DRAINAGE REPORT – PRELIMINARY



Preliminary Drainage Report

Xcel – Pathways Segment 5 Transmission Line

El Paso County, Colorado

Submittal Date: July 15, 2024



Owner: Public Service Company of Colorado, a Colorado Company – Sascha Archie, PM

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FSS

By: Samuel Acosta, PE 5555 Tech Center Drive, Suite 310 Colorado Springs, Colorado 80919 (719) 272-8894 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 by the City/County for drainage reports and said report is in conformity with the 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 the report.

Samuel Acosta, PE Registered Professional Engineer State of Colorado No. 52470



EL PASO COUNTY ONLY:

Filed in accordance with Section 51.1 of the El Paso County Land Development Code, as amended.

County Engineer

Date

Conditions:

Purpose

The purpose of this report is to present the stormwater criteria for Xcel Pathways Segment 5 and document the drainage analysis and supporting calculations to meet the County's criteria.

General Information

The Colorado Power Pathway project (Pathway) is an investment proposed by Xcel Energy to improve the state's electric grid, increase electric reliability and enable future renewable energy development around the state. Pathway includes the installation of approximately 560 miles of new 345-kilovolt (kV) double-circuit transmission line as well as new and expanded substations. This Preliminary Drainage Report is part of a larger packet submittal regarding the build of 45 miles of new 345-kilovolt (kV) double-circuit transmission line for the Pathway Segment 5 El Paso County Transmission Line Build project (Project).

Location

The Project is located in El Paso County, Colorado and begins at proposed transmission line structure 328 (located 1.12 miles southwest of the intersection of Summit Street and Simla Highway) and runs south for 45 miles to proposed transmission line structure 64 (located 1.13 miles north of intersection of Prairie Hill Road and County Road 3608).

The project is located in the following townships and ranges: T11S R60W, T12S R60W, T13S R59W, T13S R60W, T14S R59W, T14S R60W, T15S R59W, T15S R60W, T16S R60W, T17S R60W, T17S R61W.

See Figure 1 below for the Vicinity Map.

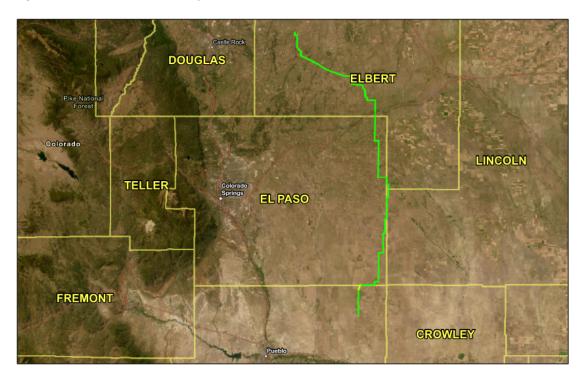


Figure 1: Vicinity Map

The average space between structures is 860 feet. The new line is comprised of a mix of monopole, tangent, and dead-end steel pole structures, with pole foundation diameters varying from 3 feet to 10 feet. The proposed structure locations are within the existing PSCo right-of-way.

Description of Property

The Project area through the County is approximately 782 acres with a utility easement width of 150 feet. The existing corridor generally consists of undeveloped and agricultural land uses with moderate to sparce levels of vegetation. Vegetation generally consists of grass land and areas of shrubbery near watercourses.

Topography along the project corridor consists of gently rolling terrain with intermittent areas of perennial floodplains and ephemeral drainageways.

The estimated change from vegetated area to imperviousness area due to the structure foundations is less than 0.5 acres over the span of 45 miles, roughly 171 square feet of new impervious surface per mile of line, a de minimis change.

Soils conditions along the project corridor vary but generally consist of hydraulic soil group Type A and Type B soils.

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.

Major drainageways along the project corridor include West Branch Creek, Steels Fork Creek, Little Horse Creek, Horse Creek, North Fork Horse Creek, and Mustang Creek. All creek and/or tributary crossings are located in Flood Zone A.

The following creek crossings are included in FEMA FIRM Panel # 08041C0900G: The project passes through an Unnamed Tributary of West Branch Creek, along County Road 1, north of the intersection of Gieck Road and County Road 1. The project passes through Steels Fork Creek along County Road 1, south of the intersection of State Highway 94 and County Road 1.

The following creek crossings are included in FEMA FIRM Panel # 08041C0675G: The project passes through Little Horse Creek Unnamed Tributary, along County Road 133 just south of the intersection of County Road 133 and County Road 12. The project passes through Little Horse Creek, at the intersection of Little Corona Road and North Rush Road. The project passes through Horse Creek along North Rush Road, south of the intersection of Cold Iron Road and North Rush Road, and north of the intersection at Judge Orr Road and North Rush Road. The project passes through North Fork Horse Creek, just south of the intersection of Funk Road and Simla Highway.

The following creek crossings are included in FEMA FIRM Panel # 08041C0450G: The project passes through an Unnamed Tributary of Mustang Creek, just north of the intersection of Hoot Owl Road and Simla Highway. The project passes through Mustang Creek just north of the intersection of Alta Vista Road and Simla Highway. The project passes through Mustang Creek along Harrisville Road, east of the intersection of Harrisville Road and Oil Well Road. The project passes through Mustang Creek along Oil Well Road, just north of the intersection of Harrisville Road and Oil Well Road.

Panels 08041C1275G, 08101C0175D, 08101C0200D, 08041C1300G, 08041C1100G do not contain any creek crossings related to the project.

There are no known irrigation ditches or underground irrigation systems that will be affected by this project.

Drainage Basins and Sub-Basins

Major Basin Descriptions.

No drainage basin studies were found within the El Paso County Drainage Basin Plans and Studies for the project area. Specific locations of the project creek crossings are discussed in detail in the "Floodplains" section of this report. FEMA maps supporting that discussion are attached in Appendix B.

Multiple portions of the project are within special flood hazard Zone A.

In proposed conditions, the drainage basin patterns will remain the same as pre-construction conditions. This project is anticipated to have minor localized grading impacts throughout with the installation of foundations for the overhead transmission line. The foundations will be placed at approximately 860 foot intervals along the line of installation.

Drainage Design Criteria

Development Criteria Reference.

The El Paso County Drainage Basin Plans were used to verify that no drainage basin studies were present in the area of the project. FEMA FIRM maps were used to verify creek crossings and flood hazard zones for the project.

Hydrologic Criteria.

Since the proposed improvements will only add an impervious area less than 0.5 acres over the span of 45 miles, existing condition capacity and runoff for the project area are presumed to stay the same. Calculations for existing conditions storage, discharge, and peak runoff were not verified.

Drainage Facility Design

General Concept.

The Project begins at proposed transmission line structure 328 (located 1.12 miles southwest of the intersection of Summit Street and Simla Highway) and runs south for 45 miles to proposed transmission line structure 64 (located 1.13 miles north of intersection of Prairie Hill Road and County Road 3608).

The average space between structures is 860 feet. The new line is comprised of a mix of monopole, tangent, and dead-end steel pole structures, with pole foundation diameters varying from 3 feet to 10 feet. The proposed structure locations are within the existing PSCo right-of-way.

The Project area through the County is approximately 782 acres with a utility easement width of 150 feet. The estimated change from vegetated area to imperviousness area due to the structure foundations is less than 0.5 acres over the span of 45 miles, roughly 171 square feet of new impervious surface per mile of line, a de minimis change.

Surface water flow from the project area will not change due to the minor localized grading impacts and structure installation. Given the line length and lack of drainage changes due to construction, a drainage plan figure has not been included with this memo.

Site disturbance would include minor grading and mowing (if needed) around the structures, grading for temporary access roads, installation of concrete foundations, and placement of conductor wire. The temporarily disturbed areas will be restored to existing vegetated conditions as nearly as practical once construction is complete. Impacts to existing grade due to permanent access are expected to be minimal and have a de minimis impact on drainage flow, direction, and flow concentration therefore, hydrologic and hydraulic calculations and tabulations have not been included in this memo.

Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) shows the project area located on Panel No. 08041C0450G in El Paso County, effective February 17, 2010. Panel No. 08041C0675G in El Paso County, effective March 17, 1997. Panel No. 08041C0900G in El Paso County, effective March 17, 1997. Panel No. 08041C1275G in El Paso County, effective March 17, 1997. Panel No. 08041C1275G in El Paso County, effective March 17, 1997. Panel No. 08041C1275G in El Paso County, effective March 17, 1997. Panel No. 08041C1275G in El Paso County, effective March 17, 1997. The project is also located in panels 08101C0175D, 08101C0200D, and 08041C1300G, however their area was not printed and therefor these panels are not included in Appendix B. The project area is located along West Branch Creek, Steels Fork Creek, Little Horse Creek, Horse Creek, North Fork Horse Creek, and Mustang Creek. All creek and/or tributary crossings are in Zone A, which is defined as having "No Base Flood Elevations Determined".

No increase to either the floodplain width or water surface elevation will result from the project because the proposed transmission line foundations will be located to avoid floodplains and floodways. This will cause no increase to the floodplain width or water surface elevation. This

certification is intended as proof of meeting the requirements set forth in the El Paso County's Drainage Criteria Manual.

The following documentation in accordance with standard Engineering practice was used to support our findings:

- a) The preliminary Xcel Pway Segment 5 structure location KMZ
- b) FEMA FIRM panels 08041C1275G, 08101C0175D, 08101C0200D, 08041C1300G, 08041C1100G, 08041C0900G, 08041C0675G, 08041C0450G. Panels 08101C0175D, 08101C0200D, and 08041C1300G area was not printed and therefor are not included in Appendix B.

Erosion Control

Erosion and sediment control plans will be developed based on the El Paso County Standards and provided after Concept Design. Erosion and sediment control will be provided for construction activity throughout the entirety of the project.

Water Quality

Proposed improvements include installing new transmission line foundations which range in 3 feet to 10 feet in diameter which are spaced approximately 860 feet apart. These proposed foundations will not alter the proposed runoff patterns and will add a trivial amount of additional impervious area per mile of transmission line.

The Project area through the County is approximately 782 acres with a utility easement width of 150 feet. The estimated change from vegetated area to imperviousness area due to the structure foundations is less than 0.5 acres over the span of 45 miles, roughly 171 square feet of new impervious surface per mile of line, a de minimis change.

Due to the nature of the proposed project, there was limited capacity in which this project could employ runoff reduction techniques and was not considered in the design of the proposed underground transmission line.

Per El Paso County's Criteria manual sites may be required to provide permanent water quality BMPs, if significant water quality impacts are anticipated as a result of development or redevelopment of the site, as determined by Engineering.

It is our opinion that this project does not result in significant or moderate water quality impacts and should be exempt from having to provide permanent water quality BMPs.

Maintenance

The Project area through the County is approximately 782 acres with a utility easement width of 150 feet.

The temporarily disturbed areas will be restored to existing vegetated conditions as nearly as practical once construction is complete.

Permanent access will be provided through existing easements. Maintenace around the proposed foundations are expected to be minimal and required on an as-needed basis.

Conclusion

The design of Xcel's Pathways Segment 5 Transmission Line project is in conformance with El Paso County's Drainage Criteria Manual. The design will adequately protect public health, safety, and general welfare and have no adverse impacts on public rights-of-way or offsite properties.

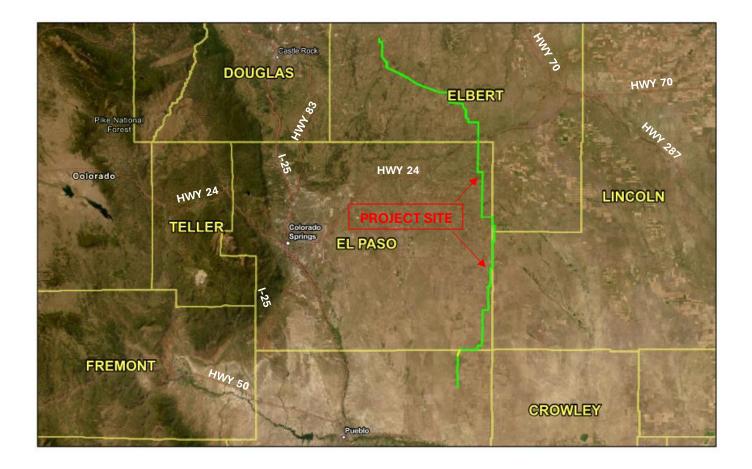
References

- El Paso County Drainage Criteria Manual, Rev October 2018.
- FEMA Map Service Center (<u>https://msc.fema.gov/portal/home</u>)

Appendix

- A. Vicinity Map
- B. FEMA Firm Panels
- C. Floodplain Statement of No-Impact
- D. Design Drawings
- E. Drainage Letter of Conformance Checklist

Appendix A – Vicinity Map



Appendix B – FEMA FIRM Maps

NOTES TO USERS This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community may prepository should be consulted								110000 FT 3415000 FT	3420000 FT	- 104" 0" 1 0425000 FT	1.007	LEGEND SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
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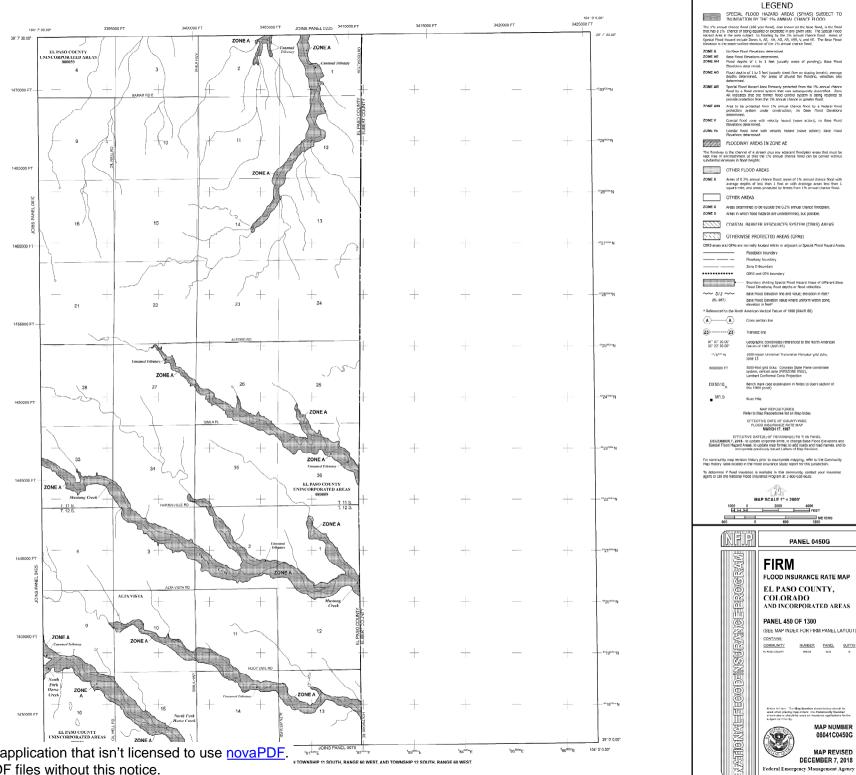




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Federal Emergency Management Agency

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NGS Information Services NOAA N/NGS12 National Geodetic Survey SMC-3 #9202 1315 East-Wost Highway Silver Spring, MD 20910-3282

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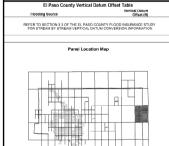
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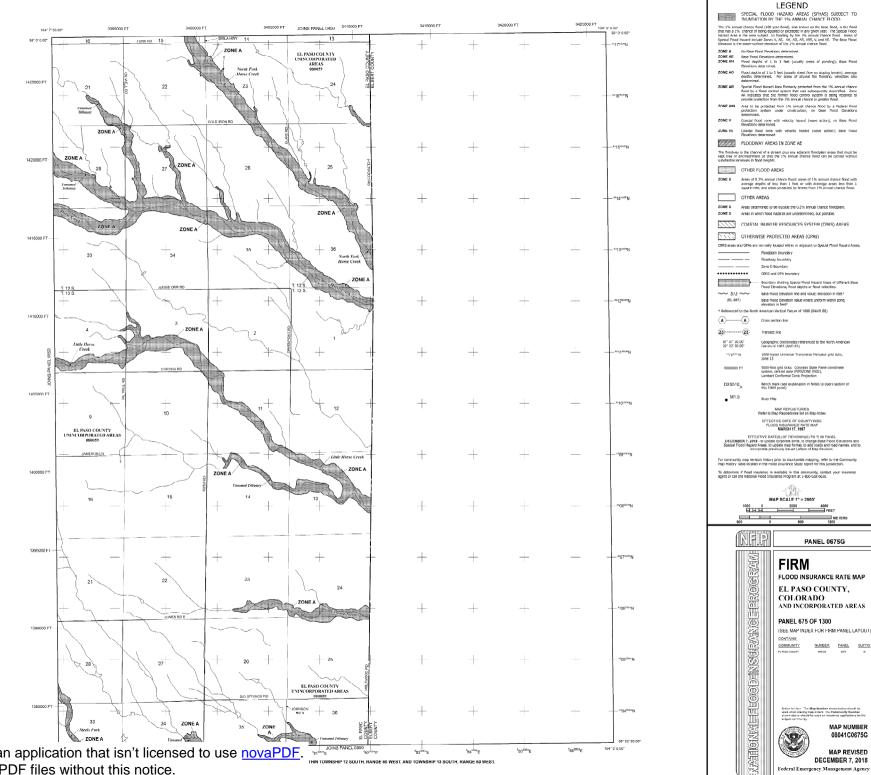
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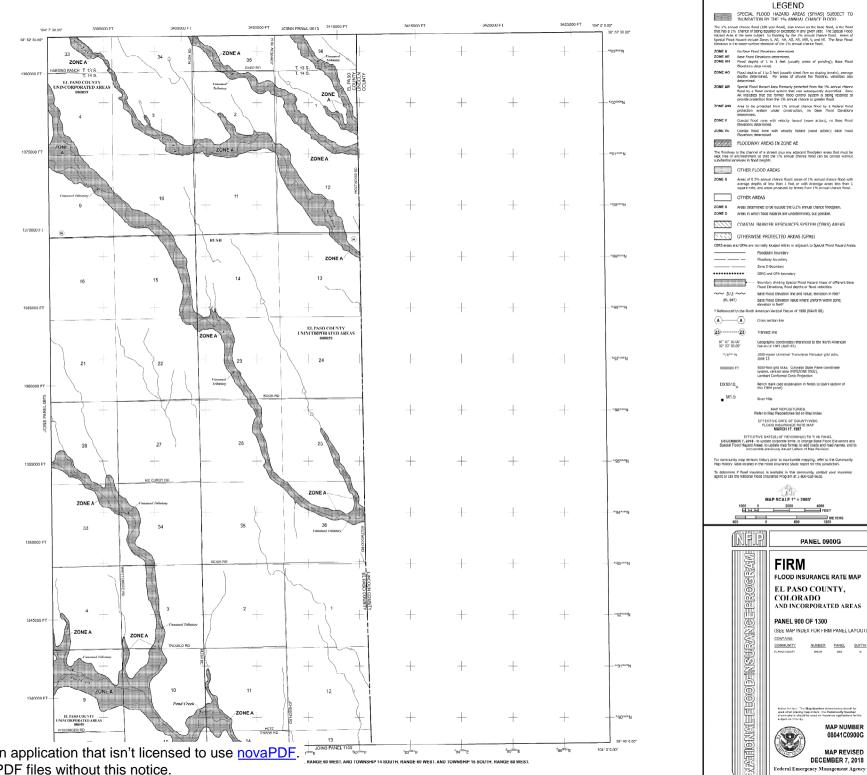
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MAP NUMBER

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MAP REVISED

Federal Emergency Management Agency

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
55MC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

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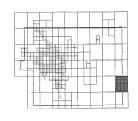
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	O SECTION 3.3 OF THE EL PAGO COUNTY FLOOD INSURANCE STUDY
FOR 5	TREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION





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Vertical Datum Offset (ft)
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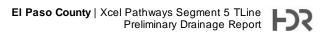


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Appendix C – Floodplain Statement of No-Impact

July 12, 2024

Dear Keith Curtis Floodplain Administrator Pikes Peak Regional Building Department 2880 International Cir, Colorado Springs, CO 80910

Dear Mr. Curtis,

I certify that I am a duly qualified registered Professional Engineer or Architect licensed in the state of Colorado.

I preliminarily certify that the proposed impacts from Xcel's PWAY Segment 5 Transmission Line Project as conceptually detailed on the construction drawings will result in zero rise in the FEMA designated 100-year flood heights, and no increase in the 100-year discharge and no increase in the 100-year floodplain width, at published and unpublished cross sections of the current FEMA floodplains and waterways as shown on following FEMA FIRM Panels.

FEMA FIRM panels 08041C1275G, 08101C0175D, 08101C0200D, 08041C1300G, 08041C1100G, 08041C0900G, 08041C0675G, 08041C0450G. Please note that panels 08101C0175D, 08101C0200D, and 08041C1300G are not printed.

The following creek crossings are included in FEMA FIRM Panel # 08041C0900G:

The project passes through an Unnamed Tributary of West Branch Creek, along County Road 1, north of the intersection of Gieck Road and County Road 1. The project passes through Steels Fork Creek along County Road 1, south of the intersection of State Highway 94 and County Road 1.

The following creek crossings are included in FEMA FIRM Panel # 08041C0675G:

The project passes through Little Horse Creek Unnamed Tributary, along County Road 133 just south of the intersection of County Road 133 and County Road 12. The project passes through Little Horse Creek, at the intersection of Little Corona Road and North Rush Road. The project passes through Horse Creek along North Rush Road, south of the intersection of Cold Iron Road and North Rush Road, and north of the intersection at Judge Orr Road and North Rush Road. The project passes through North Fork Horse Creek, just south of the intersection of Funk Road and Simla Highway.

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The following creek crossings are included in FEMA FIRM Panel # 08041C0450G:

The project passes through an Unnamed Tributary of Mustang Creek, just north of the intersection of Hoot Owl Road and Simla Highway. The project passes through Mustang Creek just north of the intersection of Alta Vista Road and Simla Highway. The project passes through Mustang Creek along Harrisville Road, east of the intersection of Harrisville Road and Oil Well Road. The project passes through Mustang Creek along Oil Well Road, just north of the intersection of Harrisville Road and Oil Well Road, and Oil Well Road.

Panels 08041C1275G, 08101C0175D, 08101C0200D, 08041C1300G, 08041C1100G do not contain any creek crossings related to the project.

This certification is intended as proof of meeting the requirements set forth in the Pikes Peak Regional Building Code RBC313.20.1. This preliminary certification is based on the conceptual transmission foundation layout and foundation sizing. This preliminary certification will be validated and resubmitted once the transmission line structure locations are finalized and floodplain modeling results are completed.

I offer the following documentation in accordance with standard Engineering practice to support my findings:

- a) PWAY Segment 5 Preliminary Layout KMZ
- b) PWAY Segment 5 Preliminary Drainage Report
- c) FEMA FIRM Panels

Samuel D. Acosta, P.E. CFM Registered Professional Engineer State of Colorado No. 52470

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Appendix D – Design Drawings

TO BE INCLUDED WITH THE PRELIMAINRY DESIGN SUBMITTAL

Appendix E - Drainage Letter of Conformance Checklist



2880 International Circle, Suite 110 Colorado Springs, CO 80910 Phone 719-520-6300 Fax 719-520-6695 www.elpasoco.com

EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

PRELIMINARY DRAINAGE REPORT (PDR) CHECKLIST

	Revised: January 2022		
Preli	minary Drainage Report		
	The purpose of the Preliminary Drainage Report is to identify specific solutions to problems onsite and offsite resulting		
	development, including issues existing prior to development. The PDR shall generally conform to the following outline	format and	major
	headings, and contain the applicable information listed.		
		Applicant	PCD
	Please confirm each item below has been included by placing a check mark in the "Applicant" column. See	\checkmark	Office use
	right for an example. The "PCD" column is for office use only.	v	only
	Report Contents		
1	Table of contents, pages numbered		
2	Existing/Historic and Developed Conditions Plans at the end of the report		
	General Location		
1	City and County, and local streets within and adjacent to the subdivision.		
2	Township, Range, section, 1/4 section.		
3	Major drainage ways and existing facilities.		
4	Names of surrounding platted developments.		
	Description of Property	•	
1	Area in acres		
2	Ground cover, (type of trees, shrubs, vegetation)		
3	General topography		
4	General soil conditions		
5	Major drainageways		
6	Irrigation facilities		
7	Utilities and other encumbrances		
	Major Basin Descriptions		
1	Reference should be made to major drainageway planning studies; Such as Drainage Basin Planning Studies; Flood		
· ·	Hazard delineation reports, and flood insurance studies or maps if available.		
2	A floodplain statement shall be provided indicating whether any portion of the development is in a designated		
	floodplain as delineated on the current FEMA mapping.		
3	Major basin drainage characteristics.		
4	Identification of all nearby irrigation facilities and other obstructions which could influence or be influenced by local		
	drainage.		
4	Sub-Basin Descriptions		
1	Discussion of historic drainage patterns of the property in question		
2	Discussion of offsite drainage flow patterns and their impact on the development		



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EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT

PRELIMINARY DRAINAGE REPORT (PDR) CHECKLIST

	Revised: January 2022	
	Drainage Design Criteria	
1	Reference all criteria, master plans, and technical information used for report preparation and design; any deviation	
	from such material must be discussed and justified.	
	Discussion of previous drainage studies (i.e. PDR, drainage basin planning studies, master plans, flood insurance	
2	studies) for the site in question that influence or are influenced by the drainage design and how the studies affect	
	drainage design for the site	
	Four-Step Process	
1	Runoff reduction proposed.	
2	Stabilization of drainage ways proposed/discussed.	
3	Proposed Stormwater Quality Capture Volume (WQCV) proposed.	
4	Identify Best Management Practices (BMP's) to be used to control industrial and commercial pollutants.	
	Hydrologic Criteria	
1	Identify design rainfall.	
2	Identify runoff calculation method.	
3	Identify design storm recurrence intervals	
4	Identify detention discharge and storage calculation method.	
5	Note ECM Appendix I Full Spectrum Detention (FSD) requirement.	
-	Drainage Facility Design - General Concept	
1	Discussion of compliance with offsite runoff considerations.	
2	Discussion of anticipated and proposed drainage patterns.	
3	Discussion of the content of tables, charts, figures, plates or drawings presented in the report.	
	Drainage Facility Design - Specific Details	
1	Presentation of existing and proposed hydrologic conditions including approximate flow rates entering and exiting the	
	subdivision with all necessary calculations.	
2	Presentation of approach to accommodate drainage impacts on existing or proposed improvements and facilities.	
3	Presentation of proposed facilities with respect to alignment, material and structure type.	
4	Discussion of drainage impact of site constraints such as streets, utilities, existing and proposed structures.	l
5	Environmental features and issues shall be presented if applicable.	
6	Discussion of maintenance access and aspects of the preliminary design.	
7	Discussion and analysis of existing and proposed downstream drainage facilities and their ability to convey developed runoff from the proposed development.	
	Drawing Contents	
	General Location Map: A map shall be provided in sufficient detail to identify drainage flows entering and leaving the	
1	development and general drainage patterns. The map should be at a scale of 1"=50' to 1"=2000'. The map shall	
	identify any major construction (i.e. development, irrigation ditches, existing detention facilities, culverts, storm sewers,	
	etc.) that shall influence or be influenced by the subdivision.	
_	Drainage Plan: Map (s) of the proposed development at a scale of 1"=20' to 1"=200' shall be included to identify	·
2	existing and proposed conditions on or adjacent to the site in question.	
	The drainage plan shall delineate all sub-basins and proposed initial and major facilities as well as provide a summary	
3	of all initial and major flow rates at design points. All floodplains affecting the site shall be shown.	