

**COMBINED PRELIMINARY AND FINAL DRAINAGE
REPORT**

for

**OHANA SUBDIVISION
EL PASO COUNTY, COLORADO**

October 28, 2021

Prepared for:

**Gary and Darlene Hammann
17825 Jones Road
Peyton, CO 80831**

Prepared by:

**Allison Engineering
4245 Log Road
Peyton, CO 80831**

Design Engineer's Statement: The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

James L. Allison, P.E. #27338



Owner/Developer's Statement:

I, the owner/developer have read and will comply with all of the requirements specified in this drainage report and plan.

Gary and Darlene Hammann

EL PASO COUNTY CERTIFICATION:

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual & Land Development Code as amended.

Jennifer Irvine, P.E.
County Engineer / ECM Administrator

Conditions:

PURPOSE

This document is intended to serve as the Preliminary and Final Drainage Report for OHANA SUBDIVISION a rural-residential subdivision of four lots of approximately 5 acres each.

The purpose of this document is to identify and analyze the on- and off-site drainage patterns and to ensure that post development runoff is routed through the site safely and in a manner that satisfies the requirements set forth by the El Paso County Drainage Criteria Manual. The proposed principal use for the four lots consist of single-family residences and whatever ancillary structures are deemed useful such as detached garages, shops, barns, and other structures common with hobby-farm types of activities. The majority of each lot will remain low, sparse grasses typical of the present condition. This form of use is typical in all four directions from the proposed subdivision.

GENERAL LOCATION AND DESCRIPTION

OHANA Subdivision is located in the northwest quarter of Section 30, Township 13 South, Range 63 West of the 6th P.M., El Paso County, Colorado. Adjacent roads are Murr Road on the west property line and Jones Road parallel to the north property line. The intersection of these two county roads is shown in the upper left-hand corner of Figure 3. There are no public roads within the boundary of the proposed subdivision. To the east is the eastern dominant drainage channel of the Haegler Ranch drainage basin within which the entirety of the proposed subdivision lies as shown in Figure 2. On the north, east, and south sides, the land use is the same as that on this parcel, rural residential of 20 acres or more. Land use to the west across Murr Road is a the Blue Sage Subdivision consisting of 2.5-acre lots.

The proposed subdivision encompasses 19.3101 acres of undeveloped land aside from the single homesite in the northwest corner closest to the intersection of Jones and Murr Roads. The homesite has been occupied for generations, dating at least to the start of the 20th century. Buildings on this, which is proposed as lot 1 in the plat plan, include a recently remodeled residence with a detached garage, two barns, and small greenhouse not suitable for commercial use but instead for hot-house fruits and vegetables.

The proposed Lot 1 has a current address of 17825 Jones Road which since the entrance is from Murr Road might be reassigned within the process of subdividing.

Existing site native grade slopes downward to the east towards the Haegler Ranch drainage way. The grade in its descent does not exceed 10% and is unbroken by erosion, cliffs, escarpments or any other feature which would indicate recent erosion or lack of conservation care as shown in Figure 4.

SOILS

The single soil type of this subdivision is Blakeland loamy sand. The description provided in the El Paso County U. S. Department of Agriculture Soil Conservation Service Soil Survey is compatible with that observed in the course of the field work for the geological-soil report for this subdivision performed by Allison Engineering.

Field examination of the area covered by Blakeland loamy sand finds consistent the slopes of “1 to 9 percent ... somewhat excessively drained soil ... extending to a depth 60 inches.” From the field examination we found the depth of the soil as stated in the U. S. DoA Soil Survey to be shallower than that observed. This is likely owing to the limited depth the survey examined. The “excessively drained” characteristic of this soil is amplified with further Soil Survey comments such as “[p]ermeability of this Blakeland soil is rapid’.” With further emphasis the “[a]vailable water capacity is low to moderate.” Given the document provides such characterization it is apparent surface runoff will be very low. Noted in Figure 4 there are no surface markings on the eastern slope of the property where the land descends toward the main drainage of the Haegler Ranch defined drainage path that indicate any recent erosion. In fact the Soil Survey gives credence by stating “[s]urface runoff is slow, the hazard of erosion is moderate.”

For residential, light agriculture use such as are typical of hobby-farm activities, the Soil Survey warning that the “hazard of soil blowing is severe” is noteworthy. With the survey stating “[m]ost areas of this soil are used for range, homesites and wildlife habitat” it is an easy conclusion that over-grazing or initiated erosion could set in motion wind erosion. The survey

substantiates the above by concluding: “Soil blowing is a hazard if protective vegetation is removed. Special erosion control practices must be provided to minimize soil losses.” An assignment of capability subclass of VIe is made in the survey.

FLOOD PLAIN STATEMENT

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel No. 08041C0590 G with an effective date of December 7, 2018; encompassing the entirety of the proposed subdivision, Zone A clips the northwest corner of proposed Lot 1. This is shown in Figure 1, which is a focus on that part of the FIRM encompassing the proposed subdivision. The spatial extent of this zone is a triangular area with dimensions of 170-feet along the north boundary and 256-feet along the east boundary. The total area of zone A in proposed Lot 1 is 21,760 square feet or slightly less than 1/2-acre. No revisions are recorded for his FIRM.

State that this area will be a "No-build area" on the plat.

DRAINAGE CRITERIA

This drainage analysis has been prepared in accordance with the current City of Colorado Springs/El Paso County Drainage Criteria Manual. Calculations were performed to determine runoff quantities for the 5-year and 100-year frequency storms for developed conditions using the Rational Method as required for basins having areas less than 100 acres. No difference in off-site drainage was found for the pre- and post-development conditions under the assumption of compliance to the "EROSION CONTROL" section of this report.

Drainage calculations need to be included in appendix, for review.

FOUR STEP PROCESS

- Step 1 Employ Runoff Reduction Practices - Approximately an additional 0.5 acres of the proposed 19.3101-acre subdivision will be impermeable surface once the three proposed and yet-to-be developed lots are fully developed with homes and outbuildings. This additional 0.5 acres of impermeable surface will be distributed across the three undeveloped lots. Among those structures roof drains will likely only be placed on

Include Reference to ECM Appendix I.7.1.b.5 & include statement about WQ requirements for large lots.

the homes. Drains therefrom are to be directed away from the home and stabilized onto level and stabilized grade a minimum of 10-feet from the residence.

Step 2 Stabilize Drainage ways - Hay bales and silt fences placed prior to, and maintained during construction are anticipated to lead to stabilized drainage paths adjacent to impervious surfaces.

Step 3 Provide Water Quality Capture Volume - Water capture will not be required. **Include why.**

Step 4 Consider Need for Industrial and Commercial BMP's - This site is not being developed for industrial or commercial use and BMP's are not necessary.

EXISTING DRAINAGE CONDITIONS

Surficial markings do not indicate defined erosion. As explained with reference to the El Paso County Soil Survey in the section of this report titled "SOILS," the soil is sufficiently porous, runoff is unlikely. If a surface flow were to develop, the majority of the drainage would be to the east and into the main drainage path of the Haegler drainage basin. A lesser surface area would drain to the west and into the drainage parallel to Murr Road which drains north toward Jones where any flow in this road barrow ditch makes a right-turn to the east then downhill to the east channel of the Haegler Drainage channel.

Address offsite flows entering site. Any existing culverts, ditches, etc that need to be discussed and analyzed?

Any previous reports need to be adhered to?

PROPOSED DRAINAGE CONDITIONS

No alteration of the existing drainage conditions will result from the placement of residences on the three yet undeveloped lots. Each of those lots will have driveways entering from Murr Road with minimum 18-inch culverts. The residential structures and ancillary buildings during construction and until re-establishment of native grasses and any landscaping could lead to erosion without erosion fences and hay bales; these are required as part of the erosion control plan.

Include analysis of an 18" culvert to show it will accommodate worst flow scenario at driveways. Any outlet protection needed for culverts?

WATER QUALITY PROVISIONS AND MAINTENANCE

The principal form of water quality runoff enhancement is the use of erosion fences and hay bales to slow or stop water from construction areas developing sufficient volume and speed to result in erosion. The effect of these measures will be to slow runoff, promote infiltration, thus reducing peak volumes. As described above in the 'Soils' section of this document, the soil is very permeable.

EROSION CONTROL

Erosion control measures are to be implemented prior to grading or construction and shall be maintained during all subsequent phases of construction. Erosion control measures will consist of silt fencing those portions of the property being developed, tracking control measures at the access points to the site, installation of hay bales at grass swales and re-vegetation with appropriate plant species.

CONSTRUCTION COST OPINION

It is the opinion of the above signed engineer that silt fencing and hay bale placement and maintenance will not exceed \$800.00 for each of the three lots yet to be developed within this proposed subdivision.

DRAINAGE FEES

To be assessed and specified by the county.

SUMMARY

Development of the OHANA SUBDIVISION FILING NO. 1 (Lots 1, 2, 3, and 4) will not adversely affect the surrounding developments per this the combined preliminary and final drainage report with no negative impact on the existing developments on any side of this project. The proposed

drainage facilities will adequately convey, detain and route runoff from the to-be-developed structures within this proposed subdivision. The Haegler Drainage Basin will not be further burdened by the development and erosion to its banks will not occur with reasonable compliance to the drainage plan of this report.

REFERENCES

1. "El Paso County and City of Colorado Springs Drainage Criteria Manual".
2. "SCS Soils Map for El Paso County"
3. Flood Insurance Rate Map (FIRM), Federal Emergency Management Agency, Effective date March 17, 1097.

Include drainage maps & calculations.

Include SCS soils map & information.



Figure 1: Zoomed view of FIRM including proposed subdivision.

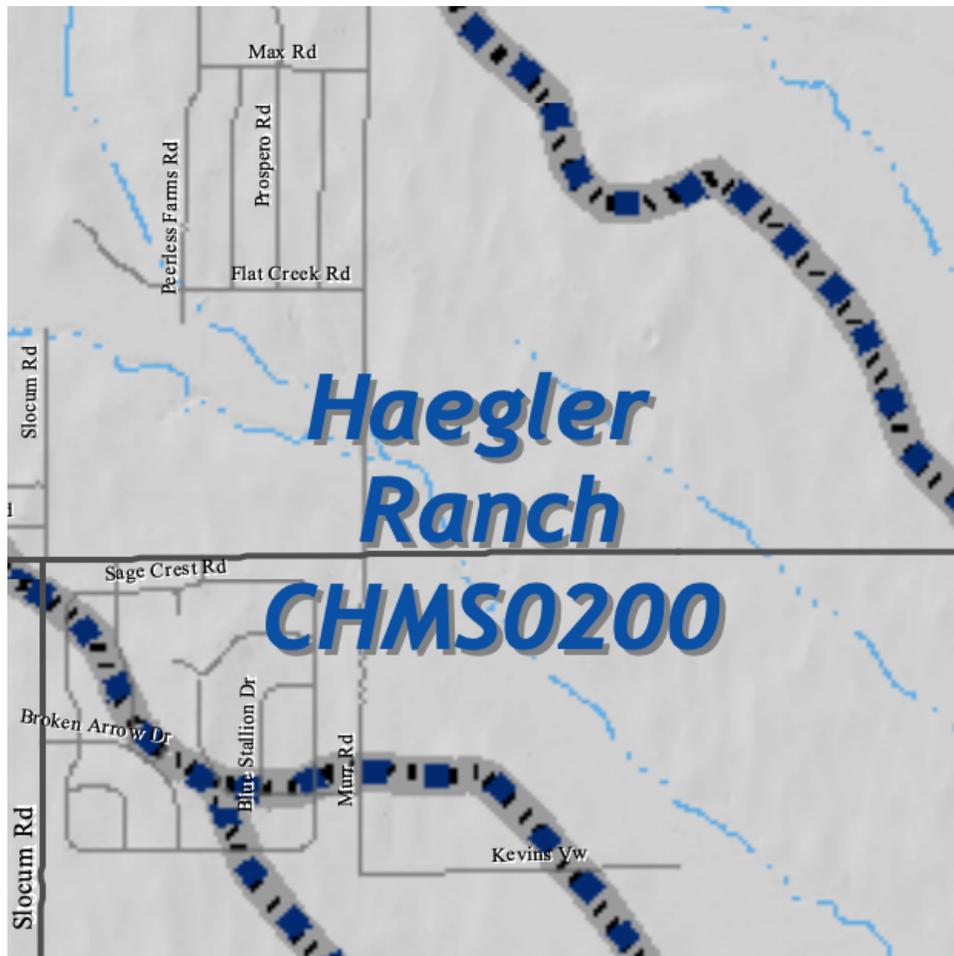


Figure 2: Context map of Haegler Basin including proposed subdivision.

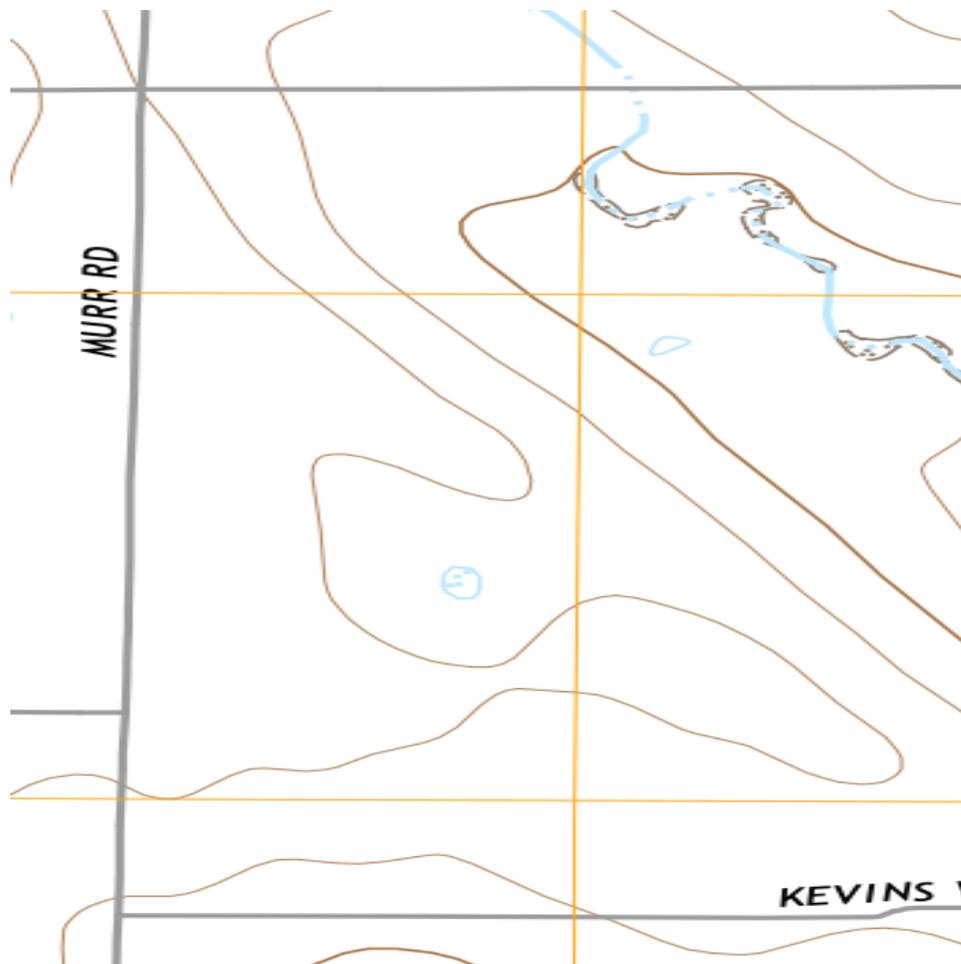


Figure 3: Context map from USGS Quad map.



Figure 4: View from east of proposed subdivision showing no erosion scars.