



Grandview Reserve Phase 3 Early Grading (Initial GEC) Stormwater Management Plan (SWMP)

October 2024

HR Green Project No: 201662.302

El Paso County No. PUDSP-241

Prepared For (Applicant/Owner):

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Prepared By:

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Company: Melody Homes, Inc., a Delaware corporation

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Contractor:

Company: TBD

Contact: TBD

Phone: TBD



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▷ **DESIGNATOR STORMWATER MANAGER**

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Engineer's Statement

The Stormwater Management Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County and State for Stormwater Management Plans.

Name: Ken Huhn, P.E. Date: _____

Phone Number: 720-602-4965

Seal

I. Site Location & Description

Location

The Grandview Reserve Phase 3 site is located in unincorporated El Paso County, Colorado. The Phase 3 location (referred to as the site herein) is located east of Grandview Reserve Filings 1-4, and southeast of the intersection of Eastonville Road & Rex Road.

The site lies within a tract of land within Sections 21, 22, 27, and 28, Township 12 South, Range 64 West of the 6th Principal Meridian, in El Paso County, State of Colorado. A Vicinity Map is included in **Appendix A**.

The site is bound by a segment of Rex Road to be developed with this project to the northeast and undeveloped land that has historically been used as ranching lands. The south and east of the site will be a future phase of the Grandview Reserve Subdivision. The west of the site is bound by Grandview Reserve Filings 1-4.

The Gieck Ranch Tributary #2 "Channel B" is a part of the Gieck Ranch Drainage Basin tributary to Black Squirrel Creek. The channel draining through the site is an ongoing project with associated CLOMR Report and the PCD File No. is CDR228 with El Paso County. The channel will be constructed according to its CLOMR report and the Grandview Reserve improvements will follow any requirements of that report. There is another floodplain channel to the north of Rex Road that will not be disturbed by this phase of development and studies as a future project.

The existing surrounding platted developments include the Grandview Reserve Phase 1 Filings 1-4, and the Meridian Ranch Subdivision is west of the site on the west side of Eastonville Road.

Description of Property

The site is approximately 102.82 acres with 83.11 disturbed acres of proposed residential development with associated right of way, open space tracts, public improvements, and stormwater treatment infrastructure. The most southeastern corner of Phase 3 is dedicated to a future 25-acre school site, which is to be developed at a later date.

The existing groundcover and topography of the site is native grasses/weeds and exposed soil on gently rolling hillside with slopes ranging from 2% to 4%.

Per a NRCS soil survey, the site is made up of Type A Columbine gravelly sandy loam. The NRCS soil survey is presented in **Appendix A**.

Gieck Ranch Tributary #2 (Channel B) traverses from north to south, through the site, and crosses underneath a proposed roadway in Phase 3. The channel is being studied in a separate project, a CLOMR report is ongoing and pending approval for this channel. Gieck Ranch Tributary #3 (Channel C) traverses the site along its northeastern boundary and forms the northeast boundary for Phase 3 along Rex Road. This channel will not be disturbed by this phase of development and will be studied at a later date.

The ultimate receiving waters for stormwater runoff and detained sediment basin discharge is Gieck Range Tributary #2, which flows from south to north through the center of Phase 3.

There is no anticipated allowable non-stormwater discharge from natural springs, irrigation, or any other discharge covered by CDPHE Low Risk Guidance. Ground Water is anticipated and will be discharged to temporary sediment basins where it can be infiltrated back into the ground.

There are no known existing utilities or other encumbrances on site.

Neighboring Areas

The surrounding area to the north is Grandview Phase 2, which has a dedicated land use of single family residential. To the west of the property is Grandview Phase 1, Filings 1-4, which has a dedicated land use of single family residential.

Construction Activity

The proposed development is to only include the early grading activities. Early grading will include overlot grading out future building pads, the over excavation of roadways by a depth of two feet, and the installation of temporary sediment basins, all of which will serve as the property's permanent extended detention basins. No utilities or proposed roadways will be installed during this time. No grading will take place within the FEMA identified 100-year zone A floodplain, map number 08041C0553G, effective date 12/7/2018, until the appropriate CLOMR permit has been approved.

Construction will begin with setting up perimeter erosion control measures and construction fencing which will then be followed by the over excavation of roadway corridors. Temporary stabilization measures such as silt fence installation and vehicle tracking control will be installed prior to construction. Note that street sweeping may be required outside of the construction area. Stabilized staging area(s) and stockpile management area(s) are shown on the GEC plans. During construction, temporary stabilization measures such as sediments basins, earth dikes and drainage swales, check dams, and temporary erosion control blankets will be utilized to control stormwater runoff. The four proposed ponds will serve as temporary sediment basins to collect stormwater runoff and sediment during construction activities for disturbed areas. These temporary sediment basins may require modification during the final construction sequence for the final design. Once construction activities have been completed, all disturbed areas within the site will receive temporary seeding and mulching. Upon stabilization, temporary erosion control measures will be left in place until the next stage of construction activities are completed.

Off-site disturbance is anticipated for the construction of the engineered temporary sediment basin 1. This offsite disturbance accounts for 3.82 acres of the total site disturbance. The off-site disturbance will occur within Grandview Reserve Phase 1 Filing No. 4. Control measures to occur while off-site construction is on-going includes a silt fence and temporary inlet protection within Phase 1 Filing No. 4. No concrete batch plants are anticipated.

The Gieck Ranch Tributary #2, Channel B, will cross directly through the center of the site. This constructed channel is assumed to be existing during the construction process of early grading activities. The crossing of this existing channel should already be constructed with culverts that allow flows to cross under the proposed roadway within Phase 3. Early grading activities to take place at this crossing will be the same as the rest of the site, an over excavation of the proposed roadway by 2 feet. To protect the culverts under the crossing, culvert inlet protection will be required at the entrance of the culverts. This project will be completed under a separate permit.

II. Construction Phasing

Phasing and Sequence Schedule

The proposed sequence of major construction activities and Construction Control Measures for the project as are follows:

1. Install VTC, SSA, CWA, TSB and other perimeter erosion and stormwater control measures (i.e. silt fence, construction fence etc.) (Summer 2025)
2. Clear grub and grade site for improvements. Install the initial phase control measures for perimeter control and temporary conditions stormwater diversion including silt fence, diversion ditches, check dams, and the required temporary sediment basins per Early Grading GEC and Drainage plans. (Summer 2025).
3. Landscaping, restoration, and final stabilization. Provide surface roughening, erosion control blankets and install temporary seeding and mulching and ensure final stabilizations are achieved prior to site closure is to take place as part of a future full construction phasing SWMP and is not within the scope of this report.

This project will not rely on any control measures owned or operated by another entity and all control measures for the site will be internal.

Construction Documentation

Construction drawings are provided with this document showing the Early Grading and Erosion Control plan for this project. This SWMP is intended to be a “living” document used by the SWMP Manager to document construction activities during the early grading process. See Appendix E for record log.

III. Pre-Development Conditions and Soils

Floodway

Based on FEMA Firm map 08041C0552G & 08041C0556G (eff. 12/7/2018), the site contains flood Zone A through the site which is part of the Gieck Ranch Tributary #2. See FEMA Firm Maps in **Appendix A**. This floodplain (Channel B) is being studied and revised in the Gieck Ranch Tributary # 2 CLOMR report. A copy of the current revised floodplain map is also provided in **Appendix A**. There is an additional Zone A floodplain northeast of the site (Channel C) which will not be altered with this projects improvements. The grading proposed within the Channel B floodplain will only be done once the corresponding CLOMR has been approved.

Existing Vegetation

The existing vegetative cover is 90 percent as evidenced by a field survey and aerial imagery. The existing vegetation includes native grasses and weeds, and shrubs.

Existing Drainage Patterns

Gieck Ranch Tributary #2 (Channel B) traverses from north to south, through the center of the site. The channel is being studied in a separate project, a CLOMR report is ongoing and pending approval for this channel. Gieck Ranch Tributary #3 (Channel C) traverses the site along its northeastern boundary and forms the northeast boundary for Phase 3 along Rex Road. This channel will not be disturbed by this phase of development and will be studied at a later date.

Existing Slopes

Phase 3 of Grandview Reserve generally slopes south east with varied slopes between 1% and 6%.

Soils

According to the US Department of Agriculture Natural Resources Conservation Service Soil Survey of El Paso County, Colorado, the primary soil through site is Type A columbine gravelly sandy loam.

The existing soil type has a slight potential for erosion which can be mitigated by employing appropriate downstream construction BMPs before/during/after construction to limit potential impacts to stormwater discharges. The potential impacts are sediment discharge into the existing Gieck Ranch Tributary #3 and downstream properties.

IV. Description of Potential Pollutants

Potential sources of sediment to stormwater runoff include earth moving and concrete activities associated with grading, residential structure construction including concrete foundations and hardscape, and landscaping.

Potential pollutants and sources other than sediment to stormwater runoff include trash, debris, fueling and equipment failure. Materials of significance stored on the project site include: sediment, concrete washout, cement, trash & debris, fuels and oils.

Construction activities can produce a variety of pollutants that can potentially cause stormwater contamination. Grading activities remove rocks, vegetation and other erosion controlling surfaces and can result in the exposure of underlying soil to the elements, which can then be displaced into water sources.

Wind erosion and vehicular transport can produce sediment debris.

Potential Sources of Pollution:

1. Potential sources of pollution from construction activities include
 - a. Disturbed or stored soils
 - b. Vehicle tracking of sediment (Street sweeping required as needed)
 - c. Loading & unloading operations
 - d. Outdoor Storage activities
 - e. Vehicle and Equipment Maintenance/Fueling
 - f. Dust or Particulate Generating Processes
 - g. Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents etc.
 - h. On-site waste management (waste piles, liquid wastes, dumpsters)
 - i. Concrete truck/equipment washing (washing truck chute and associated fixtures)
 - j. Dedicated asphalt, concrete batch plants and masonry mixing stations (not anticipated)
 - k. Non-industrial waste (worker trash and portable toilets)

V. Areas and Volumes

In Phase 3, a total of 83.11 acres is expected to be disturbed per the Early Grading and Erosion Control Plan for over excavation of proposed lot pads and roadway corridors. The early grading will be the entirety of the construction process for this submittal with the anticipated limits of disturbance to affect 83.11 acres of the 102.82 acre site.

Early Grading Earthwork Quantities:

Cut Quantity: 109,170 c.y.

Fill Quantity: 291,709 c.y.

Net: 182,539 c.y. (Fill)

The full build-out earthwork quantities cannot be quantified at this stage as each respective lot disturbance and construction will vary by architecture, layout, and plot plan.

VI. Self-Inspections

Self-inspections of the Construction Control Measures must be completed by the certified GEC Administrator. The below provides the minimum to satisfy the El Paso County self-inspection requirements. A more frequent self-inspection schedule may be required to ensure Control Measures are operating in compliance with the approved GEC plan.

1. Inspection Schedules:

- a. The GEC Administrator shall make a thorough inspection of the Control Measures:
 - i. At least once every fourteen (14) calendar days.
 - ii. Within 24 hours following any precipitation event (i.e. rain, snow, hail etc.) that causes surface erosion.
 - Alternatively, the GEC Administrator can perform a thorough inspection of the Control Measures once every seven (7) days and forego post-precipitation inspections.
- b. For sites where construction activities have completed and final stabilization measures installed but final stabilization has not yet been achieved, the GEC Administrator shall make a thorough inspection of the Control Measures:
 - i. At least once every month
 - ii. Within 72 hours following any precipitation event that causes surface erosion

2. Inspection Procedures:

- a. Site Inspection & Observation Items:
 - i. Limits of disturbance perimeter and stormwater discharge points
 - ii. All disturbed areas to ensure necessary Construction Control Measures are in place to control potential stormwater runoff.
 - iii. Areas used for material/waste storage.
 - iv. Any areas having a signification potential for storm water pollution (i.e site entrances, concrete washout areas etc.)
 - v. All Construction Control Measures identified on the GEC plans.
- b. Inspection Requirements:
 - i. Determine any locations, or potential locations, where pollutants and stormwater may be exiting the site/entering the receiving waters.
 - ii. Evaluate Construction Control measures and determine if they are constructed in accordance with the latest revision of the approved GEC plan and operating effectively.
 - iii. Provide recommendations for the need of additional Construction Control measures and the maintenance of existing measures in disrepair to ensure complication with the El Paso County Stormwater Construction Manual.
- c. Construction Control Measure Maintenance/Replacement:

- i. The GEC administrator shall ensure sediment has been removed from perimeter controls and relocated to an area without the potential for sediment to discharge from the site
 - ii. The GEC administrator shall ensure diversion ditches and temporary sediment ponds have not accumulated excess sediment that impedes their functionality.
 - iii. The GEC administrator shall ensure that failed Control Measures are repaired/reinstalled within three (3) calendar days, according to the El Paso County Stormwater Control Measure details, to ensure pollutants and/or sediment do not discharge from the site. GEC details are provided in Appendix B.
 - d. Documentation:
 - i. All Inspection logs shall be signed by the GEC administrator
 - ii. Update the GEC plan to document the installation/revision of Control Measures
 - iii. Identify Control Measure deficiencies and that noncompliance is resolved within three (3) calendar days.
 - iv. Identify Self-Inspection schedule in most recent inspection form
 - v. Complete and submit Self-Inspection forms with GEC administrator signature to El Paso County within five (5) business days of the completed inspection
 - vi. Ensure Self-Inspections are available, either physically or electronically, throughout the duration of the project
 - vii. Self-Inspection Report shall contain at least the following:
 - Inspection Date
 - Name and title of the GEC Administrator performing inspection
 - Location(s) of illicit discharges of stormwater, sediment or pollutants from the site
 - Location(s) of Construction Control Measures in need of maintenance/repair
 - Location(s) of Construction Control Measures that failed to operate as designed or proved inadequate
 - Location(s) of additional Construction Control Measures not shown on the latest, approved revision of the GEC plan
 - Any deviations from the minimum inspection schedule

VII. Materials Handling

1. General Materials Handling Practices:
 - a. Potential pollutants shall be stored and used in a manner consistent with the manufacturer's instructions in a secure location. To the extent practical, material storage areas should be located away from storm drain inlets and should be equipped with covers, roofs or secondary containment as required to prevent stormwater from contacting stored materials. Chemicals that are not compatible shall be stored in segregated areas so that spill materials cannot combine and react.
 - b. Disposal of materials shall be in accordance with the manufacturer's instructions and applicable local, state, and federal regulations.
 - c. Materials no longer required for construction shall be removed from the site as soon as possible.
 - d. Adequate garbage, construction waste, and sanitary waste handling and disposal facilities shall be provided as necessary to keep the site clear of obstruction and Control Measures clear and functional. Waste disposal facilities shall be checked weekly for leaks and emptied on a weekly

- basis (or when facility is at capacity). Appearance of leaks/overflow will be cleaned and cleared immediately.
- e. Portable toilets will be located a minimum of 10 feet from stormwater inlets and 50 feet from state waters. They will be secured at all four corners to prevent overturning and cleaned on a weekly basis. They will be inspected daily for spills.
2. Specific Materials Handling Practices:
- a. All pollutants, including waste materials and demolition debris, that occur onsite during construction shall be handled in a way that does not contaminate stormwater.
 - b. All chemicals including liquid products, petroleum products, water treatment chemicals, and wastes stored onsite shall be covered and protected from vandalism.
 - c. Maintenance, fueling, and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, degreasing operation, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants, shall be conducted under cover during wet weather and on an impervious surface to prevent release of contaminants onto the ground. Materials spilled during maintenance operations shall be cleaned up immediately and properly disposed of.
 - d. Wheel wash water shall be settled and discharged onsite by infiltration.
 - e. Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Follow manufacturer's recommendations for application rates and procedures.
 - f. pH-modifying sources shall be managed to prevent contamination of runoff and stormwater collected onsite. The most common sources of pH-modifying materials are bulk cement, cement kiln dust (CKD), fly ash, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, and concrete pumping and mixer washout waters.

VIII. Spill Prevention & Response Plan

1. The primary objective in responding to a spill is to quickly contain the material and prevent or minimize their mitigation into stormwater runoff and conveyance systems. If the release has impacted onsite stormwater, it is critical to contain the released materials onsite and prevent their release into receiving waters.
2. Spill Response Procedures:
 - a. Notify site superintendent immediately when a spill, or the threat of a spill, is observed. The superintendent shall assess the situation and determine the appropriate response.
 - b. If spills represent an imminent threat of escaping onsite facilities and entering the receiving waters, site personnel shall respond immediately to contain the release and notify the superintendent once the situation has stabilized.
 - c. The site superintendent shall be responsible for completing a spill reporting form and for reporting the spill to the appropriate agency.
 - d. Spill response equipment shall be inspected and maintained as necessary to replace any materials used in spill response activities.
3. Spill kits shall be on-hand at all fueling sites. Spill kit locations shall be reported to the GEC administrator.
4. Absorbent materials shall be on-hand at all fueling areas for use in containing advertent spills. Containers shall be on-hand at all fueling sites for disposal of used absorbents.

5. Recommended components of spill kits include the following:
 - a. Oil absorbent pads
 - b. Oil absorbent booms
 - c. 55-gallon drums
 - d. 9-mil plastic bags
 - e. Personal protective equipment including gloves and goggles
6. Concrete wash water: unless confined in a pre-defined, bermed containment area, the cleaning of concrete truck delivery chutes is prohibited at the job site.
7. Notification procedures:
 - a. In the event of an accident or spill, the GEC administrator shall be notified.
 - b. Depending on the nature of the spill and material involved, the Colorado Department of Public Health and Environment, downstream water users, or other agencies may also need to be notified.
 - c. Any spill of oil which 1) violates water quality standards, 2) produces a “sheen” on a surface water, or 3) causes a sludge or emulsion, or any hazardous substance release, or hazardous waste release which exceeds the reportable quantity, must be reported immediately by telephone to the National Response Center Hotline at (800) 424-8802.

IX. Implementation of Control Measures

Stormwater control measures must be installed according to El Paso County design specifications, presented in Appendix D, and the approved Grading and Erosion Control plan this report supports. Within the context of this SWMP’s construction activities the following control measures, at a minimum, are required:

- Perimeter Silt Fence
- Vehicle Tracking Control
- Stabilized Staging Area
- Concrete Washout
- Construction Fence
- Stockpile Management
- Inlet Protection
- Culvert Inlet Protection
- Check Dams
- Erosion Control Blanket
- Surface Roughening
- Diversion Ditches (Earth Dikes & Drainage Swales)
- Temporary Sediment Basins
- Temporary Seeding & Mulching

Additional control measures may be required at the discretion of the County Stormwater Inspector.

X. Final Stabilization & Long-Term Stormwater Management Plan

1. Ensure stabilization is achieved prior to site closure. Final stabilization is to take place as a part of a future construction phasing SWMP and is not within the scope of this report.
2. Temporary seeding and mulching will be installed to provide interim stabilization prior to final landscaping installation (Refer to approved Landscape Plan). Interim stormwater management will be addressed with the proposed three (4) TSB's. Final stabilization will be achieved at time of final landscaping. See approved landscaping plans for final stabilization details. Final stabilization is met when 70% of pre disturbance levels, not including noxious weeds, are stabilized. Final stabilization must be achieved prior to removal of temporary stormwater control measures. The anticipated date of final stabilization is Fall 2025; however this is subject to change. Long term stormwater management will be provided in the onsite, private full spectrum detention ponds. See the Permanent Control Measure Plans for construction details of the permanent full spectrum detention pond. See below for seeding and mulching details:
 - a. Prior to seeding, fill any eroded rills and gullies with topsoil.
 - b. Ensure all areas are seeded and mulched per the County Stormwater Construction Manual.
 - c. Continue monthly self-inspections of final stabilization methods and the stormwater management system to ensure proper function. If repairs are needed, reseed and re-mulch as needed.
 - d. Control noxious weeds in a manner acceptable to the GEC inspector.
 - e. Seed Mix: See Appendix D for approved seed mixes.
 - f. Seeding Requirements:
 - i. Drill seed whenever possible, seed depth must be 1/3 to 1/2 inch when drill-seeding. Cross drilling should be used whenever possible with the seed divided between the two operations. The second drilling should be perpendicular to the first.
 - ii. When drill seeding is not possible or on slopes greater than 3:1, hydro-seeding with tackifier may be substituted at the discretion of the GEC inspector. Hydro-seeding must be lightly raked into soil. Seeding rates are presented in Appendix D.
 - iii. All seeded areas must be mulched.
 - g. Mulching Requirements:
 - i. Mulching shall be completed as soon as practical after seeding but no more than fourteen (14) days after planting. Erosion control blanket can be used in place of the below mulching methods.
 - ii. Hay or straw mulch:
 1. Only certified weed-free and certified-seed free mulch may be used. Must be applied at 2 tons/acre and adequately secured.
 2. Crimping shall not be used no slopes greater than 3:1, tackifier must be used in place.
 - iii. Hydraulic mulching:
 1. Allowable on steep slopes or areas with limited access
 2. If hydro-seeding is used, mulching must be applied secondly.
 3. Wood cellulose fibers mixed with water must be applied at a rate of 2,000-2,500 lbs/acre, and tackifier applied at a rate of 100 lbs/acre.



XI. References

El Paso County – Drainage Criteria Manual, latest revision October 31, 2018

El Paso County – Engineering Criteria Manual, latest revision October 14, 2020

Mile High Flood District Urban Storm Drainage Criteria Manual Volumes 1, 2, and 3; latest revisions



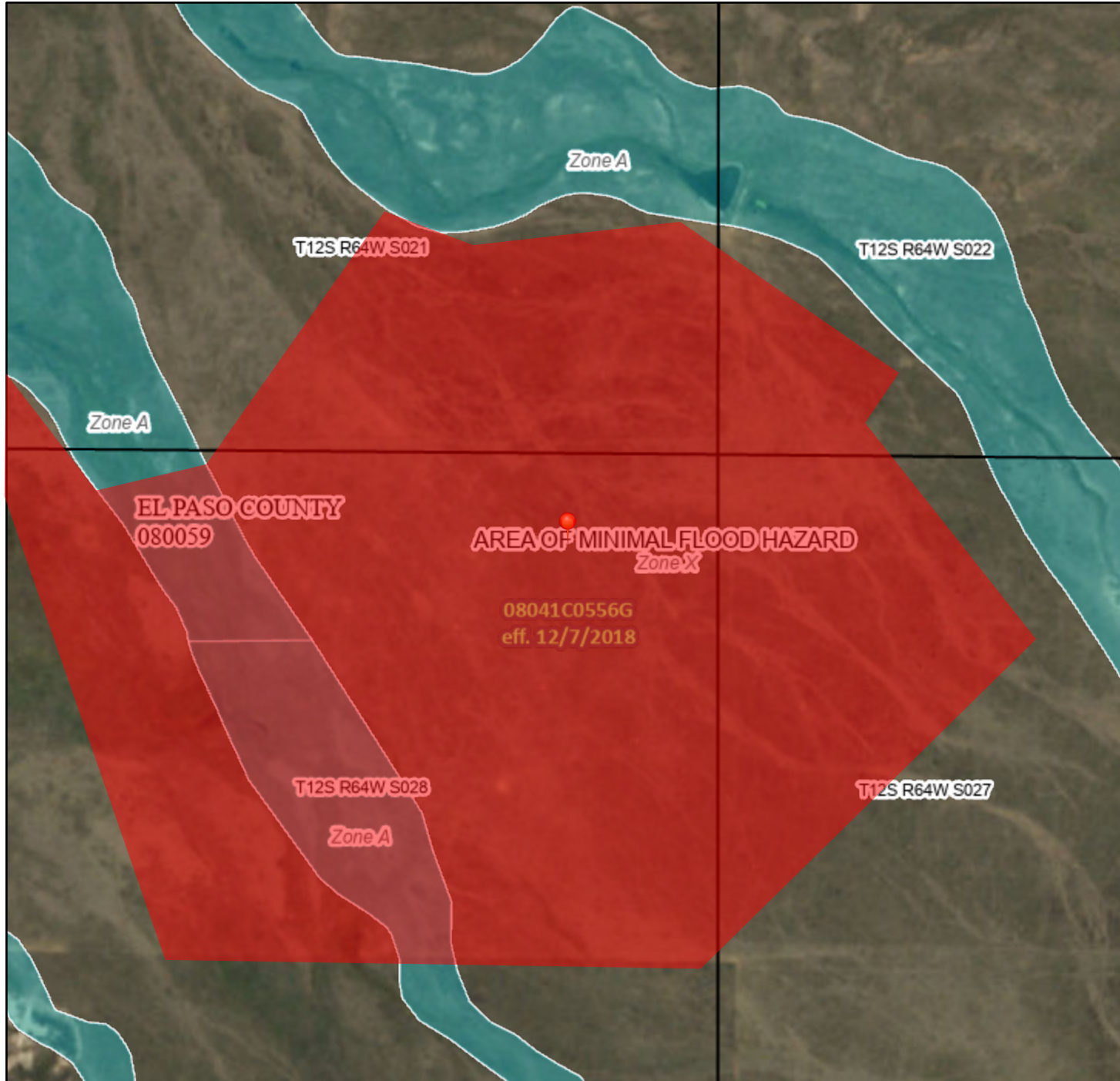
Grandview Reserve Phase 3
Stormwater Management Plan
Project No.: 201662.302
El Paso County, Colorado

APPENDIX A – VICINITY MAP & NRCS SOIL SURVEY & FEMA MAP

National Flood Hazard Layer FIRMMette



104°33'34"W 38°59'13"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- | | | |
|------------------------------------|--|--|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE)
<i>Zone A, V, A99</i> |
| | | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i> |
| | | Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i> |
| | | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i> |
| | | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i> |
| | | Area with Flood Risk due to Levee <i>Zone D</i> |
| OTHER AREAS | | NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i> |
| | | Effective LOMRs |
| GENERAL STRUCTURES | | Area of Undetermined Flood Hazard <i>Zone D</i> |
| | | Channel, Culvert, or Storm Sewer |
| | | Levee, Dike, or Floodwall |
| OTHER FEATURES | | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation |
| | | 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation |
| | | Coastal Transect |
| | | Base Flood Elevation Line (BFE) |
| | | Limit of Study |
| MAP PANELS | | Jurisdiction Boundary |
| | | Coastal Transect Baseline |
| | | Profile Baseline |
| | | Hydrographic Feature |
| | | Digital Data Available |
| | | No Digital Data Available |
| | | Unmapped |

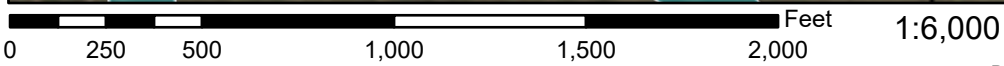


The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **3/19/2024 at 12:27 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

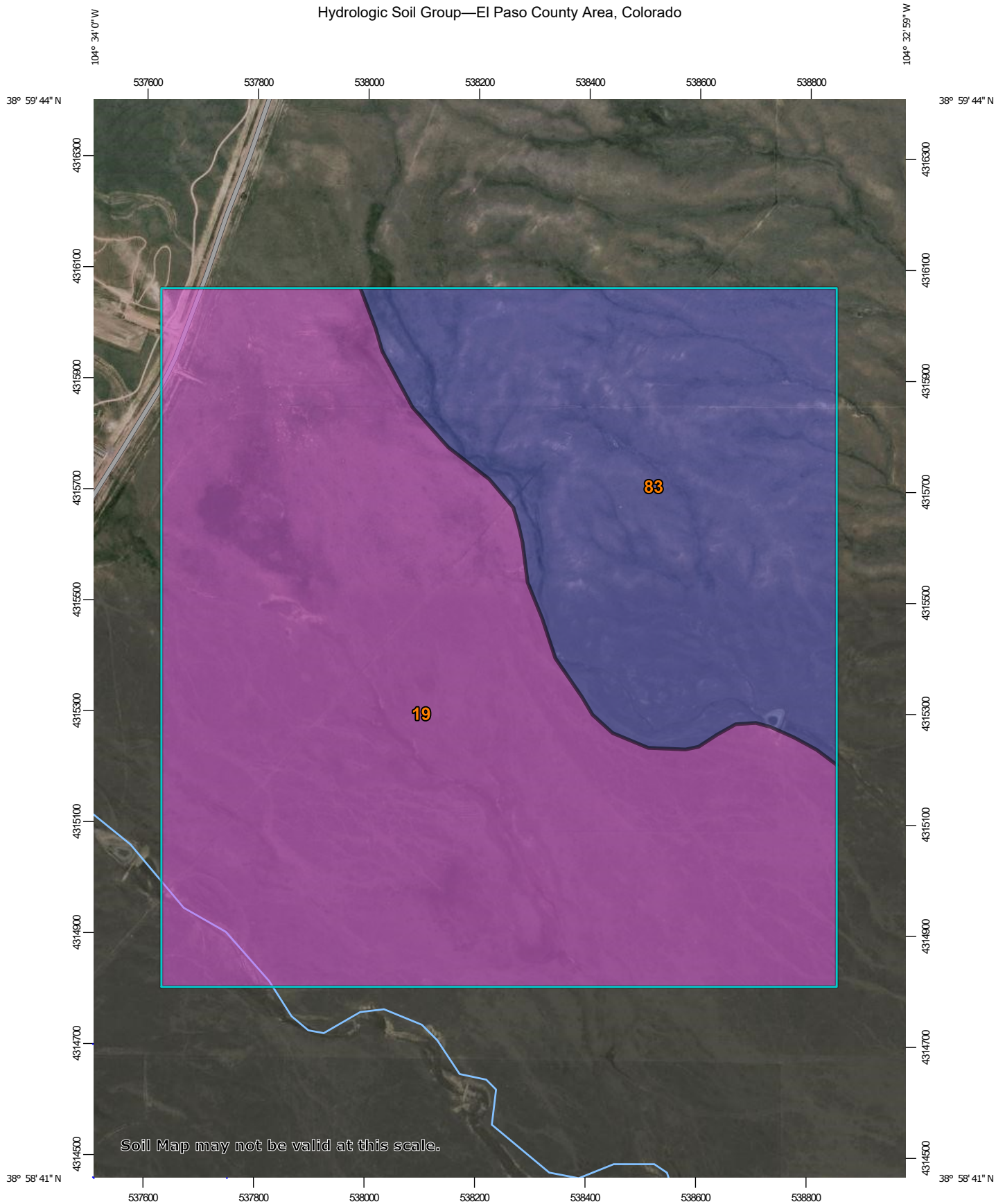
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



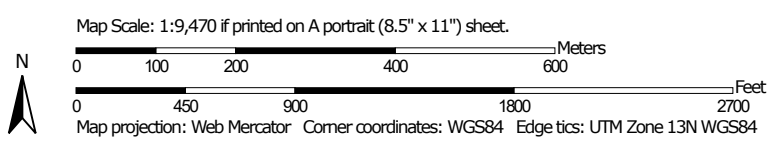
Basemap Imagery Source: USGS National Map 2023

104°32'56"W 38°58'46"N

Hydrologic Soil Group—El Paso County Area, Colorado



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points





-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available


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: Sep 11, 2018—Jun 12, 2021

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	A	254.0	66.5%
83	Stapleton sandy loam, 3 to 8 percent slopes	B	127.8	33.5%
Totals for Area of Interest			381.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



APPENDIX B – GEC PLANS

TO BE INSERTED WITH
FINAL APPROVED SWMP



APPENDIX C – CALCULATIONS

TEMP SEDIMENT BASIN 1 - POND 1
SEDIMENT BASIN STAGE-STORAGE CALCULATIONS

Elevation	Area	Area	Volume	Volume	Cumm Vol	Cumm Vol	Proration	Proration	Elev.
	S.F.	Acre	Cu. Ft.	Acre-Ft	Cu. Ft.	Acre-Ft	Enter Vol.	Enter Vol.	Cu-Ft
							in Cu-Ft*	in Acre-Ft*	
6911.0	80								
6912.0	1688		712		712	0.016			
6913.0	7579		4,281		4,993	0.115			
6914.0	16468		11,740		16,733	0.384	21,615	0.496	6,914.23
6915.0	26820		21,435		38,167	0.876	64,845	1.489	6,915.82
6916.0	38862		32,655		70,823	1.626			
6917.0	54074		46,259		117,082	2.688			
6918.0	74479		64,005		181,087	4.157			
6919.0	94037		84,068		265,155	6.087			
6920.0	114254		103,982		369,137	8.474			
6921.0									
6922.0									
6923.0									
6924.0									
6925.0									
6926.0									
6927.0									
6928.0									
6929.0									
6930.0									
6931.0									
6932.0									

COLUMN 1	COLUMN 2	CENTROID EL.
ORIFICE 1-1	ORIFICE 1-2	6,914.23
ORIFICE 2-1	ORIFICE 2-2	6,914.56
ORIFICE 3-1	ORIFICE 3-2	6,914.89
ORIFICE 4-1	ORIFICE 4-2	6,915.22
ORIFICE 5-1	ORIFICE 5-2	6,915.55

SED Basin riser pipe orifice calculations			
$A_0 =$			area per row of orifices spaced on 4" centers (in ²)
V=	1.4886		design volume (acre feet) * <15 ac.
$T_0 =$	72		time to drain the prescribed volume (hrs) (Typically 72 hours for EURV)
H=	1.589		depth of volume (ft)
S=	0.0001		Trickel channel slope (ft/ft) [Use 0.0001 for flat slope]
			S=0%
$A_0 =$	3.7322	in ²	3.7212 in ²
Dia	2.18	in	*EXCEEDS 1", USE TWO COLUMNS @ $A_0=1.027$ in ²
	4.35	Dia=/2	area hole diameter
	8.71	Dia=/4	1.86 EQUIV. D. 1-9/16"
	17.41	Dia=/8	
	34.83	Dia=/16	
	69.65	Dia=/32	

SEDIMENT VOLUME CALCULATIONS			
Disturbed area-acres	23.850	Acre	
Undisturbed area-acres	0.900	Acre	
Total Area-acres	24.750	Acre	
Sediment volume	64,845	cu-ft	1.4886 Acres-ft
Volume below lowest hole	21,615	cu-ft	0.4962 Acres-ft
Volume above lowest hole	64,845	cu-ft	1.4886 Acres-ft
Total Volume	86,438	cu-ft	1.9844 Acres-ft

Note: Enter values in highlighted cells only.

TEMP SEDIMENT BASIN 2 - POND 2
SEDIMENT BASIN STAGE-STORAGE CALCULATIONS

Elevation	Area S.F.	Area Acre	Volume Cu. Ft.	Volume Acre-Ft	Cumm Vol Cu. Ft.	Cumm Vol Acre-Ft	Proration Enter Vol. in Cu-Ft*	Proration Enter Vol. in Acre-Ft*	Elev. ft.
6912.0	0								
6913.0	236		79		79	0.002			
6914.0	3201		1,435		1,514	0.035			
6915.0	16414		8,955		10,469	0.240	16,581	0.381	6,915.26
6916.0	31964		23,761		34,230	0.786	49,743	1.142	6,916.44
6917.0	39429		35,631		69,861	1.604			
6918.0	43512		41,454		111,315	2.555			
6918.5	47000		22,622		133,937	3.075			
6919.0	47702		23,675		157,612	3.618			
6920.0									
6921.0									
6922.0									
6923.0									
6924.0									
6925.0									
6926.0									
6927.0									
6928.0									
6929.0									
6930.0									
6931.0									
6932.0									

COLUMN 1	COLUMN 2	CENTROID EL.
ORIFICE 1-1	ORIFICE 1-2	6,915.26
ORIFICE 2-1	ORIFICE 2-2	6,915.59
ORIFICE 3-1	ORIFICE 3-2	6,915.92
ORIFICE 4-1	ORIFICE 4-2	6,916.25

SED Basin riser pipe orifice calculations	
$A_0 =$	area per row of orifices spaced on 4" centers (in ²)
V=	1.1419 design volume (acre feet) * < 15 ac.
$T_0 =$	72 time to drain the prescribed volume (hrs) (Typically 72 hours for EURV)
H=	1.178 depth of volume (ft)
S=	0.0001 Trickle channel slope (ft/ft) [Use 0.0001 for flat slope]
	S=0%
$A_0 =$	3.0866 in ²
Dia	1.98 in
	*EXCEEDS 1", USE TWO COLUMNS @ $A_0=1.538$ in ²
	3.96 Dia=/2
	7.92 Dia=/4
	15.84 Dia=/8
	31.67 Dia=/16
	63.34 Dia=/32

1.54 EQUIV. D. 1-3/8"

SEDIMENT VOLUME CALCULATIONS			
Disturbed area-acres	18.340	Acre	
Undisturbed area-acres	0.450	Acre	
Total Area-acres	18.790	Acre	
Sediment volume	49,743	cu-ft	1.1419 Acres-ft
Volume below lowest hole	16,581	cu-ft	0.3806 Acres-ft
Volume above lowest hole	49,743	cu-ft	1.1419 Acres-ft
Total Volume	66,307	cu-ft	1.5222 Acres-ft

Note: Enter values in highlighted cells only.

TEMP SEDIMENT BASIN 3 - POND REX ROAD
SEDIMENT BASIN STAGE-STORAGE CALCULATIONS

Elevation	Area	Area	Volume	Volume	Cumm Vol	Cumm Vol	Proration	Proration	Elev.
	S.F.	Acre	Cu. Ft.	Acre-Ft	Cu. Ft.	Acre-Ft	Enter Vol.	Enter Vol.	Cu-Ft
							in Cu-Ft*	in Acre-Ft*	
6909.5	0								
6910.0	492		82		82	0.002			
6911.0	3893		1,923		2,005	0.046			
6912.0	20643		11,167		13,172	0.302	25,770	0.5916	6,912.41
6913.0	42219		30,795		43,966	1.009	77,309	1.7748	6,913.69
6914.0	54958		48,449		92,415	2.122			
6914.5	57768		28,179		120,594	2.768			
6915.5									
6916.5									
6917.5									
6918.5									
6919.5									
6920.5									
6921.5									
6922.5									
6923.5									
6924.5									
6925.5									
6926.5									
6927.5									
6928.5									
6929.5									

COLUMN 1	COLUMN 2	CENTROID EL.
ORIFICE 1-1	ORIFICE 1-2	6,912.41
ORIFICE 2-1	ORIFICE 2-2	6,912.74
ORIFICE 3-1	ORIFICE 3-2	6,913.07
ORIFICE 4-1	ORIFICE 4-2	6,913.40

SED Basin riser pipe orifice calculations			
A_0 =	area per row of orifices spaced on 4" centers (in ²)		
V=	1.7748 design volume (acre feet)	*<15 ac.	
T_0 =	72 time to drain the prescribed volume (hrs) (Typically 72 hours for EURV)		
H=	1.279 depth of volume (ft)		
S=	0.0001 Trickle channel slope (ft/ft) [Use 0.0001 for flat slope]		
		S=0%	
A_0 =	4.5856 in ²	4.5721 in ²	
Dia	2.41 in	*EXCEEDS 1", USE TWO COLUMNS @ A_0 =2.28 in ²	
	4.83 Dia=/2	area	hole diameter
	9.65 Dia=/4	2.29	EQUIV. D. 1-11/16"
	19.30 Dia=/8		
	38.60 Dia=/16		
	77.21 Dia=/32		

SEDIMENT VOLUME CALCULATIONS			
Disturbed area-acres	28.522	Acre	
Undisturbed area-acres	0.600	Acre	
Total Area-acres	29.122	Acre	
Sediment volume	77,309	cu-ft	1.7748 Acres-ft
Volume below lowest hole	25,770	cu-ft	0.5916 Acres-ft
Volume above lowest hole	77,309	cu-ft	1.7748 Acres-ft
Total Volume	103,053	cu-ft	2.3658 Acres-ft

Note: Enter values in highlighted cells only.

TEMP SEDIMENT BASIN 4 - SCHOOL SITE
SEDIMENT BASIN STAGE-STORAGE CALCULATIONS

Elevation	Area S.F.	Area Acre	Volume Cu. Ft.	Volume Acre-Ft	Cumm Vol Cu. Ft.	Cumm Vol Acre-Ft	Proration Enter Vol. in Cu-Ft*	Proration Enter Vol. in Acre-Ft*	Elev. ft.
6897.0	8171								
6898.0	9722		8,935		8,935	0.205	9,227	0.212	6,898.03
6899.0	11375		10,538		19,473	0.447	18,454	0.424	6,898.90
6900.0	13128		12,241		31,714	0.728			
6901.0									
6902.0									
6903.0									
6904.0									
6905.0									
6906.0									
6907.0									
6908.0									
6909.0									
6910.0									
6911.0									
6912.0									
6913.0									
6914.0									
6915.0									
6916.0									
6917.0									
6918.0									

COLUMN 1

ORIFICE 1-1
ORIFICE 2-1
ORIFICE 3-1

CENTROID EL.

6,898.03
6,898.36
6,898.69

SED Basin riser pipe orifice calculations			
$A_0 =$			area per row of orifices spaced on 4" centers (in ²)
$V =$	0.2118		design volume (acre feet) * < 15 ac.
$T_0 =$	72		time to drain the prescribed volume (hrs) (Typically 72 hours for EURV)
$H =$	0.876		depth of volume (ft)
$S =$	0.0001		Trickel channel slope (ft/ft) [Use 0.0001 for flat slope]
			$S = 0\%$
$A_0 =$	0.6442	in ²	0.6423 in ²
Dia	0.90	in	
	1.81	Dia=/2	
	3.62	Dia=/4	EQUIV. D. 7/8"
	7.23	Dia=/8	
	14.47	Dia=/16	
	28.94	Dia=/32	

SEDIMENT VOLUME CALCULATIONS			
Disturbed area-acres	4.018	Acre	
Undisturbed area-acres	7.982	Acre	
Total Area-acres	12.000	Acre	
Sediment volume	18,454	cu-ft	0.4237 Acres-ft
Volume below lowest hole	9,227	cu-ft	0.2118 Acres-ft
Volume above lowest hole	9,227	cu-ft	0.2118 Acres-ft
Total Volume	18,454	cu-ft	0.4237 Acres-ft

Note: Enter values in highlighted cells only.

<u>BMP FEATURE</u>	<u>TOTAL TRIBUTARY AREA (AC)</u>	<u>DISTURBED AREA (AC)</u>	<u>UNDISTURBED AREA (AC)</u>	<u>BOTTOM SIZE (FT)</u>	<u>SEDIMENT VOLUME (AC-FT)</u>	<u>BASIN VOLUME (AC-FT)</u>	<u>BOTTOM ELEVATION</u>	<u>CREST ELEVATION</u>	<u>CREST WxL (FT)</u>	<u>TOP OF POND ELEVATION</u>	<u>LOWEST ORIFICE ELEVATION</u>	<u>AREA OF ORIFICES (SQ IN)</u>	<u># OF ORIFICE COLUMNS</u>	<u>DIA. OF ORIFICES</u>	<u>RISER PIPE INVERT</u>	<u>DAYLIGHT ELEVATION</u>	<u>OUTLET PIPE LENGTH (FT)</u>	<u>OUTLET PIPE SLOPE</u>
TSB-1	24.75	23.85	0.90	700' X 90'	1.49	1.98	6911.00	6920.00	75' X 40'	6921.00	6914.23	1.86	2	1-9/16"	6912.90	6912.00	94	1.0%
TSB-2	18.79	18.34	0.45	270' x 115'	1.14	1.52	6912.00	6918.50	30' x 35'	6919.00	6915.26	1.54	2	1-3/8"	6913.93	6913.00	60	1.5%
TSB-3	29.12	28.52	0.60	300' x 150'	1.77	2.37	6909.50	6914.00	30' x 20'	6914.50	6912.41	2.29	2	1-11/16"	6911.08	6910.70	128	0.3%
TSB-4	12.00	4.02	7.98	64' x 128'	0.42	0.73	6897.00	6900.00	10' x 18'	6901.00	6898.03	0.64	1	7/8"	6897.70	6897.00	141	0.5%

Riprap Sizing - POND 1 SPILLWAY				
q (cfs/ft)	S (ft/ft)	C _f	n	D ₅₀ min. (in)
0.80	0.2	2	0	4.03

Type VL Riprap (D₅₀ = 6") will be utilized for the outlet protection.

Riprap Sizing - POND REX SPILLWAY				
q (cfs/ft)	S (ft/ft)	C _f	n	D ₅₀ min. (in)
1.20	0.2	2	0	5.06

Type VL Riprap (D₅₀ = 6") will be utilized for the outlet protection.

Riprap Sizing - POND 2 INFLOW				
q (cfs/ft)	S (ft/ft)	C _f	n	D ₅₀ min. (in)
2.81	0.25	2	0	8.97

Type L Riprap (D₅₀ = 9") will be utilized for the outlet protection.

Riprap Sizing - POND 2 SPILLWAY				
q (cfs/ft)	S (ft/ft)	C _f	n	D ₅₀ min. (in)
1.50	0.2	2	0	5.73

Type VL Riprap (D₅₀ = 6") will be utilized for the outlet protection.

Riprap Sizing - POND 1 INFLOW				
q (cfs/ft)	S (ft/ft)	C _f	n	D ₅₀ min. (in)
3.75	0.25	2	0	10.54

Type M Riprap (D₅₀ = 12") will be utilized for the outlet protection.

Riprap Sizing - POND REX INFLOW				
q (cfs/ft)	S (ft/ft)	C _f	n	D ₅₀ min. (in)
2.25	0.25	2	0	7.91

Type L Riprap (D₅₀ = 9") will be utilized for the outlet protection.

$$D_{50} = 5.23 S^{0.43} (1.35 C_f q)^{0.56}$$

Equation 13-9

Where:

- D₅₀ = median rock size (in)
- S = longitudinal slope (ft/ft)
- C_f = concentration factor (1.0 to 3.0)
- q = unit discharge (cfs/ft)

When:

- η (porosity) = 0.0 (i.e., for buried soil riprap)



APPENDIX D – EL PASO COUNTY CONSTRUCTION CONTROL MEASURES
(see GEC Plans)



APPENDIX E – SPILL PREVENTION PLAN

Spill Prevention, Control and Countermeasure (SPCC) Plan

Facility Name: _____
Address: _____

Contact Name: _____
Phone: _____
Fax: _____
Email: _____

Certification: I hereby certify that I have examined the facility, and, being familiar with the provisions of 40 CFR part 112, attest that this SPCC plan has been prepared, or updated within 5 years, in accordance with good engineering practices and meets the requirements listed in 40 CFR part 112.

This plan has been certified by:

Date of certification: _____

Engineer's Seal

Copies of this plan are located at the facility and are available to all employees.

Location(s) of plan(s): _____

I. FACILITY INFORMATION

- a. Facility Name: _____
- b. Mailing Address: _____

- c. Physical address if different: _____

- d. Owner Name: _____
- e. Owner Address: _____

- f. Primary Contact Name: _____
Work Phone Number: _____
Home Phone Number: _____
Mobile Phone Number: _____
- g. Secondary Contact Name: _____
Work Phone Number: _____
Home Phone Number: _____
Mobile Phone Number: _____
- h. Date of Initial Operation: _____

II. SITE ASSESSMENT

a. Location:

Describe where facility is located. For example, "This site is located along Broad Creek about 2 miles north of its confluence with the Choptank River at Holland Point. Road access is from. . . . The site is located on Talbot County ADC map 22 (H5). Latitude is ____ and longitude is ____."

III. FACILITY DESCRIPTION

a. Acres of land: ____

b. Facilities and Equipment:

Place an X beside all that apply.

- ____ Garage for vehicle processing
- ____ Parts store
- ____ On-site crusher
- ____ Impervious crush pad for crusher
- ____ Impervious pad for outside vehicle processing
- ____ Spill kit/emergency equipment
- ____ Refrigerant (Freon) extractor

- ____ Parts washer
- ____ Other structures and major equipment:

Please list: _____

c. Services:

Place an X beside all that apply.

- ____ Dismantler/Recycler
- ____ Sell used parts
- ____ Sell vehicles for scrap
- ____ Crushing
- ____ Auto body/repair shop
- ____ Sell used cars

____ Other services:

Please list: _____

d. Fixed Storage:

List capacity and contents of each storage container. For example, "One 6,000 gallon above ground tank containing diesel fuel." Be sure to include diesel, gasoline, waste oil, heating oil, kerosene, paint thinner and other solvents. Also describe the construction of the containers, secondary containment for each, liquid level indicators, alarms and method of corrosion protection for each container.

VII. FACILITY INSPECTIONS

a. Routine Inspections

Name facilities and the frequency with which they are inspected. For example, “The fuel pumps are inspected daily. The materials storage area is inspected monthly.” Describe all facility containers, piping, etc. that is to be inspected. Name the person who has responsibility to implement preventative maintenance programs, oversee on-site inspections, coordinate employee training, maintain records, update the plan as necessary, and ensure that reports are submitted to the proper authorities.

b. Annual Inspections

Include a description of annual comprehensive inspections. For example, “A site inspection is also conducted annually by appropriate responsible personnel to verify that the description of potential pollutant sources are accurate, that the map reflects current site conditions, and that the controls to reduce the pollutants identified in this plan are being implemented and are adequate. This annual inspection will be conducted above and beyond the routine inspections done focusing on designated equipment and areas where potential sources are located.”

VIII. RECORD KEEPING

Describe record keeping procedures. For example, “Record keeping procedures consist of maintaining all records a minimum of three years. The following items will be kept on file: current SPCC plan, internal site reviews, training records, and documentation of any spills or maintenance conducted in regards to these sites.” *Maintenance Inspection, Employee Training, and Record Keeping* logs are included in this template for your use.



APPENDIX F – CSWMP REPORT REVISION LOG



APPENDIX G – CERTIFICATIONS



EnviroCert International, Inc.®

certifies that

Staci Kahl

Subscribes to the Code of Ethics and Professional Conduct and has met the requirements established for the CPESC® Program as a

Certified Professional in Erosion and Sediment Control®

CPESC® Number: 14953

Certificate Date: 25-Sep-2023

Robert Anderson, EnviroCert Board President

Jim O'Tousa, EnviroCert Technical Advisory Council





CISEC, Inc.
 P.O. Box 188
 Parker, CO 80134
 Ph: (720) 235-2783
 Fax: 303-841-6383
 E-mail: contactus@cisecinc.org

CISEC, Inc. Wallet Card

Name: Staci Kahl

Order Date February 2023

Below is your wallet card.

Please print this card and keep it in your wallet or your files.

 <p>CISEC, Inc. Board of Directors <i>certifies that</i> Staci Kahl <i>has demonstrated satisfactory evidence of sediment and erosion control inspection skills and successfully passed the certification examination and therefore, as required by CISEC, Inc., is authorized to use the title of</i> Certified Inspector of Sediment and Erosion Control</p> <p>3561  February 28, 2024</p>	<p><i>As a CISEC Registrant, I agree to the following:</i></p> <ul style="list-style-type: none"> ▪ At all times, strictly abide by the CISEC, Inc. Code of Ethics. ▪ Perform all services in a professional manner and uphold professional standards in relating to the public, to other CISEC, Inc. registrants and to other professionals within the industry. ▪ Earn at least 12 CDH's each year after becoming a CISEC registrant and ▪ Pay CISEC, Inc. annual renewal fees. <p></p> <p>CISEC, Inc. P.O. Box 188 Parker, CO 80134 720-235-2783 www.cisecinc.org</p>
<p>CISEC # CISEC, Inc. Expiration Date President</p>	<p> Signature (required)</p>