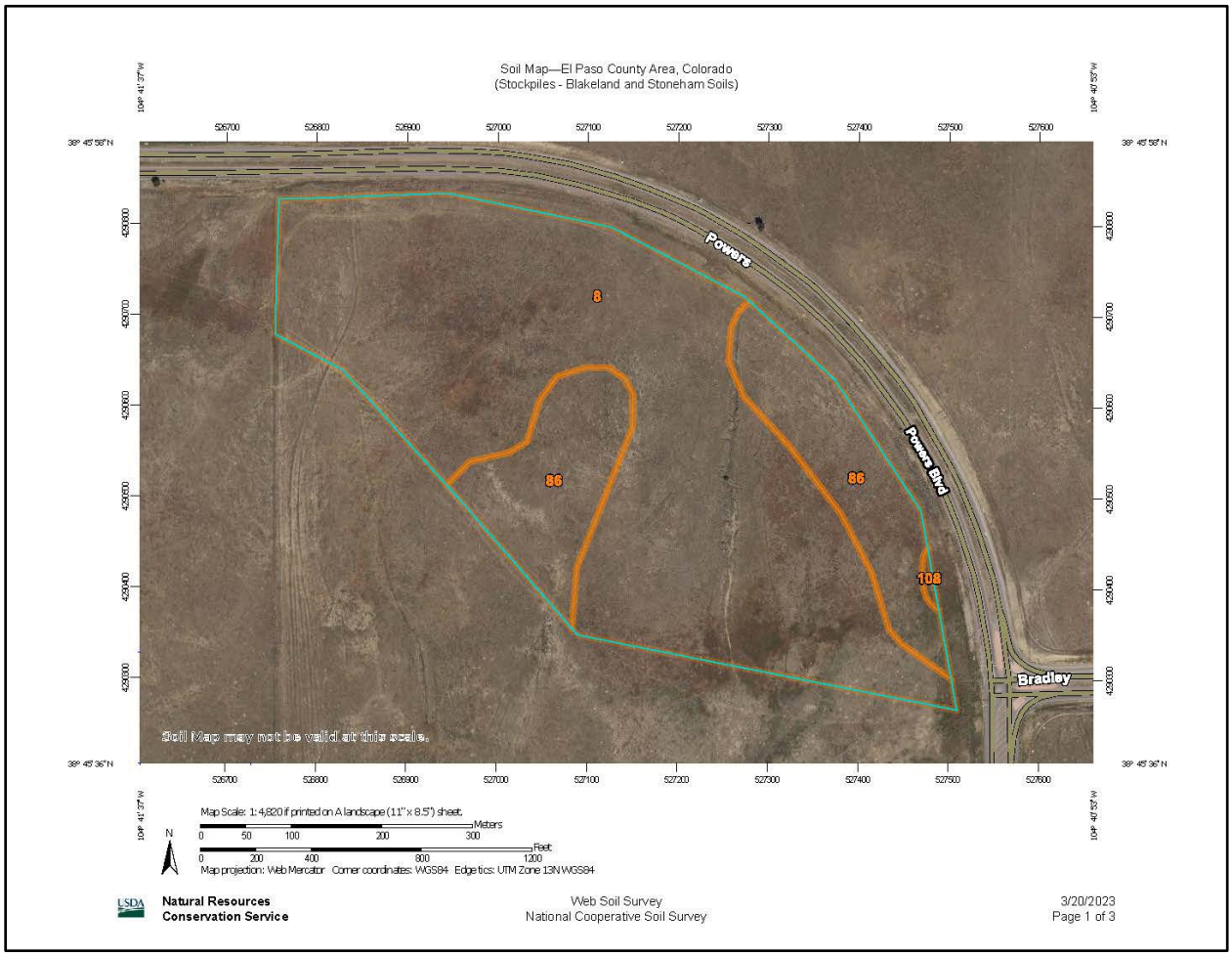
Date:_____ Signature:_____

COMPLIANCE CERTIFICATION

Corrective action(s) has been taken, or where a report does not identify any incidents requiring corrective action, the report shall contain a signed statement indicating the site is in compliance with the CDPHE permit referenced above to the best of the signer's knowledge and belief.

Date:_____ Signature:_____

Soil Survey of El Paso County Area Soils Map



Soil Map—El Paso County Area, Colorado
(Stockpiles - Blakeland and Stoneham Soils)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 19, 2018—Sep 23, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	46.4	75.8%
86	Stoneham sandy loam, 3 to 8 percent slopes	14.6	23.9%
108	Wiley silt loam, 3 to 9 percent slopes	0.2	0.3%
Totals for Area of Interest		**61.2**	**100.0%**

El Paso County Area, Colorado

8—Blakeland loamy sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369v
Elevation: 4,600 to 5,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Flats, hills
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock and/or eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 11 inches: loamy sand
AC - 11 to 27 inches: loamy sand
C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

El Paso County Area, Colorado

8—Blakeland loamy sand, 1 to 9 percent slopes

Map Unit Setting

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Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

El Paso County Area, Colorado

56—Nelson-Tassel fine sandy loams, 3 to 18 percent slopes

Map Unit Setting

National map unit symbol: 3690
Elevation: 5,600 to 6,400 feet
Mean annual precipitation: 12 to 14 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Nelson and similar soils: 55 percent
Tassel and similar soils: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nelson

Setting

Landform: Hills
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous residuum weathered from interbedded sedimentary rock

Typical profile

A - 0 to 5 inches: fine sandy loam
Ck - 5 to 23 inches: fine sandy loam
Cr - 23 to 27 inches: weathered bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B
Ecological site: R067BY045CO - Shaly Plains
Other vegetative classification: SHALY PLAINS (069AY046CO)
Hydric soil rating: No

Description of Tassel

Setting

Landform: Hills
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous slope alluvium over residuum weathered from sandstone

Typical profile

A - 0 to 4 inches: fine sandy loam
C - 4 to 10 inches: fine sandy loam
Cr - 10 to 14 inches: weathered bedrock

Properties and qualities

Slope: 3 to 18 percent
Depth to restrictive feature: 6 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R067BY045CO - Shaly Plains
Other vegetative classification: SHALY PLAINS (069AY046CO)
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 4 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

El Paso County Area, Colorado

52—Manzanst clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w4nr
Elevation: 4,060 to 6,660 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 130 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Manzanst and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manzanst

Setting

Landform: Drainageways, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Clayey alluvium derived from shale

Typical profile

A - 0 to 3 inches: clay loam
Bt - 3 to 12 inches: clay
Btk - 12 to 37 inches: clay
Bk1 - 37 to 52 inches: clay
Bk2 - 52 to 79 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Slightly saline (4.0 to 7.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4c

Hydrologic Soil Group: C
Ecological site: R067BY037CO - Saline Overflow
Hydric soil rating: No

Minor Components

Ritoazul
Percent of map unit: 7 percent
Landform: Interfluves, drainageways
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY042CO - Clayey Plains
Hydric soil rating: No

Arvada
Percent of map unit: 6 percent
Landform: Interfluves, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY033CO - Salt Flat
Hydric soil rating: No

Wiley
Percent of map unit: 2 percent
Landform: Interfluves
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

El Paso County Area, Colorado

108—Wiley silt loam, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: 367b
Elevation: 5,200 to 6,200 feet
Mean annual precipitation: 12 to 14 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Wiley and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wiley

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous silty eolian deposits

Typical profile

A - 0 to 4 inches: silt loam
Bt - 4 to 16 inches: silt loam
Bk - 16 to 60 inches: silt loam

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R067BY002CO - Loamy Plains

Other vegetative classification: LOAMY PLAINS (069AY006CO)
Hydric soil rating: No

Minor Components

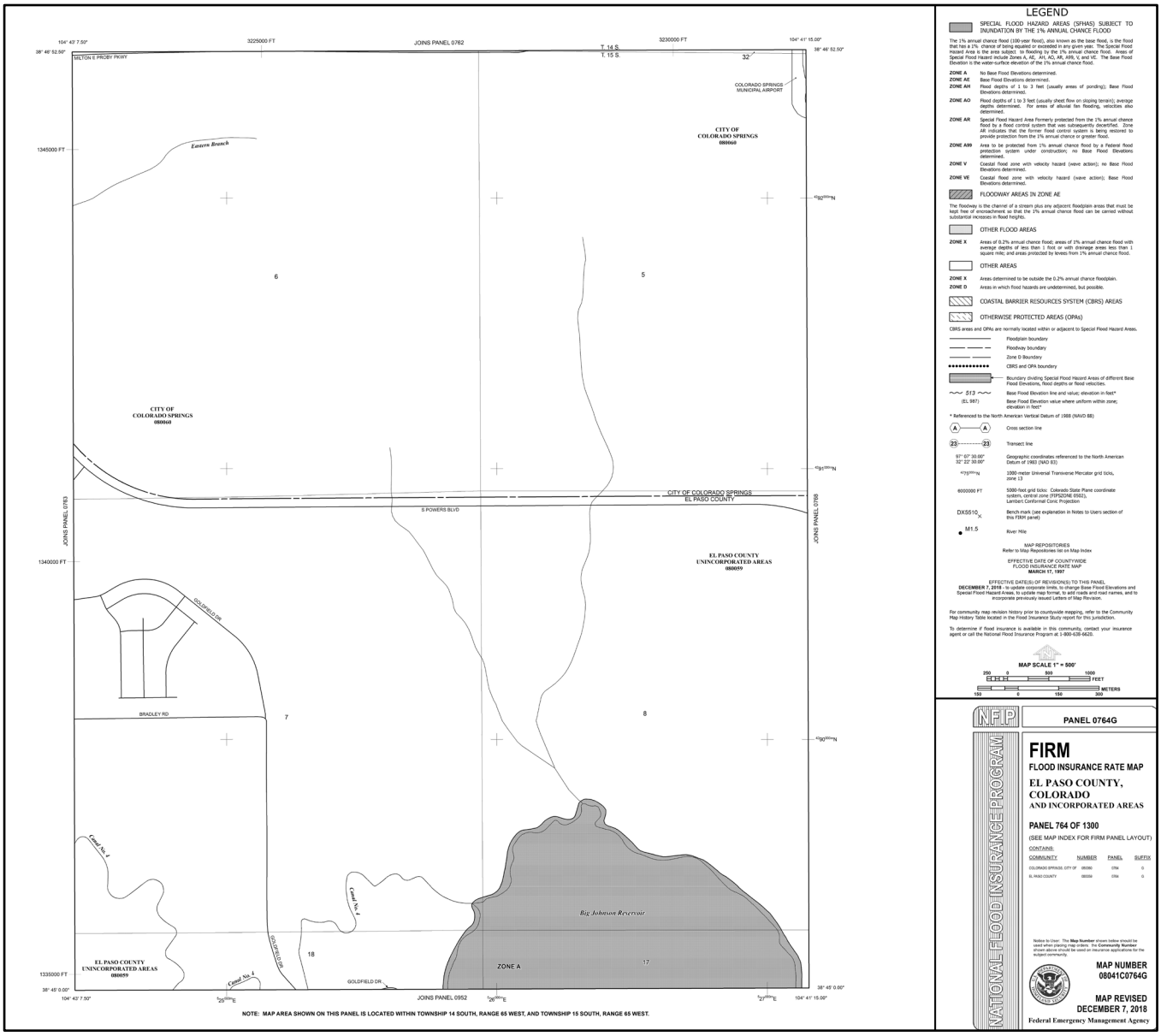
Other soils
Percent of map unit: 4 percent
Hydric soil rating: No

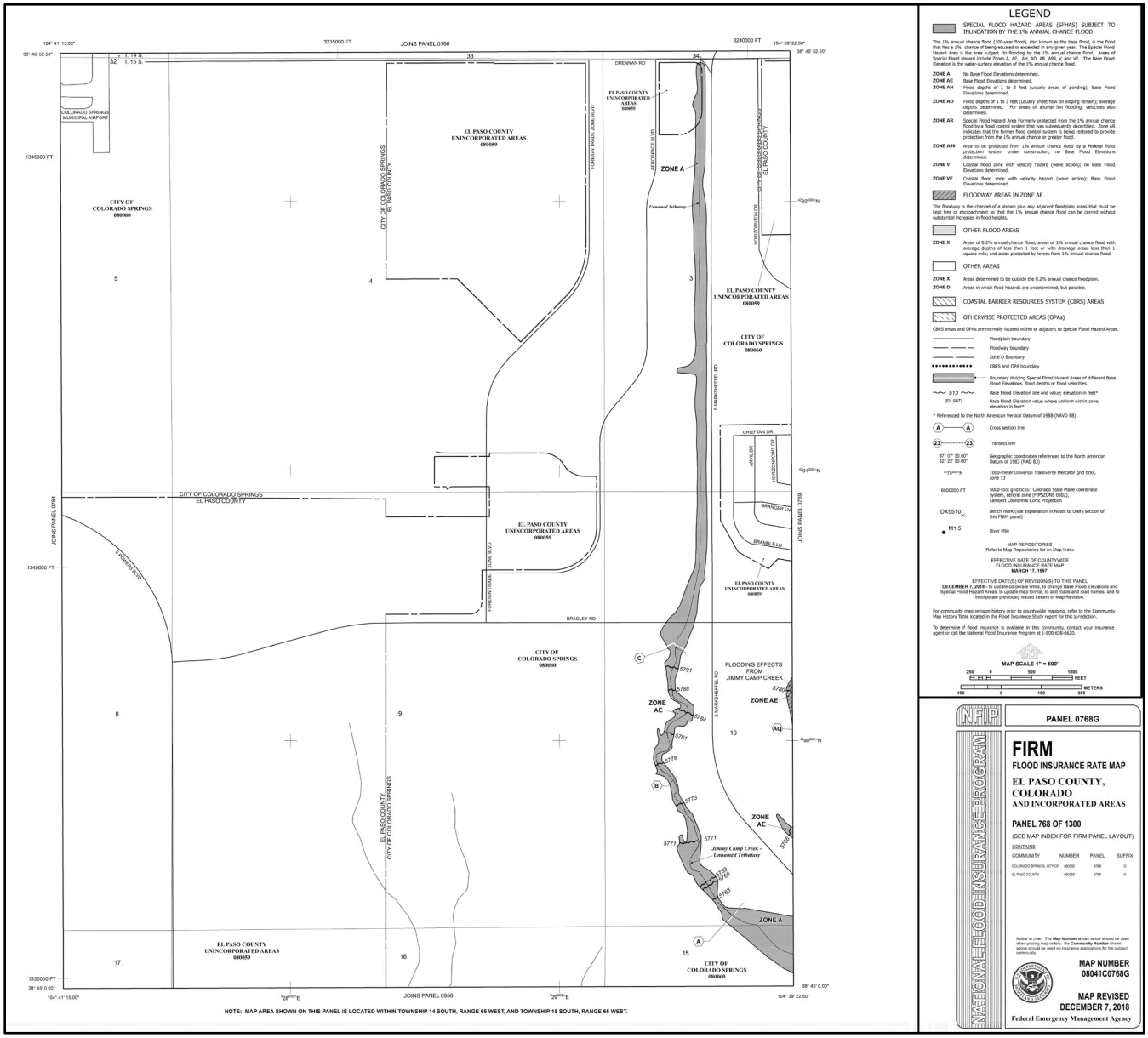
Pleasant
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

FEMA FIRM Floodplain Maps





NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 14 SOUTH, RANGE 65 WEST, AND TOWNSHIP 15 SOUTH, RANGE 65 WEST.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 87° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 600000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0768G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 768 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0768	G
EL PASO COUNTY	080059	0768	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08041C0768G

MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

CDPHE General Permit

Login: https://cdphe.colorado.gov/cor400000-stormwater-discharge