Appendix B

2018 Wetland Assessment and Delineation Report
&
2019 USACE Approved Jurisdictional Determination

Matrix ENVIRONMENTAL

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Date: 28 November 2018

To: Tony Martinez, U.S. Army Corps of Engineers

From: Tierney Walsh, Matrix Environmental Services

Subject: Wetland Assessment and Delineation Report – Rev. 1, Proposed True North Commons Enhanced Use Lease Area, United States Air Force Academy, Colorado Springs, Colorado

Mr. Martinez,

On behalf of the United States Air Force Academy (USAFA), the Air Force Civil Engineering Center (AFCEC), and Blue and Silver Development Group, LLC (Blue and Silver), Matrix Environmental Services, LLC (MES) is pleased to submit this report summarizing the assessment and delineation of wetlands within the 57-acre boundary of the proposed True North Commons Enhanced Use Lease Area (the Site), which is currently undeveloped open space at the USAFA in Colorado Springs, Colorado, located in El Paso County.

The scope of work for the wetland assessment and delineation included the entire 57-acres of the proposed Enhanced Use Lease (EUL) area; however, the proposed commercial development at the Site is limited to the southern portion of the EUL area, comprising 38 acres to the north and south of North Gate Boulevard and east of the USAFA North Gate security checkpoint. The wetland assessment and delineation area also included land within 20 feet to the north and south of North Gate Boulevard beginning at the eastern boundary of the EUL area and extending to the eastern edge of the USAFA property along North Gate Boulevard.

Similar plant communities were identified throughout the EUL area; however, due to the expanse of the Site and the distance between similar communities, the observed plant communities were divided into 25 distinct communities with one data sample point collected in each community.

The assessment and delineation field work were conducted from September 26, 2018 through October 19, 2018, while the assessment and delineation field work along North Gate Boulevard to the east of the EUL boundary was completed on November 20, 2018. Climatic and hydrologic conditions at the Site were typical for the time of year; however, the wet season in Colorado Springs is between April and September, peaking in July and August. Therefore, saturation to the surface was not required to satisfy hydrologic requirements because the field assessment was completed 6-13 weeks after the peak of the wet season.

Community 1 is approximately 0.089-acres and is the northernmost community delineated at the Site. The vegetation is dominated by two species of cattails including broadleaf (*Typha latifolia*) and hybrid (*Typha X glauca*) with minor amounts of narrowleaf cattail (*Typha angustifolia*), Rocky Mountain willowherb (*Epilobium saximontanum*), Cutleaf Water Horehound (*Lycopus americanus*), Canada thistle (*Cirsium arvense*), Fuller's Teasel (*Dipsacus fullonum*), and Great Mullein (*Verbascum thapsus*). This community encompasses the foot slope and toe slope of an adjacent upland and appears undisturbed. The community contained visible surface water, a high water table, and saturation to the surface. Additionally, a hydrogen sulfide odor was detectable within 12 inches of the soil surface. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 2 is approximately 0.288-acres located immediately south of Community 1. The vegetation is dominated by Baltic Rush (*Juncus balticus*) and Leafy Tussock Sedge (*Carex aquatilis*) but also includes Fuller's Teasel (*Dipsacus fullonum*), Rocky Mountain willowherb (*Epilobium saximontanum*), Broadleaf cattail (*Typha latifolia*), Tall Goldenrod (*Solidago altissima*), and Canada thistle (*Cirsium arvense*) with minor amounts of Butter and Eggs Toadflax (*Linaria vulgaris*), Yucca (*Yucca angustissima*), and Great Mullein (*Verbascum thapsus*) primarily found on the edges of the community. The community includes the middle and lower portions of west-facing and south-facing slopes as well as a valley and the lower portion of an adjacent north-facing slope. The community had visible surface water in approximately 20% of the area as well as a high water table and near-surface saturation. A hydrogen sulfide odor was also detectable within 12 inches of the surface soil. A gleyed layer is present at 12 inches and underlies dark soils extending to 12 inches with values of 2.5 or less and chroma of 1 or less, which satisfy the criteria of a thick dark surface. Additionally, prominent redox concentrations are present at sufficient quantities (15-20%) from 0-4 inches and 6-12 inches, which satisfies the criteria for redox dark surface. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 3 includes approximately 0.382-acres, encompasses the middle and lower portions of west and south-facing hillslopes, and is very similar to Community 2. The vegetation is dominated by Baltic Rush (*Juncus balticus*) but also includes Broadleaf cattail (*Typha latifolia*), hybrid cattail (*Typha X glauca*), Rocky Mountain willowherb (*Epilobium saximontanum*), Late Goldenrod (*Solidago gigantea*), and minor amounts of Fuller's Teasel (*Dipsacus fullonum*). The community had visible surface water in approximately 30% of the area as well as a high water table, near-surface saturation, iron deposits on the ground surface, oxidized rhizospheres along living roots, and a hydrogen sulfide odor within 12 inches of the surface soil. The top two inches of soil met the criteria of sandy mucky mineral, while matrix depletions from 4-6 inches and prominent redox concentrations from 2-6 inches satisfied the criteria for stripped matrix and sandy redox, respectively. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 4 is approximately 0.326-acres and includes a portion of an elevated meadow south of Community 3. The vegetation is dominated by Baltic Rush (*Juncus balticus*) and Leafy Tussock Sedge (*Carex aquatilis*). Saturation was observed at 34 inches below the ground surface; however, the water table was not encountered despite the soil pit being extended to 44 inches. This community is believed to be seasonally inundated, and due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology is naturally problematic for this community. Nevertheless, oxidized rhizospheres along living roots satisfied the identification of wetland hydrology, while the area's soil met the criteria for redox dark surface with 5% prominent redox concentrations from 3.5-14 inches. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 1b is approximately 0.568-acres and includes the west-facing hillslope to the east, and upslope, of Community 4. Community 1b has species dominance like Community 1 and Community 3 being dominated by two species of cattails including broadleaf (*Typha latifolia*) and hybrid (*Typha X glauca*) as well as Baltic Rush (*Juncus balticus*) and Leafy Tussock Sedge (*Carex aquatilis*). Surface water was visible across 30% of the area, and the water table was 4 inches below the ground surface with saturation at 2 inches below the surface. A sandy gleyed matrix was present within six inches of the soil surface in portions of the site, and prominent redox concentrations were also observed. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 5 includes the hillslope and terrace between Communities 3, 4, and 1b. Community 5 is dominated by grasses including Smooth Brome (*Bromus inermis*) and Blue Grama (*Bouteloua gracilis*) as well as a shrub, Western Snowberry (*Symphoricarpos occidentalis*). The area also includes Canada Thistle (*Cirsium arvense*), Prairie Sagewort (*Artemisia frigida*), Butter and Eggs Toadflax (*Linaria vulgaris*), Baltic Rush (*Juncus balticus*), and Big Bluestem (*Andropogon gerardii*); minor amounts of Yucca (*Yucca angustissima*), Yellow Rabbitbrush (*Chrysothamnus viscidiflorus*), and Great Mullein (*Verbascum thapsus*); and one Peachleaf Willow tree (*Salix amygdaloides*). No hydric soil indicators were observed in the area; however, the soil pit could not be extended beyond 20 inches due to a hard layer at depth. Saturation and a water table were not observed in the area: the sandy soil was dry to a depth of 20 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology is naturally problematic for this community; however, the lack of hydric soil indicators and hydrophytic vegetation indicates that wet season hydrology in Community 5 does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my professional opinion, this community does not meet the criteria of a wetland based on the lack of dominance of hydrophytic vegetation, a negative prevalence index, lack of hydric soils, and a lack of hydrology.

Community 6 includes the summit and shoulder of a ridge adjacent and west of a small creek (Community 8). Community 6 is dominated by Ponderosa Pine trees (*Pinus ponderosa*) as well as shrubs and herbs including Narrowleaf Willow (*Salix exigua*), Western Snowberry

(*Symphoricarpos occidentalis*), Smooth Brome (*Bromus inermis*), Blue Grama (*Bouteloua gracilis*), and Nodding Wild Rye (*Elymus canadensis*). The area also includes Butter and Eggs Toadflax (*Linaria vulgaris*) and minor amounts of Gambel Oak (*Quercus gambelii*), Prairie Sagewort (*Artemisia frigida*), Great Mullein (*Verbascum thapsus*), and Prickly Pear cactus (*Opuntia spp*). No hydric soil indicators were observed. Saturation and a water table were not observed in the area: the sandy soil was dry to a depth of 25 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology could be naturally problematic for this community; however, the lack of hydric soil indicators and hydrophytic vegetation indicates that wet season hydrology in Community 6 does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my professional opinion, this community does not meet the criteria of a wetland based on the lack of dominance of hydrophytic vegetation, a negative prevalence index, lack of hydric soils, and a lack of hydrology.

Community 7 includes the toe slope meadow adjacent and west of a ridge (Community 7) and small creek (Community 8). Community 7 is dominated by Baltic Rush (*Juncus balticus*) as well as shrubs and herbs including Western Snowberry (*Symphoricarpos occidentalis*), Narrowleaf Willow (*Salix exigua*), and Butter and Eggs Toadflax (*Linaria vulgaris*). The area also includes Gambel Oak shrubs (*Quercus gambelii*), Fuller's Teasel (*Dipsacus fullonum*), two species of goldenrod (*Solidago altissima* and *Solidago wrightii*), and Canada thistle (*Cirsium arvense*). No hydric soil indicators were observed. Saturation and the water table were encountered at a depth of 23 inches. While a dry season water table of 24 inches is acceptable for a clay or loam soil, it is not acceptable for sands; therefore, no hydrology indicators were satisfied. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology could be naturally problematic for this community; however, the lack of hydric soil indicators and a negative prevalence index indicates that wet season hydrology in Community 7 does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my professional opinion, this community does not meet the criteria of a wetland based on a negative prevalence index, lack of hydric soils, and a lack of hydrology.

Community 8 is approximately 0.464-acres includes a small stream valley fed by upland drainage. Community 8 is dominated by Peachleaf Willow trees (*Salix amygdaloides*) as well as shrubs and herbs including Narrowleaf Willow (*Salix exigua*), Bristly Black Gooseberry (*Ribes lacustre*), Tall Goldenrod (*Solidago altissima*), Common Duckweed (*Lemna minor*), and Rocky Mountain willowherb (*Epilobium saximontanum*). A stripped matrix was observed from 3-12 inches in portions of the stream valley, while a hydrogen sulfide odor was detected in other locations. Surface water was visible in portions of the stream valley, while saturation and a water table were observed at 8 inches. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 8B is a subset of Community 8 and includes the natural sand levee within the middle segment of the stream valley. Community 8B has similar vegetation as Community 8 but contains

more goldenrod then the upper and lower segments of the stream valley. Community 8B is dominated by Peachleaf Willow trees (*Salix amygdaloides*) as well as shrubs and herbs including Narrowleaf Willow (*Salix exigua*), Whitestem Gooseberry (*Ribes inerme*), Golden Currant (*Ribes aureum*), Tall Goldenrod (*Solidago altissima*), and Rocky Mountain Goldenrod (*Solidago multiradiata*). No hydric soil indicators were observed within the natural sand levee of the stream valley. Saturation was observed at 16 inches while a water table was observed at a depth of 20 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology could be naturally problematic for this community; however, the lack of hydric soil indicators suggests that wet season hydrology within the sand levee of Community 8B does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my professional opinion, this community does not meet the criteria of a wetland based on the lack of hydric soils. Nevertheless, due to the narrowness of the stream valley and the unlikelihood of the area being disturbed during the proposed EUL development, these potential "non-wetland" riparian areas were included in the wetland boundary.

Community 9 is approximately 0.008-acres and includes a depression in the stream valley at the toe of an adjacent ridge and elevated meadow forming Community 6 and 7, respectively. Community 9 is dominated by shrubs and herbs including Bristly Black Gooseberry (*Ribes lacustre*), Western Snowberry (*Symphoricarpos occidentalis*), Rocky Mountain willowherb (*Epilobium saximontanum*), and American Wild Mint (*Mentha arvensis*). The community had visible surface water in approximately 30% of the area as well as a water table at 8 inches. Additionally, saturation was present at six inches, and a hydrogen sulfide odor was detected within 12 inches of the surface soil. Finally, the top six inches of soil met the criteria of sandy mucky mineral. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 10 includes the edges of the stream valley, situated at the base of the adjacent hill. Community 10 is dominated by Ponderosa Pine trees (*Pinus ponderosa*) as well as shrubs and herbs including Western Snowberry (*Symphoricarpos occidentalis*), Choke Cherry (*Prunus virginiana*), Smooth Brome (*Bromus inermis*), and Canada Thistle (*Cirsium arvense*). No hydric soil indicators were observed. Saturation and a water table were not encountered in the soil pit, which was extended to a depth of 24 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology could be naturally problematic for this community; however, the lack of hydric soil indicators and hydrophytic vegetation indicates that wet season hydrology in Community 10 does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my professional opinion, this community does not meet the criteria of a wetland based on the lack of dominance of hydrophytic vegetation, a negative prevalence index, lack of hydric soils, and a lack of hydrology.

Community 11 is approximately 0.0091-acres and includes the toe slope of an upland ridge, which drains into the northern edge of Community 7 and subsequently into Community 9. Community

11 is dominated by Ponderosa Pine trees (*Pinus ponderosa*) as well as shrubs and herbs including Narrowleaf Willow (*Salix exigua*), Western Snowberry (*Symphoricarpos occidentalis*), Tall Goldenrod (*Solidago altissima),* and Rocky Mountain willowherb (*Epilobium saximontanum*). Mucky modified sandy soil was observed from 0-2.5 inches and depletions satisfying the criteria of a stripped matrix were observed from 2.5-6.5 inches. Saturation was present at 10 inches, while the water table was encountered at 12 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season and the presence of hydric soil indicators, it is expected that the water table rises to saturate the surface during the wet season for a sufficient frequency and duration to promote a prevalence of vegetation adapted to saturated soil conditions. Additionally, while the soils in Community 11 were sand, a dry season water table of 12 inches is an acceptable secondary hydrology indicator for sands. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 12 is approximately 0.013-acres and includes a depression within the toe slope of an adjacent hill that terminates at North Gate Boulevard. The vegetation is dominated by two species of cattails including narrowleaf (*Typha angustifolia*) and hybrid (*Typha X glauca*) with minor amounts of Rocky Mountain willowherb (*Epilobium saximontanum*), Baltic Rush (*Juncus balticus*), and Colorado Rush (*Juncus confusus*). 2% prominent redox concentrations along pore linings from 2-6 inches satisfied the criteria for Sandy Redox. Saturation was observed at 4 inches, and the water table was encountered at 10.5 inches. Saturation at 4 inches and oxidized rhizospheres along living roots from 2-6 inches satisfied the identification of wetland hydrology. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 13 includes the toe slope of an adjacent hill that terminates at North Gate Boulevard, north and east of Community 12. Community 13 is dominated by a Peachleaf Willow tree (*Salix amygdaloides*) as well as shrubs and herbs including Narrowleaf Willow (*Salix exigua*), Russian Olive (*Elaeagnus angustifolia*), Baltic Rush (*Juncus balticus*), and Colorado Rush (*Juncus confusus*). No hydric soil indicators were observed in the area; however, the soil pit could not be extended beyond 12 inches due to a hard layer at depth. Saturation and a water table were not observed in the area: the sandy soil was dry to a depth of 12 inches. Oxidized rhizospheres were observed on living roots from 2-3 inches; however, the observed soil did not meet any hydric soil indicator (the thickness of the redox concentrations was less than the four inches required for Sandy Redox). It is not advisable to use the C3 hydrology indicator (oxidized rhizospheres along living roots) in the absence of a hydric soil indicator because it can lead to false positives as oxidized pore linings can persist for years following removal of anoxic conditions. Therefore, while wetland hydrology is indicated as present because a primary hydrology indicator was observed; the hydrology indicator observed in Community 13 is not a strong indicator of wetland hydrology. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology is naturally problematic for this community; however, the lack of hydric soil indicates that wet season hydrology in Community 13 does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my

professional opinion, this community does not meet the criteria of a wetland based on a lack of hydric soils and a lack of strong hydrology indicators; however, a follow up visit during the wet season (May-August) would give a more accurate determination.

Community 14 includes a portion of a drainage swale fed by drainage ditches along North Gate Boulevard. Community 14 is dominated by Peachleaf Willow trees (*Salix amygdaloides*) as well as shrubs and herbs including Narrowleaf Willow (*Salix exigua*) and broadleaf cattail (*Typha latifolia*). Despite a predominance of hydrophytic vegetation, no hydric soil or wetland hydrology indicators were observed within the area. Neither saturation nor a water table were encountered to a depth of 30 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology could be naturally problematic for this community; however, the lack of hydric soil indicators suggests that wet season hydrology within Community 14 does not inundate or saturate soils for a sufficient frequency or duration to promote saturated soil conditions. In my professional opinion, this community does not meet the criteria of a wetland based on the lack of hydric soils and lack of hydrology.

Community 15 is approximately 0.14-acres and includes the southern portion of a drainage swale sourced with water from drainage ditches along North Gate Boulevard. Community 15 is dominated by shrubs and herbs including Golden Currant (*Ribes aureum*), Watercress (*Nasturtium officinale*), and Late Goldenrod (*Solidago gigantea*) but also includes Rocky Mountain willowherb (*Epilobium saximontanum*), Common Duckweed (*Lemna minor*), Wand Panic Grass (*Panicum virgatum*), and Canadian Thistle (*Cirsium arvense*). The community had visible surface water in approximately 80% of the area as well as a high water table (2 inches depth) and surface saturation. A hydrogen sulfide odor was also detectable within 12 inches of the surface soil. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 16 is approximately 0.29-acres and includes the central portion of a drainage swale sourced with water from drainage ditches along North Gate Boulevard. Community 16 is dominated by Peachleaf Willow trees (*Salix amygdaloides*) as well as shrubs and herbs including Narrowleaf Willow (*Salix exigua*), Russian Olive (*Elaeagnus angustifolia*), hybrid cattail (*Typha X glauca*), and Common Duckweed (*Lemna minor*) but also includes Watercress (*Nasturtium officinale*), broadleaf cattail (*Typha latifolia*), and Late Goldenrod (*Solidago gigantea*). The community had visible surface water in approximately 60% of the area as well as a high water table (2 inches depth) and surface saturation. A hydrogen sulfide odor was also detectable within 12 inches of the surface soil. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 17 is approximately 0.021-acres and includes the northern portion of a drainage swale sourced with water from drainage ditches along North Gate Boulevard, north of Community 14. Community 17 is dominated by Peachleaf Willow trees (*Salix amygdaloides*) as well as shrubs and herbs including Narrowleaf Willow (*Salix exigua*), Peachleaf Willow shrubs

(*Salix amygdaloides*), Bristly Black Gooseberry (*Ribes lacustre*), hybrid cattail (*Typha X glauca*), and broadleaf cattail (*Typha latifolia*). 3% prominent redox concentrations along pore linings from 2-9 inches satisfied the criteria for Redox Dark Surface. The water table and saturation were encountered at a depth of 15 inches; however, oxidized rhizospheres along living roots from 2-9 inches satisfied the identification of wetland hydrology. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 18 is approximately 0.009-acres and includes a drainage swale immediately south of North Gate Boulevard, upgradient of Community 17. Community 18 is dominated by shrubs and herbs including Narrowleaf Willow (*Salix exigua*), Whitestem Gooseberry (*Ribes inerme*), hybrid cattail (*Typha X glauca*), and Rocky Mountain willowherb (*Epilobium saximontanum*). A gleyed matrix within six inches of the soil surface satisfied the criteria for Sandy Gleyed Matrix. Saturation was encountered at a depth of 5 inches and surface water was visible in approximately 15% of the area. Oxidized rhizospheres along living roots from 2-9 inches also satisfied the identification of wetland hydrology. The water table was not encountered at a depth of 9 inches; however, the soil pit could not be extended further due to the presence of boulders lining the drainage swale. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 19 is approximately 0.102-acres and includes portions of toe slopes that transition into drainage ditches north and south of North Gate Boulevard. Community 19 is dominated by herbs including Wand Panic Grass (*Panicum virgatum*) and Baltic Rush (*Juncus balticus*). Saturation was observed at 9 inches, and the water table was encountered at 11 inches. A dry season water table of 11 inches is an acceptable secondary hydrology indicator; however, a hydrogen sulfide odor was detectable within 12 inches of the surface, which satisfies criteria for hydric soils and wetland hydrology. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 20 includes a toe slope of an upland hill that transitions into a drainage ditch immediately north of North Gate Boulevard, west of Community 19. Community 20 is dominated by rushes including Baltic Rush (*Juncus balticus*) and Swordleaf Rush (*Juncus ensifolius*). Saturation was observed at 22 inches, while the water table was encountered at 23 inches. Oxidized rhizospheres along living roots from 2-4 inches and 6-14 inches satisfied the identification of wetland hydrology; however, no hydric soil indicators were observed in this area. In my professional opinion, this community does not meet the criteria of a wetland based on the lack of hydric soils.

Community 21 is approximately 0.043-acres and includes a toe slope of an upland hill that transitions into a drainage ditch immediately north of North Gate Boulevard, west of Community 20. Community 21 has similar vegetation as Community 19 and 20, dominated by rushes and grass including Baltic Rush (*Juncus balticus*), Swordleaf Rush (*Juncus ensifolius*), and Wand Panic

Grass (*Panicum virgatum*). The community also includes Three-Square (*Schoenoplectus pungens*) and Bluejoint (*Calamagrostis canadensis*), which are not dominant but prevalent. Within the soil pit, saturation was observed at 10 inches, and the water table was encountered at 12 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season and the presence of hydric soil indicators, it is expected that the water table rises to saturate the surface during the wet season for a sufficient frequency and duration to promote a prevalence of vegetation adapted to saturated soil conditions. Additionally, surface water was visible in approximately 15% of the area. Prominent redox concentrations from 0-4 inches satisfy the criteria of Redox Dark Surface and further satisfied the identification of wetland hydrology. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 22 is upland of Community 1 and Community 2, the northernmost most wetland communities observed within the Site; however, this area is typical of a majority of the upland area at the Site. Community 22 is dominated by Ponderosa Pine trees (*Pinus ponderosa*) as well as herbs including Blue Grama (*Bouteloua gracilis*), Smooth Brome (*Bromus inermis*), and Butter and Eggs Toadflax (*Linaria vulgaris*). No hydric soil indicators were observed in the area; however, the soil pit could not be extended beyond 14 inches due to a hard layer at depth. Saturation and a water table were not observed in the area: the sandy soil was dry to a depth of 14 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology could be naturally problematic for this community; however, the lack of hydric soil indicators and hydrophytic vegetation indicates that wet season hydrology in Community 22 does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my professional opinion, this community does not meet the criteria of a wetland based on the lack of dominance of hydrophytic vegetation, a negative prevalence index, lack of hydric soils, and a lack of hydrology.

Community 23 includes the western portion of a drainage ditch immediately south of North Gate Boulevard. Community 23 is dominated by Narrowleaf cattail (*Typha angustifolia*) and Broadleaf cattail (*Typha latifolia*). No hydric soil indicators were observed in the area; however, the soil pit could not be extended beyond 14 inches due to a layer of asphalt at depth. The asphalt encountered at 14 inches is believed to be associated with historic paving of North Gate Boulevard. Saturation and a water table were not observed in the area: the sandy soil was dry to a depth of 14 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology is naturally problematic for this community; however, the lack of hydric soil and wetland hydrology indicates that wet season hydrology in Community 23 does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my professional opinion, this community does not meet the criteria of a wetland based on a lack of hydric soils and a lack of hydrology.

Community 24 is 0.255 acres and includes the eastern portion of a drainage ditch immediately south of North Gate Boulevard as well as portions of the drainage ditch to the north of North Gate Boulevard, located both east and west of Interstate I-25. Community 24 is dominated by Narrowleaf cattail (*Typha angustifolia*) and Broadleaf cattail (*Typha latifolia*) as well as Common

Duckweed (*Lemna minor*). Prominent redox concentrations from 4-12 inches satisfy the hydric soil criteria of Sandy Redox and further satisfied the identification of wetland hydrology. However, the soil pit could not be extended beyond 12 inches due to a layer of asphalt at depth. The asphalt encountered at 12 inches is believed to be associated with historic paving of North Gate Boulevard. Saturation and a water table were not observed in the area: the sandy soil was dry to a depth of 14 inches. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology is naturally problematic for this community; however, the prominent redox concentrations from 4-12 inches indicates that wet season hydrology in Community 24 does inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my professional opinion, this community meets the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators.

Community 25 includes a portion of a drainage ditch immediately south of North Gate Boulevard, located immediately west of the northbound interstate lanes of I-25. Community 25 is dominated by Narrowleaf Willow (*Salix exigua*), Wand Panic Grass (*Panicum virgatum*), and Canada Thistle (*Cirsium arvense*). No hydric soil indicators were observed in the area; however, the soil pit could not be extended beyond 14 inches due to a layer of metal sheeting at depth. The metal sheeting encountered at 14 inches is believed to be associated with historic construction of I-25 and/or North Gate Boulevard. Saturation and a water table were not observed in the area: the sandy soil was moist from 12-14 inches below the ground surface, but saturation was not observed. Due to the assessment of Community 25 being conducted 9-13 weeks after the peak of the wet season, hydrology is naturally problematic for this community; however, the lack of hydric soil and wetland hydrology indicates that wet season hydrology in Community 25 does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions. In my professional opinion, this community does not meet the criteria of a wetland based on a lack of hydric soils and a lack of hydrology.

According to the National Resources Conservation Service's Web Soil Survey, most soils within the Site are classified as Kettle-Rock outcrop complex, except soils within Communities 12, 13, and 15 with are classified at Tomah-Crowfoot complex; soils within Communities 18 through 21, 23, and 24 which are classified at Pring coarse sandy loam; and soils within Community 25 which are classified as Blendon sandy loam. None of the areas within the Site, the EUL boundaries, were classified at wetlands according to the National Wetlands Inventory map; however, a wetland delineation was conducted by the Air Force Academy in 2002. Wetland boundaries determined during the 2002 delineation effort did not receive a jurisdictional determination from the United States Army Corps of Engineers; however, the location and extent of the 2002 wetland boundaries within the Site are included on the attached figure in addition to the wetland boundaries as determined by the most recent field visit to the Site in September, October, and November of 2018.

Flags were placed along the boundaries of the areas identified as wetlands within the Site, including Communities 1, 2, 3, 4, 1b, 8, 9, 11, 12, 15, 16, 17, 18, 19, 21, and 24, and are indicated on the attached figure. However, while Communities 1, 2, 3, 4, 1b, 8, 9, 11, 12, 15, 16, 17, 18, 19,

21, and 24 satisfied the criteria to be considered wetlands, none of the identified wetland areas within the proposed 38-acre EUL development area at the Site are believed to meet the criteria to be considered Waters of the United States.

The professional opinions made in this report regarding the location and extent of areas that do or do not satisfy the criteria of a wetland or a water of the United States were determined pursuant to the Army Corps of Engineer's Regional Supplement and appropriate guidance and pursuant to confirmation by appropriate regulatory staff including but not limited to the Army Corps of Engineers.

Please contact Ms. Tierney Walsh at 314-591-0862 or Tierney_Walsh@matrixdesigngroup.com should you have any questions or comments.

Sincerely,

Matrix Environmental Services, LLC

B. Tierney Walsh

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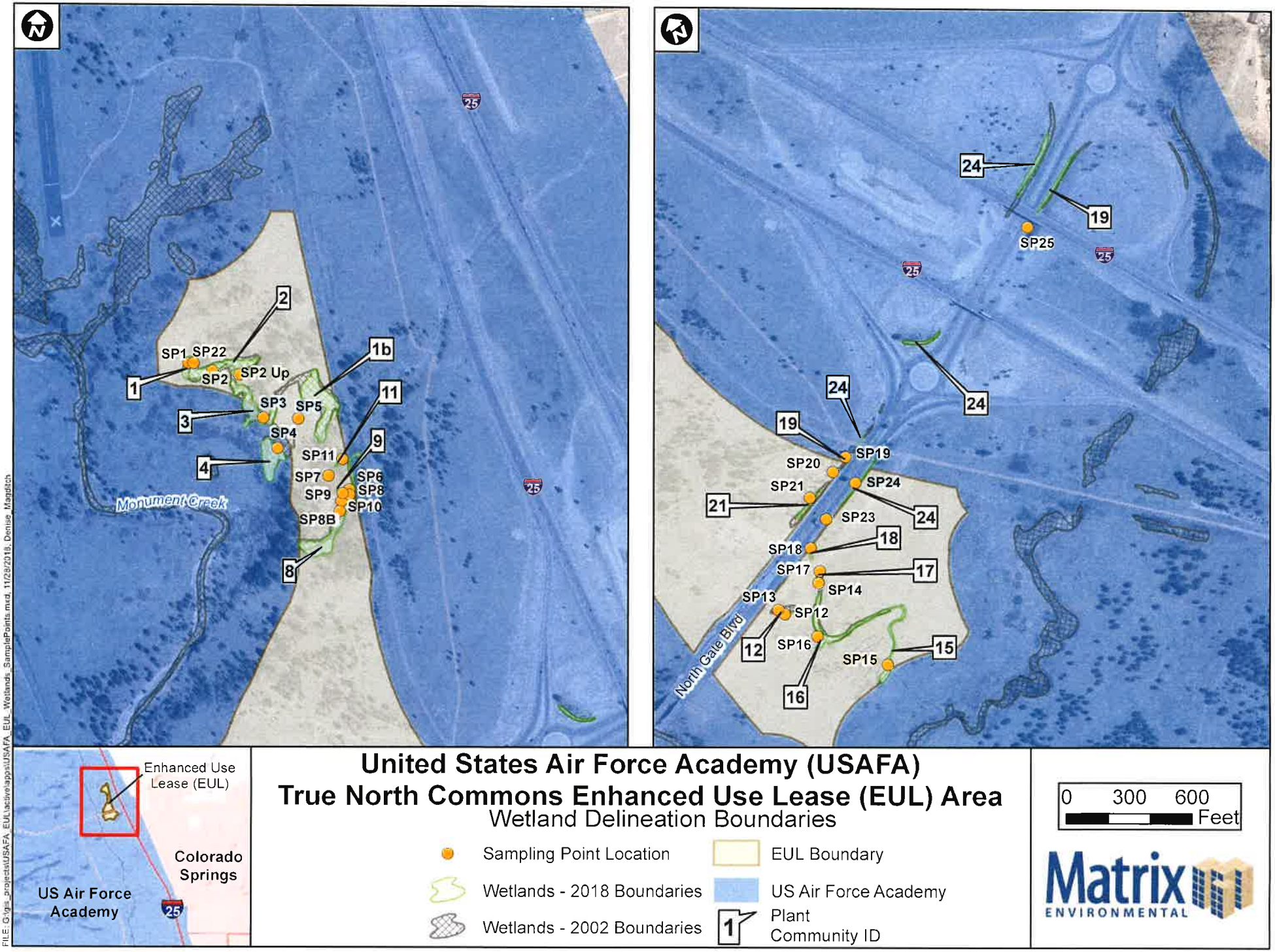
Enclosures:

Site Figures

Photolog

Field Data Forms

cc: Mr. Eric Smith, Vice President, Blue and Silver Development Partners, LLC



FILE: G:\gis_projects\USAFA_EUL\active\apps\USAFA_EUL_Wetlands_SamplePoints.mxd, 11/28/2018, Denise Magditch

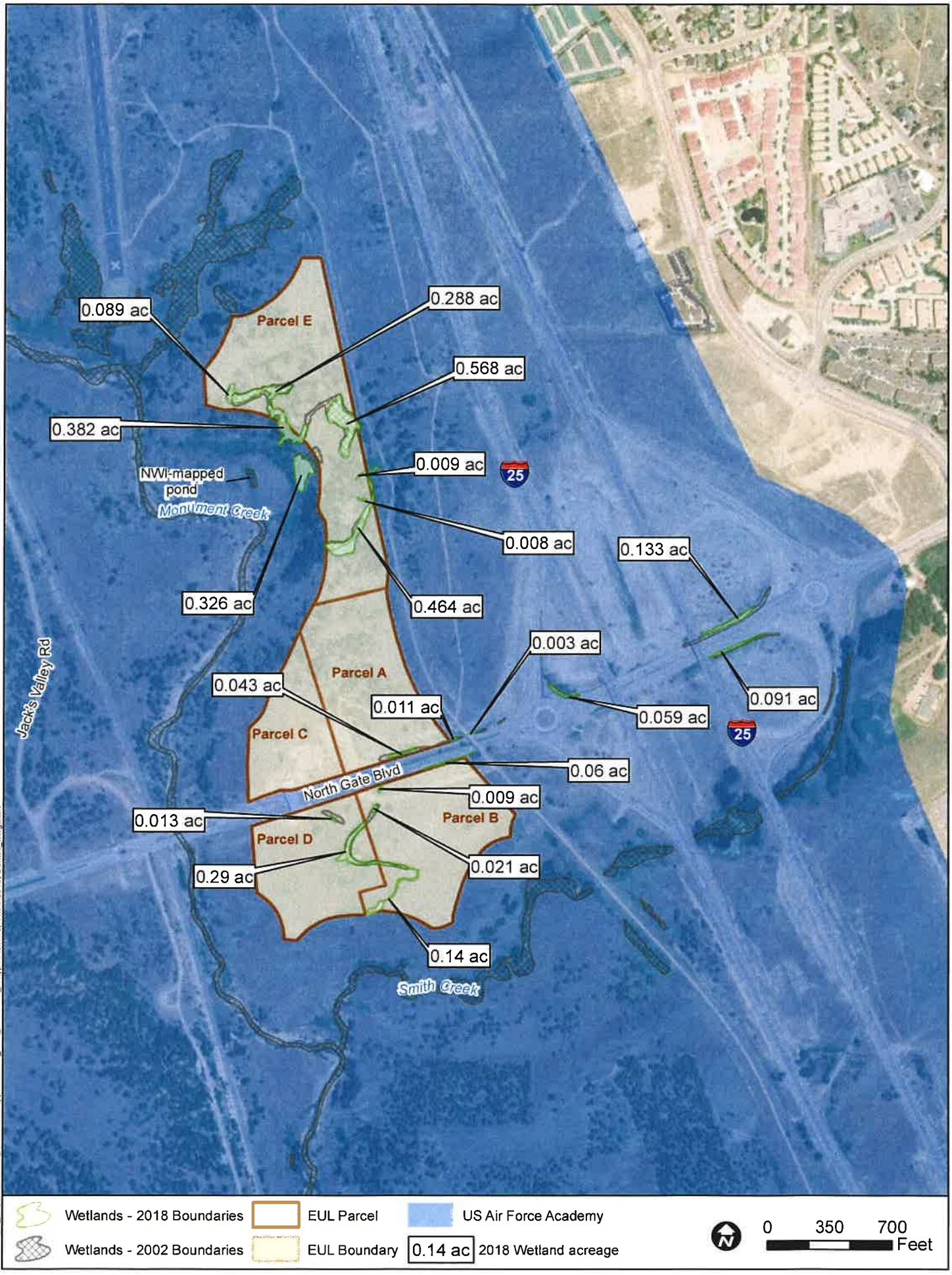


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Photo Log

Photo 1 –Community 1 encompasses the foot slope and toe slope of an adjacent upland and appears undisturbed.

Photo 2 – Soil pit for Community 1

Photo 3 – Soil core from Community 2 exhibited hydrogen sulfide odor and satisfied criteria of thick dark surface

Photo 4 – Community 2 is directly south of Community 1 and wraps around a hillslope in the northern portion of the EUL area.

Photo 5 – Community 3 includes the middle and lower portions of west and south-facing hillslopes, south of Community 2.

Photo 6 – Community 3 had visible surface water in approximately 30% of the area and a hydrogen sulfide odor.

Photo 7 – Soil core from Community 4 had 5% prominent redox concentrations from 3.5-14 inches

Photo 8 – Soil core from Community 4 had 5% prominent redox concentrations from 3.5-14 inches

Photo 9 – Community 5 (upland) in foreground with Community 1b (wetland) in background

Photo 10 – Sandy gleyed soils and a high water table were observed within Community 1b

Photo 11 – Community 5 (upland) in foreground with Community 1b (wetland) in background

Photo 12 – Soils observed within Community 5 did not satisfy wetland hydrology or hydric soil indicator criteria

Photo 13 – Community 6 includes the summit and shoulder of a ridge adjacent and west of a small creek (Community 8).

Photo 14 – Soils observed within Community 6 did not satisfy wetland hydrology or hydric soil indicator criteria

Photo 15 – Community 7 includes the toe slope meadow adjacent and west of an upland ridge (Community 7).

Photo 16 – Within Community 7, no wetland hydrology or hydric soil indicators were observed.

Photo 17 – Community 8 includes a small stream valley fed by upland drainage.

Photo 18 – A stripped matrix was observed from 3-12 inches in the northern portion of Community 8.

Photo 19 – Community 8B is a subset of Community 8 and includes the natural sand levee within the middle segment of the stream valley.

Photo 20 – No hydric soil indicators were observed within Community 8B, the natural sand levee of the Site's stream valley.

Photo 21 – Community 9 includes a depression in the stream valley at the toe of an adjacent ridge and elevated meadow.

Photo 22 – A hydrogen sulfide odor and sandy mucky mineral soils were observed within Community 9.

Photo 23 – Community 10 includes the edges of the stream valley, situated at the base of the adjacent hill.

Photo 24 – No hydric soil indicators were observed, and saturation and a water table were not encountered within 24 inches.

Photo 25 – Community 11 includes the toe slope of an upland ridge, which drains into the northern edge of Community 7.

Photo 26 – Mucky modified sandy and a stripped matrix were observed in soils within Community 11.

Photo 27 – Community 12 includes a depression within the toe slope of a hill beginning at North Gate Boulevard.

Photo 28 – 2% prominent redox concentrations along pore linings from 2-6 inches satisfied the criteria for Sandy Redox.

Photo 29 - Community 13 includes the toe slope of the hill south of North Gate Boulevard, north and east of Community 12.

Photo 30 – No hydric soil indicators were observed Community 13; however, the soil pit could not be extended beyond 12 inches.

Photo 31 – No hydric soil or wetland hydrology indicators were observed within Community 14.

Photo 32 – A gleyed layer was observed from 17-19 inches within Community 14 but did not satisfy any criteria of hydric soils.

Photo 33 – Community 15 includes the southern portion of a drainage swale south of North Gate Boulevard.

Photo 34 – Community 15 had visible surface water in approximately 80% of the area as well as a hydrogen sulfide odor.

Photo 35 – Community 16, the central portion of a drainage swale south of North Gate Blvd, had a hydrogen sulfide odor.

Photo 36 – Community 17, within the swale north of Community 14, had 3% prominent redox concentrations from 2-9 inches.

Photo 37 – Community 18, a drainage swale upgradient of Community 17, had a gleyed matrix within six inches of the soil surface.

Photo 38 – A hydrogen sulfide odor was detectable within 12 inches of the surface within Community 19.

Photo 39 – Community 19 includes a toe slope of an upland hill that transitions into a drainage ditch north of North Gate Blvd.

Photo 40 – Prominent redox concentrations from 0-4 inches were observed in soils within Community 21.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 9/28/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #1

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 0-20%

Subregion (LRR): E Lat: N 39 01.826' Long: W 104 50.542 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus gambelii	5%	Y	UPL
2.			
3.			
4.			
	5% = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: *)			
1. Typha X glauca	40%	Y	OBL
2. Typha latifolia	40%	Y	OBL
3. Typha angustifolia	5%	N	OBL
4. Cirsium arvense	5%	N	FAC
5. Epilobium saximontanum	2%	N	FACW
6. Lycopus americanus	2%	N	OBL
7. Dipsacus fullonum	1%	N	FAC
8. Verbascum thapsus	1%	N	FACU
9. Carex praegracilis	1%	N	FACW
10.			
11.			
	97% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.66% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	87	x 1 =	87
FACW species	3	x 2 =	6
FAC species	6	x 3 =	18
FACU species	1	x 4 =	4
UPL species	5	x 5 =	25
Column Totals:	102 (A)		140 (B)

Prevalence Index = B/A = 1.3725

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community

A grass species, approximating 5% total cover, was unidentifiable due to its lack of reproductive structures during the site visit.

SOIL

Sampling Point: #1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	10 YR 3/2	100					Loamy Sand	organic rich mineral soil
1-10	10 YR 2/2	100					Loamy Sand	
10-20	10YR 4/4	100					Loamy Sand	
20-24	10 YR 6/8	100					Loamy Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- + Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydrogen sulfide odor

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- + Surface Water (A1)
- + High Water Table (A2)
- + Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- + Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): <1 inch

Water Table Present? Yes X No _____ Depth (inches): at surface

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): at surface

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 9/28/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #2

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 15-35%

Subregion (LRR): E Lat: N 39 01.820' Long: W 104 50.518 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: * _____)			
1. Juncus balticus	80%	Y	FACW
2. Carex aquatilis	50%	Y	OBL
3. Dipsacus fullonum	30%	N	FAC
4. Epilobium saximontanum	25%	N	FACW
5. Typha latifolia	15%	N	OBL
6. Solidago altissima	10%	N	FACU
7. Cirsium arvense	10%	N	FAC
8. Lycopus americanus	3%	N	OBL
9. Linaria vulgaris	2%	N	UPL
10. Yucca angustissima	2%	N	UPL
11. Verbascum thapsus	2%	N	FACU
	229% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	68	x 1 = 68
FACW species	105	x 2 = 210
FAC species	40	x 3 = 120
FACU species	12	x 4 = 48
UPL species	4	x 5 = 20
Column Totals:	229 (A)	466 (B)

Prevalence Index = B/A = 2.03

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	85	7.5YR 5/8	15	C	PL	Sandy clay	
4-6	10YR 2/1	80	10Y 5/	20	D	M	Sandy clay	
6-12	2.5Y 2.5/1	80	2.5Y 6/8	20	C	PL	Loamy Sand	
12-18	10Y 5/	95	7.5YR 5/8	5	C	PL	Sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- + Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- + Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- + Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
Hydrogen sulfide odor. Sand grains >70% coated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- + Surface Water (A1)
- + High Water Table (A2)
- + Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- + Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): <1 inch

Water Table Present? Yes X No _____ Depth (inches): 6.5 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 4 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Surface water present within approximately 20% of the plant community.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/17/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #2 Upland

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 5-30%

Subregion (LRR): E Lat: N 39 01.817' Long: W 104 50.491 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus gambelii	10%	Y	UPL
2. Crataegus erythropoda	5%	Y	FACU
3.			
4.			
	15%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Symphoricarpos occidentalis	15%	Y	FAC
2. Robinia neomexicana	10%	Y	UPL
3. Ribes lacustre	10%	Y	FAC
4. Cercocarpus montanus	5%	N	UPL
5.			
	40%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Solidago missouriensis	90%	Y	UPL
2. Linaria vulgaris	30%	Y	UPL
3. Juncus balticus	25%	N	FACW
4. Cirsium arvense	15%	N	FAC
5. Dipsacus fullonum	10%	N	FAC
6. Andropogon gerardii	5%	N	FACU
7. Yucca glauca	5%	N	UPL
8.			
9.			
10.			
11.			
	180%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 2%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.57% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	50	x 3 =	150
FACU species	10	x 4 =	40
UPL species	150	x 5 =	750
Column Totals:	235 (A)		990 (B)

Prevalence Index = B/A = 4.21

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- - 2 - Dominance Test is >50%
- - 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #2 Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					Sandy loam	
4-8	10YR 2/2	100					loamy sand	
8-24	10YR 2/2	100					Loamy Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators observed. Sand grains not 70% coated. No redox concentrations, depletions, or greyed matrix observed to depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table and saturation absent at 24 inches below ground surface.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/15/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #3

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Sections 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave to convex Slope (%): 40%

Subregion (LRR): E Lat: N 39 01.7833' Long: W 104 50.4667 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: *)			
1. Juncus balticus	90%	Y	FACW
2. Typha latifolia	20%	N	OBL
3. Typha X glauca	20%	N	OBL
4. Epilobium saximontanum	10%	N	FACW
5. Solidago gigantea	10%	N	FACW
6. Dipsacus fullonum	5%	N	FAC
7.			
8.			
9.			
10.			
11.			
	155% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	110	x 2 =	220
FAC species	5	x 3 =	15
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	155 (A)		275 (B)

Prevalence Index = B/A = 1.77

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

\+ 2 - Dominance Test is >50%

\+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10 YR 2/1	100					Loamy Sand	mucky modified sand
2-4	10 YR 2/2	95	7.5YR 5/8	5	C	PL	Loamy Sand	
4-6	10YR 4/1	85	10YR 5/8	5	C	PL	Loamy Sand	
			10Y 6/	10	D	M		
6-10	N 6/	70	10YR 4/6	30	C	PL	Loamy Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- + Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- + Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- + Sandy Redox (S5)
- + Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- + Surface Water (A1)
- + High Water Table (A2)
- + Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- + Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- + Hydrogen Sulfide Odor (C1)
- + Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): <1 inch

Water Table Present? Yes X No _____ Depth (inches): 6 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 4 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/4/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #4

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Sections 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): meadow Local relief (concave, convex, none): concave Slope (%): 5-10%

Subregion (LRR): E Lat: N 39 01.759' Long: W 104 50.453 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August. Hydrology is naturally problematic as the site visit was conducted after the wet season and the sampling area is believed to a seasonal wetland. Oxidized rhizospheres on living roots from 3.5 - 14 inches used as primary hydrology indicator.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: * _____)			
1. Juncus balticus	95%	Y	FACW
2. Carex aquatilis	40%	Y	OBL
3. Mentha arvensis	10%	N	FACW
4. Dipsacus fullonum	10%	N	FAC
5. Epilobium saximontanum	3%	N	FACW
6. Cirsium arvense	2%	N	FAC
7.			
8.			
9.			
10.			
11.			
	160% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	108	x 2 =	216
FAC species	12	x 3 =	36
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	160 (A)		292 (B)

Prevalence Index = B/A = 1.825

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3.5	10 YR 2/1	100					Sandy loam	
3.5-14	10 YR 2/1	95	7.5YR 5/8	5	C	PL	Sandy clay loam	
14-21	10YR 2/1	85	7.5YR 4/8	15	C	M	Sandy clay loam	
21-34	10YR 2/1	60	10YR 3/6	30	C	M	Sandy clay loam	
			N 3/	10	D	M		
34-44	N 3/	80	7.5Y 6/8	20	C	M	sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) **(except MLRA 1)**
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- + Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- + Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) **(LRR A)**
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 34 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation observed at 34 inches below the ground surface. Water table not encountered. Hydrology is naturally problematic as the sampled area is believed to be seasonally inundated. Oxidized root channels observed from 3.5 to 14 inches below the ground surface used as the hydrology indicator.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/15/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #5

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): hillslope terrace Local relief (concave, convex, none): convex Slope (%): 10-35%

Subregion (LRR): E Lat: N 39 01.782' N Long: W 104 50.432 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August. Hydrology could be naturally problematic as the site visit was conducted after the wet season; however, the lack of dominance of hydrophytic vegetation and the lack of hydric soil indicate wet season hydrology is insufficient in frequency and/or duration to support a prevalence of vegetation adapted to saturated soil conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: * _____)			
1. Symphoricarpos occidentalis	20%	Y	FAC
2. Salix amygdaloides	3%	N	FACW
3.			
4.			
5.			
	23% = Total Cover		
Herb Stratum (Plot size: * _____)			
1. Bromus inermis	80%	Y	UPL
2. Bouteloua gracilis	40%	Y	UPL
3. Cirsium arvense	30%	N	FAC
4. Artemisia frigida	15%	N	UPL
5. Linaria vulgaris	15%	N	UPL
6. Juncus balticus	15%	N	FACW
7. Andropogon gerardii	10%	N	FACU
8. Yucca angustissima	5%	N	UPL
9. Chrysothamnus viscidiflorus	5%	N	UPL
10. Verbascum thapsus	5%	N	FACU
11.			
	220% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 20%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	18	x 2 =	36
FAC species	50	x 3 =	150
FACU species	15	x 4 =	60
UPL species	160	x 5 =	800
Column Totals:	243 (A)		1046 (B)

Prevalence Index = B/A = 4.30

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- - 2 - Dominance Test is >50%
- - 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					loamy sand	
2-20	10YR 5/3	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators observed. Sand grains not 70% coated. No redox concentrations, depletions, or greyed matrix observed to depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table and saturation absent at 20 inches below ground surface. Unable to extend soil boring below 20 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/3/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #6

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): ridge Local relief (concave, convex, none): convex Slope (%): 0-35%

Subregion (LRR): E Lat: N 39 01.726' Long: W 104 50.381 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August. Hydrology could be naturally problematic as the site visit was conducted after the wet season; however, the lack of dominance of hydrophytic vegetation, a negative prevalence index, and the lack of hydric soil indicate wet season hydrology is insufficient in frequency and/or duration to support a prevalence of vegetation adapted to saturated soil conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus ponderosa	40%	Y	FACU
2. Quercus gambelii	5%	N	UPL
3.			
4.			
	45%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Salix exigua	15%	Y	FACW
2. Symphoricarpos occidentalis	10%	Y	FAC
3.			
4.			
5.			
	25%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Bromus inermis	40%	Y	UPL
2. Bouteloua gracilis	40%	Y	UPL
3. Elymus canadensis	30%	Y	FAC
4. Linaria vulgaris	20%	N	UPL
5. Verbascum thapsus	5%	N	FACU
6. Artemisia frigida	5%	N	UPL
7. Opuntia spp	5%	N	UPL
8.			
9.			
10.			
11.			
	145%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	40	x 3 =	120
FACU species	45	x 4 =	180
UPL species	115	x 5 =	575
Column Totals:	215 (A)		905 (B)

Prevalence Index = B/A = 4.21

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

- 2 - Dominance Test is >50%

- 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 2/2	100					sand	
15-25	10YR 2/2	100					loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) **(except MLRA 1)**
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators observed. Sand grains not 70% coated. No redox concentrations, depletions, or greyed matrix observed to depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) **(LRR A)**
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) **(LRR A)**
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table and saturation absent at 25 inches below ground surface.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/3/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #7

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): toeslope meadow Local relief (concave, convex, none): concave to flat Slope (%): 0-10%

Subregion (LRR): E Lat: N 39 01.737' Long: W 104 50.402 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August. Hydrology could be naturally problematic as the site visit was conducted after the wet season and hydrophytic vegetation dominates the area; however, the negative prevalence index and the lack of hydric soil indicate wet season hydrology is insufficient in frequency and/or duration to support a prevalence of vegetation adapted to saturated soil conditions. Water table and saturation observed at 23 inches below the surface; however, soils dominated by sands with capillary fringe ranges of 0.4-7.9 inches. Dry season water table of 24 inches is appropriate for clay/loam but is not appropriate for sands; therefore, no hydrology indicators were satisfied.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: * _____)			
1. Symphoricarpos occidentalis	35%	Y	FAC
2. Salix exigua	20%	Y	FACW
3. Quercus gambelii	5%	N	UPL
4.			
5.			
	60% = Total Cover		
Herb Stratum (Plot size: * _____)			
1. Juncus balticus	80%	Y	FACW
2. Linaria vulgaris	60%	Y	UPL
3. Dipsacus fullonum	40%	N	FAC
4. Solidago altissima	15%	N	FACU
5. Solidago wrightii	10%	N	UPL
6. Cirsium arvense	5%	N	FAC
7.			
8.			
9.			
10.			
11.			
	210% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	80	x 3 =	240
FACU species	15	x 4 =	60
UPL species	75	x 5 =	375
Column Totals:	270 (A)		875 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

- 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4.5	7.5YR 2.5/1	100					loamy sand	
4.5 - 10	7.5 YR 3/1	100					sand	
10 - 14	7.5YR 2.5/2	95	7.5YR 5/8	5	C	M	loamy sand	
14 - 18	10YR 7/2	50	10YR 6/8	50	C	M	loamy sand	
18 - 24	10Y 5/	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators observed. Sand grains not 70% coated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 23 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 23 inches

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table and saturation at 23 inches below the surface; however, soils dominated by sands with capillary fringe ranges of 0.4-7.9 inches. Dry season water table of 24 inches is appropriate for clay/loam but is not appropriate for sands.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/6/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #8

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): stream valley Local relief (concave, convex, none): concave Slope (%): 10-12%

Subregion (LRR): E Lat: N 39 01.722' Long: W 104 50.381 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August. The natural sand levee in the center of the stream valley was not observed to have hydric soil indicators; however, the narrowness of the stream valley and unlikelihood of development in the stream valley resulted in these areas being included in the wetland boundary.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix amygdaloides	20%	Y	FACW
2. Pinus ponderosa	4%	N	FACU
3.			
4.			
	24%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Salix exigua	60%	Y	FACW
2. Ribes lacustre	30%	Y	FAC
3. Ribes inerme	20%	N	FAC
4. Symphoricarpos occidentalis	3%	N	FAC
5. Prunus virginiana	2%	N	FACU
	115%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Solidago altissima	20%	Y	FACU
2. Lemna minor	10%	Y	OBL
3. Epilobium saximontanum	10%	Y	FACW
4. Juncus alpinoarticulatus	5%	N	OBL
5. Mentha arvensis	5%	N	FACW
6. Lycopus americanus	5%	N	OBL
7. Solidago multiradiata	5%	N	FACU
8. Cirsium arvense	5%	N	FAC
9. Solidago simplex	3%	N	FACU
10.			
11.			
	68%	= Total Cover	
Woody Vine Stratum (Plot size: *)			
1. Parthenocissus quinquefolia	5%	Y	FAC
2.			
	5%	= Total Cover	

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	95	x 2 =	190
FAC species	63	x 3 =	189
FACU species	34	x 4 =	136
UPL species	0	x 5 =	0
Column Totals:	212 (A)		535 (B)

Prevalence Index = B/A = 2.52

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 2/1	100					sandy loam	with OM
3-12	10YR 3/3	60	10YR 7/1	40	D	M	sand	
12-18	10YR 3/2	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- + Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicators were observed in portions of the stream valley including the upper and lower portions of the EUL area; however, a natural sand levee in the middle of the stream valley did not exhibit hydric soil indicators. Due to the narrowness of the stream valley and the unlikelihood of the area being disturbed during the proposed EUL development, these potential "non-wetland" riparian areas were included in the wetland boundary.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- + Surface Water (A1)
- - High Water Table (A2)
- + Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- + Drainage Patterns (B10)
- + Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): <1 inch

Water Table Present? Yes X No _____ Depth (inches): 8 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 8 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water was present in portions of the stream valley. Saturation and water table met criteria for dry season conditions considering the site visit was conducted 6-10 after the peak wet season.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/6/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #8B - Sand levee

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): stream valley edge - sand levee Local relief (concave, convex, none): convex to concave Slope (%): 3-10%

Subregion (LRR): E Lat: N 39 01.709' Long: W 104 50.391 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August. The natural sand levee in the center of the stream valley was not observed to have hydric soil indicators; however, the narrowness of the stream valley and unlikelihood of development in the stream valley resulted in these areas being included in the wetland boundary. A follow up visit during the wet season (May-August) would give a more accurate determination and additional hydrology indicators may be present at that time; however, the lack of hydric soil indicators suggests that the sampled area is not a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix amygdaloides	30%	Y	FACW
2.			
3.			
4.			
	30%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Salix exigua	40%	Y	FACW
2. Ribes inerme	30%	Y	FAC
3. Ribes aureum	15%	N	FAC
4.			
5.			
	85%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Solidago altissima	40%	Y	FACU
2. Solidago multiradiata	20%	Y	FACU
3. Epilobium saximontanum	15%	N	FACW
4. Juncus alpinoarticulatus	15%	N	OBL
5. Cirsium arvense	5%	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	95%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	85	x 2 =	170
FAC species	50	x 3 =	150
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	210 (A)		575 (B)

Prevalence Index = B/A = 2.74

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #8B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/1	100					loamy sand	
2 - 6	10YR 5/2	100					sand	
6 - 8	10YR 3/2	70	10YR 5/8	5	C	PL	loamy sand	
			10YR 6/3	25	D	M		
8 - 10	10YR 5/2	100					sand	
10 - 24	10YR 2/1	100					sand	with OM

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Hydric soil indicators were not observed in this area and additional portions of the natural sand levee within the stream valley; however, hydric soil indicators such as stripped matrix and hydrogen sulfide odor were observed in the upper and lower segments of the stream valley. Due to the narrowness of the stream valley and the unlikelihood of the area being disturbed during the proposed EUL development, these potential "non-wetland" riparian areas were included in the wetland boundary of Community/Sampling Area #8.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- + Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 20 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 16 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table and saturation within 24 inches of the surface; however, soils dominated by sands with capillary fringe ranges of 0.4-7.9 inches. Dry season water table of 24 inches is appropriate for clay/loam but is not appropriate for sands. Oxidized rhizospheres observed from 6-8 inches; however, the observed soil did not meet any hydric soil indicator. It is not advisable to use the oxidized rhizospheres along living roots (C3) hydrology indicator in the absence of a hydric soil indicator because it can lead to false positives as oxidized pore linings can persist long after removal of anoxic conditions. Nevertheless, a primary indicator was observed, so wetland hydrology is indicated as present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/4/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #9

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): stream valley depression Local relief (concave, convex, none): concave Slope (%): 0-1%

Subregion (LRR): E Lat: N 39 01.723' Long: W 104 50.388' Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: *_____)			
1. Ribes lacustre	10%	Y	FAC
2. Symphoricarpos occidentalis	5%	Y	FAC
3.			
4.			
5.			
	15% = Total Cover		
Herb Stratum (Plot size: *_____)			
1. Nasturtium officinale	30%	Y	OBL
2. Epilobium saximontanum	10%	Y	FACW
3. Mentha arvensis	10%	Y	FACW
4. Cirsium arvense	5%	N	FAC
5. Solidago canadensis	5%	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	60% = Total Cover		
Woody Vine Stratum (Plot size: *_____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 40%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	20	x 2 =	40
FAC species	20	x 3 =	60
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	75 (A)		150 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community. Grass also present within this area but unidentifiable due to lack of reproductive structures.

SOIL

Sampling Point: #9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	10YR 2/1	100					loamy sand	sand >70% coated
6 - 12	10YR 3/1	70	10YR 5/8	20	C	M	loamy sand	
			10YR 6/2	10	D	M		
12 - 16	10YR 3/6	100					sand	
16 - 20	10YR 5/2	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- + Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- + Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydrogen sulfide odor from 0-6 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- + Surface Water (A1)
- + High Water Table (A2)
- + Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- + - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): <1 inch

Water Table Present? Yes X No _____ Depth (inches): 8 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 6 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/6/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #10

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): toe slope of stream valley floodplain Local relief (concave, convex, none): concave Slope (%): 0-15%

Subregion (LRR): E Lat: N 39 01.717' Long: W 104 50.389 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus ponderosa	100%	Y	FACU
2. Quercus gambelii	20%	N	UPL
3.			
4.			
	120%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Symphoricarpos occidentalis	55%	Y	FAC
2. Prunus virginiana	25%	Y	FACU
3. Crataegus erythropoda	10%	N	FACU
4. Salix exigua	2%	N	FACW
5.			
	92%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Bromus inermis	30%	Y	UPL
2. Cirsium arvense	25%	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 45%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	2	x 2 =	4
FAC species	80	x 3 =	240
FACU species	135	x 4 =	540
UPL species	50	x 5 =	250
Column Totals:	267 (A)		1,034 (B)

Prevalence Index = B/A = 3.87

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

- 2 - Dominance Test is >50%

- 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
* Sampled entire plant community

SOIL

Sampling Point: #10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 1	10YR 3/1	100					silt loam	dry
1 - 4	10YR 5/4	100					silty clay loam	dry
4 - 5	10YR 5/3	95	10YR 6/8	5	C	M	silty clay loam	dry
5 - 12	10YR 5/2	90	10YR 5/1	10	D	M	silty clay	dry
12 - 22	10YR 5/2	80	10YR 5/8	20	C	M	silty clay	dry
22 - 24	10YR 5/2	100					clay	dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- _ Histosol (A1)
- _ Histic Epipedon (A2)
- _ Black Histic (A3)
- _ Hydrogen Sulfide (A4)
- _ Depleted Below Dark Surface (A11)
- _ Thick Dark Surface (A12)
- _ Sandy Mucky Mineral (S1)
- _ Sandy Gleyed Matrix (S4)
- _ Sandy Redox (S5)
- _ Stripped Matrix (S6)
- _ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- _ Loamy Gleyed Matrix (F2)
- _ Depleted Matrix (F3)
- _ Redox Dark Surface (F6)
- _ Depleted Dark Surface (F7)
- _ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- _ 2 cm Muck (A10)
- _ Red Parent Material (TF2)
- _ Very Shallow Dark Surface (TF12)
- _ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Hydric soil indicators not observed. Redox concentrations from 5-12 inches are faint using Regional Supplement Table A1 (ERDC/EL TR-10-3).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- _ Surface Water (A1)
- _ High Water Table (A2)
- _ Saturation (A3)
- _ Water Marks (B1)
- _ Sediment Deposits (B2)
- _ Drift Deposits (B3)
- _ Algal Mat or Crust (B4)
- _ Iron Deposits (B5)
- _ Surface Soil Cracks (B6)
- _ Inundation Visible on Aerial Imagery (B7)
- _ Sparsely Vegetated Concave Surface (B8)
- _ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- _ Salt Crust (B11)
- _ Aquatic Invertebrates (B13)
- _ Hydrogen Sulfide Odor (C1)
- _ Oxidized Rhizospheres along Living Roots (C3)
- _ Presence of Reduced Iron (C4)
- _ Recent Iron Reduction in Tilled Soils (C6)
- _ Stunted or Stressed Plants (D1) (**LRR A**)
- _ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- _ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- _ Drainage Patterns (B10)
- _ Dry-Season Water Table (C2)
- _ Saturation Visible on Aerial Imagery (C9)
- _ Geomorphic Position (D2)
- _ Shallow Aquitard (D3)
- _ FAC-Neutral Test (D5)
- _ Raised Ant Mounds (D6) (**LRR A**)
- _ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): not encountered

Water Table Present? Yes _____ No X Depth (inches): not encountered

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): not encountered

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No water table or saturation encountered within 24 inches of the surface. Based on the slope of the sampling area and the slope of the neighboring stream, it seems the sampling area would readily discharge water and be unlikely to flood for continuous days.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/6/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #11

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): toe slope of upland ridge Local relief (concave, convex, none): concave Slope (%): 5%

Subregion (LRR): E Lat: N 39 01.750' Long: W 104 50.388 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Field work conducted in early October. The wet season is April-September, peaking in July and August. Additional hydrology indicators would be expected during the wet season; however, saturation at 10 inches and a dry season water table of 12 inches in addition to the presence of hydric soil indicators and hydrophytic vegetation indicate the sampled area is a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus ponderosa	15%	Y	FACU
2.			
3.			
4.			
	15%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Salix exigua	60%	Y	FACW
2. Symphoricarpos occidentalis	40%	Y	FAC
3. Pinus ponderosa	5%	N	FACU
4. Quercus gambelii	2%	N	UPL
5.			
	107%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Solidago altissima	30%	Y	FACU
2. Epilobium saximontanum	20%	Y	FACW
3. Cirsium arvense	10%	N	FAC
4. Verbascum thapsus	5%	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	65%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	50	x 3 =	150
FACU species	55	x 4 =	220
UPL species	2	x 5 =	10
Column Totals:	187 (A)		540 (B)

Prevalence Index = B/A = 2.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community. Grasses also present in sample area but unidentifiable due to lack of reproductive structures.

SOIL

Sampling Point: #11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2.5	10YR 2/1	100					loamy sand	mucky
2.5 - 6.5	10YR 4/1	85	N 7/	15	D	M	sand	moist
6.5 - 7.5	10YR 5/2	50	5YR 4/6	50	C	M	sand	moist
7.5 - 10	10YR 4/2	100					sand	moist
10 -15	10YR 6/3	100					sand	wet
15 - 23	10Y 7/	80	10 YR 5/8	20	C	M	sand	wet

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- + Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- ± Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicators observed included mucky modified sandy soil from 0-2.5 inches and a stripped matrix from 2.5-6.5 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- + Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- + Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): not encountered

Water Table Present? Yes X No _____ Depth (inches): 12 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 10 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

The site visit was conducted 6-10 weeks after the peak wet season months (July and August). Based on the toe of slope position and shallow sloping concave relief of the sample area in addition to saturation at 10 inches and a water table at 12 inches, it is expected that the water table rises to saturate the the surface during some portion of a typical growing season. A follow up visit during the wet season (May-August) would give a more accurate determination; however, the presence of hydric soil indicators and hydrophytic vegetation supports this hypothesis.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/5/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #12

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): toe of slope depression Local relief (concave, convex, none): concave Slope (%): 0%

Subregion (LRR): E Lat: N 39 01.432' Long: W 104 50.427 Datum: WGS 84

Soil Map Unit Name: Tomah-Crowfoot complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Field work conducted in early October. Wet season is April-September, peaking in July and August. Additional hydrology indicators would be expected during the wet season; however, saturation at 4 inches and a dry season water table of 10.5 inches in addition to the presence of prominent redox concentrations from 2-6 inches and hydrophytic vegetation indicate the sampled area is a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: *)			
1. Typha angustifolia	85%	Y	OBL
2. Typha X glauca	45%	Y	OBL
3. Epilobium saximontanum	5%	N	FACW
4. Juncus balticus	5%	N	FACW
5. Juncus confusus	5%	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	145% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	130	x 1 =	130
FACW species	10	x 2 =	20
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	145 (A)		165 (B)

Prevalence Index = B/A = 1.14

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community.

SOIL

Sampling Point: #12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 2/1	100					silty clay loam	moist
2 - 6	10YR 6/1	88	10YR 5/8	2	C	PL	sand	moist - wet
			10YR 8/1	10	D	M		
6 - 16	10YR 6/2	95	5YR 5/8	5	C	M	sand	wet
16 -18	7.5YR 5/8	60	N 6/	40	D	M	sand	wet
18 - 36	7.5YR 5/8	100					sand	wet

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- + Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) **(except MLRA 1)**
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator observed included prominent redox concentrations from 2-6 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- + Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- + Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) **(LRR A)**
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- - Drainage Patterns (B10)
- + Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) **(LRR A)**
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): not encountered

Water Table Present? Yes X No _____ Depth (inches): 10.5 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 4 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

The site visit was conducted 6-10 weeks after the peak wet season months (July and August). Based on the toe of slope position and concave relief of the sample area in addition to saturation at 4 inches and a water table at 10.5 inches, it is expected that the water table rises to saturate the the surface during some portion of a typical growing season. A follow up visit during the wet season (May-August) would give a more accurate determination; however, the presence of oxidized rhizospheres along living roots and hydrophytic vegetation supports this hypothesis.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/5/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #13

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): shallow hillslope Local relief (concave, convex, none): convex Slope (%): 5-15%

Subregion (LRR): E Lat: N 39 01.438' Long: W 104 50.430 Datum: WGS 84

Soil Map Unit Name: Tomah-Crowfoot complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes X*	No _____	

Remarks:
The site visit was conducted 6-10 weeks after the peak wet season months (July and August). Oxidized rhizospheres were observed on living roots from 2-3 inches; however, the observed soil did not meet any hydric soil indicator (the thickness of the redox concentrations was less than the four inches required for Sandy Redox). It is not advisable to use the oxidized rhizospheres along living roots (C3) hydrology indicator in the absence of a hydric soil indicator because it can lead to false positives as oxidized pore linings can persist for years following removal of anoxic conditions. Based on the location, relief, and sandy matrix, the sample area would likely shed water readily, although the compacted sand encountered at 12 inches may serve as a restrictive layer. A follow up visit during the wet season (May-August) would give a more accurate determination and additional hydrology indicators may be present at that time; however, the lack of hydric soil indicators suggests that the sampled area is not a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix amygdaloides	5%	Y	FACW
2.			
3.			
4.			
	5%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Salix exigua	35%	Y	FACW
2. Elaeagnus angustifolia	30%	Y	FAC
3. Ribes inerme	15%	N	FAC
4. Juniperus monosperma	10%	N	UPL
5.			
	90%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Juncus balticus	50%	Y	FACW
2. Juncus confusus	35%	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	80	x 3 =	240
FACU species	0	x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	180 (A)		470 (B)

Prevalence Index = B/A = 2.61

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community.

SOIL

Sampling Point: #13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 2	10YR 2/1	100					loamy sand	dry
2 - 3	10YR 8/2	80	10YR 6/8	20	C	PL	sand	dry
3 - 12	10YR 5/4	100					sand	dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Compacted Sand (Hardpan)

Depth (inches): 12 inches

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicator observed. Could not penetrate soil pit beyond 12 inches into underlying compacted sand. Dry to depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- +* Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): not encountered

Water Table Present? Yes _____ No X Depth (inches): not encountered

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): not encountered

Wetland Hydrology Present? Yes X* No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

*The site visit was conducted 6-10 weeks after the peak wet season months (July and August). Oxidized rhizospheres were observed on living roots from 2-3 inches; however, the observed soil did not meet any hydric soil indicator (the thickness of the redox concentrations was less than the four inches required for Sandy Redox). It is not advisable to use the C3 hydrology indicator (oxidized rhizospheres along living roots) in the absence of a hydric soil indicator because it can lead to false positives as oxidized pore linings can persist for years following removal of anoxic conditions. Nevertheless, a primary indicator was observed, so wetland hydr olgy is indicated as present. ,Based on the slope, relief, sandy matrix, and the lack of saturation and/or the water table at 12 inches, the sample area does not exhibit strong wetland hydrology indicators; however, a follow up visit during the wet season (May-August) would give a more accurate determination.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/6/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #14

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): artificial drainage swale Local relief (concave, convex, none): concave Slope (%): 0-25%

Subregion (LRR): E Lat: N 39 01.437' Long: W 104 50.381 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Field work conducted in early October. The wet season is April-September, peaking in July and August. A site visit during the wet season would give a more accurate determination; however, the lack of hydric soil and wetland hydrology indicate that the sampled area is not a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix amygdaloides	50%	Y	FACW
2.			
3.			
4.			
	50%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Salix exigua	40%	Y	FACW
2. Elaeagnus angustifolia	10%	N	FAC
3. Ribes inerme	10%	N	FAC
4. Robinia neomexicana	2%	N	UPL
5.			
	62%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Typha latifolia	10%	Y	OBL
2. Epilobium saximontanum	2%	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	12%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 40%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	92	x 2 =	184
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	2	x 5 =	10
Column Totals:	124 (A)		264 (B)

Prevalence Index = B/A = 2.13

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community. Grasses also present in sample area but unidentifiable due to lack of reproductive structures.

SOIL

Sampling Point: #14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/1	100					silty clay loam	
4 - 5	10YR 2/1	99	10YR 6/6	1	C	PL	silty clay loam	
5 - 17	10YR 2/1	100					sandy loam	
17 - 19	10Y 7/	50	10YR 6/6	50	C	M	sand	
19 - 24	10YR 7/3	50	10YR 6/8	40	C	M	sand	moist
			10Y 7/	10	D	M		
24 - 30	10Y 7/	100					sand	moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): not encountered

Water Table Present? Yes _____ No X Depth (inches): not encountered

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): not encountered

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

The site visit was conducted 6-10 weeks after the peak wet season months (July and August). Soil pit extended to 30 inches; however, no saturation or water table was encountered. A follow up visit during the wet season (May-August) would give a more accurate determination; however, the lack of hydric soil indicators may be due to a lack of wetland hydrology.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/6/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #15

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): artificial drainage swale depression Local relief (concave, convex, none): concave Slope (%): 0-15%

Subregion (LRR): E Lat: N 39 01.353' Long: W 104 50.372 Datum: WGS 84

Soil Map Unit Name: Tomah-Crowfoot complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Field work conducted in early October. A predominance of hydrophytic vegetation, the observation of hydric soil indicators (hydrogen sulfide odor and mucky modified sand) as well as standing water and a high water table indicate the sampled area is a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: * _____)			
1. Ribes aureum	5%	Y	FAC
2.			
3.			
4.			
5.			
	5% = Total Cover		
Herb Stratum (Plot size: * _____)			
1. Nasturtium officinale	90%	Y	OBL
2. Solidago gigantea	70%	Y	FACW
3. Epilobium saximontanum	25%	N	FACW
4. Lemna minor	25%	N	OBL
5. Panicum virgatum	20%	N	FACW
6. Cirsium arvense	20%	N	FAC
7. Mentha arvensis	15%	N	FACW
8. Rumex crispus	10%	N	FAC
9. Linaria vulgaris	10%	N	UPL
10. Asclepias speciosa	2%	N	FAC
11.			
	287% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	115	x 1 =	115
FACW species	130	x 2 =	260
FAC species	37	x 3 =	111
FACU species	0	x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	292 (A)		536 (B)

Prevalence Index = B/A = 1.84

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community. Additional grasses also present in sample area but unidentifiable due to lack of reproductive structures.

SOIL

Sampling Point: #15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					loamy sand	sand >70% coated with OM
5-18	10YR 2/1	100					loamy sand	coarser sand with high OM

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- \- Histosol (A1)
- \- Histic Epipedon (A2)
- \- Black Histic (A3)
- \+ Hydrogen Sulfide (A4)
- \- Depleted Below Dark Surface (A11)
- \- Thick Dark Surface (A12)
- \+ Sandy Mucky Mineral (S1)
- \- Sandy Gleyed Matrix (S4)
- \- Sandy Redox (S5)
- \- Stripped Matrix (S6)
- \- Loamy Mucky Mineral (F1) **(except MLRA 1)**
- \- Loamy Gleyed Matrix (F2)
- \- Depleted Matrix (F3)
- \- Redox Dark Surface (F6)
- \- Depleted Dark Surface (F7)
- \- Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- \- 2 cm Muck (A10)
- \- Red Parent Material (TF2)
- \- Very Shallow Dark Surface (TF12)
- \- Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicators observed included hydrogen sulfide odor from 0-6 inches and mucky modified sand from 0-5 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- \+ Surface Water (A1)
- \+ High Water Table (A2)
- \+ Saturation (A3)
- \- Water Marks (B1)
- \- Sediment Deposits (B2)
- \- Drift Deposits (B3)
- \- Algal Mat or Crust (B4)
- \- Iron Deposits (B5)
- \- Surface Soil Cracks (B6)
- \- Inundation Visible on Aerial Imagery (B7)
- \- Sparsely Vegetated Concave Surface (B8)
- \- Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- \- Salt Crust (B11)
- \- Aquatic Invertebrates (B13)
- \+ Hydrogen Sulfide Odor (C1)
- \- Oxidized Rhizospheres along Living Roots (C3)
- \- Presence of Reduced Iron (C4)
- \- Recent Iron Reduction in Tilled Soils (C6)
- \- Stunted or Stressed Plants (D1) **(LRR A)**
- \- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- \- Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- \- Drainage Patterns (B10)
- \- Dry-Season Water Table (C2)
- \- Saturation Visible on Aerial Imagery (C9)
- \- Geomorphic Position (D2)
- \- Shallow Aquitard (D3)
- \- FAC-Neutral Test (D5)
- \- Raised Ant Mounds (D6) **(LRR A)**
- \- Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): <1 inch

Water Table Present? Yes X No _____ Depth (inches): 2 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): at surface

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water and a shallow water table (2 inches below the ground surface) observed throughout the sampled area during a site visit approximately 6-10 weeks after the peak wet season months (July and August). Hydrogen sulfide odor also detected.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/15/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #16

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): artificial drainage swale Local relief (concave, convex, none): concave Slope (%): 0-10%

Subregion (LRR): E Lat: N 39 01.403' Long: W 104 50.413 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Field work conducted in early October. A predominance of hydrophytic vegetation and the observation of hydric soil indicators (hydrogen sulfide odor), standing water, and a high water table indicate the sampled area is a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix amygdaloides	5%	Y	FACW
2. Pinus ponderosa	1%	N	FACU
3.			
4.			
	6%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Salix exigua	40%	Y	FACW
2. Elaeagnus angustifolia	15%	Y	FAC
3. Ribes aureum	5%	N	FAC
4. Symphoricarpos occidentalis	5%	N	FAC
5. Juniperus monosperma	1%	N	UPL
	66%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Typha X glauca	85%	Y	OBL
2. Lemna minor	40%	Y	OBL
3. Nasturtium officinale	35%	N	FACW
4. Typha latifolia	15%	N	OBL
5. Solidago gigantea	10%	N	FACW
6. Epilobium saximontanum	2%	N	FACW
7. Cirsium arvense	2%	N	FAC
8.			
9.			
10.			
11.			
	189%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 40%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	140	x 1 =	140
FACW species	92	x 2 =	184
FAC species	27	x 3 =	81
FACU species	1	x 4 =	4
UPL species	1	x 5 =	5
Column Totals:	261 (A)		414 (B)

Prevalence Index = B/A = 1.59

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community.

SOIL

Sampling Point: #16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					OM	mucky peat
4-8	10YR 2/2	100					loamy sand	high OM
8-12	10YR 4/1	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- + Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicators observed included hydrogen sulfide odor from 0-6 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- + Surface Water (A1)
- + High Water Table (A2)
- + Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- + Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): <1 inch

Water Table Present? Yes X No _____ Depth (inches): 2 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): at surface

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water was observed in a portion of the sampled area, while a shallow water table (2 inches below the ground surface) was observed throughout the sampled area . The site visit was conducted approximately 6-10 weeks after the peak wet season months (July and August). Hydrogen sulfide odor also detected.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/15/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #17

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): artificial drainage swale Local relief (concave, convex, none): concave Slope (%): 0- 30%

Subregion (LRR): E Lat: N 39 01.444' Long: W 104 50.373 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Field work conducted in early October, which is approximately 6-10 weeks after the peak wet season months (July and August). A predominance of hydrophytic vegetation and the observation of hydric soil indicators (redox dark surface) indicate the sampled area is a wetland. Oxidized rhizospheres along living roots was the only hydrology indicator observed in the sampled area; however, assessment during the wet season would likely result in additional hydrology indicators being observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix amygdaloides	20%	Y	FACW
2.			
3.			
4.			
	20%	= Total Cover	
Sapling/Shrub Stratum (Plot size: *)			
1. Salix exigua	40%	Y	FACW
2. Salix amygdaloides	20%	Y	FACW
3. Ribes lacustre	20%	Y	FAC
4.			
5.			
	80%	= Total Cover	
Herb Stratum (Plot size: *)			
1. Typha X glauca	30%	Y	OBL
2. Typha latifolia	20%	Y	OBL
3. Epilobium saximontanum	10%	N	FACW
4. Asclepias speciosa	1%	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	61%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 45%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	90	x 2 =	180
FAC species	21	x 3 =	63
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	161 (A)		293 (B)

Prevalence Index = B/A = 1.82

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community.

SOIL

Sampling Point: #17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 5/1	100					clay loam	
2-9	10YR 3/1	97	10YR 5/8	3	C	PL	silty clay loam	
9-11	10YR 3/1	70	10YR 4/4	30	C	M	loamy sand	
11-17	10YR 6/1	90	N 7/	10	D	M	loamy sand	moist-wet

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- = Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- + Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
Hydric soil indicators observed included 3% prominent redox concentrations in pore linings from 2-9 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- = Hydrogen Sulfide Odor (C1)
- + Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- + Dry-Season Water Table (C2)
- = Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- = Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): not encountered

Water Table Present? Yes X No _____ Depth (inches): 15 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 15 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
The site visit was conducted approximately 6-10 weeks after the peak wet season months (July and August). Additional hydrology indicators would be expected if the site were investigated during the wet season; however, hydric soil indicators and the presence of oxidized rhizospheres along living roots indicates the sampled area is a wetland.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/15/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #18

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): Artificial drainage swale Local relief (concave, convex, none): convex to concave Slope (%): 0- 10%

Subregion (LRR): E Lat: N 39 01.463' Long: W 104 50.3667 Datum: WGS 84

Soil Map Unit Name: Pring coarse sandy loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Field work conducted in early October, which is approximately 6-10 weeks after the peak wet season months (July and August). A predominance of hydrophytic vegetation, the observation of hydric soil indicators (sandy gleyed matrix), and the observation of hydrology indicators (surface water, saturation, and oxidized rhizospheres along living roots) indicate the sampled area is a wetland. Large boulders prevented observation of soils below 9 inches depth.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: *)			
1. Salix exigua	40%	Y	FACW
2. Ribes inerme	20%	Y	FAC
3.			
4.			
5.			
	60% = Total Cover		
Herb Stratum (Plot size: *)			
1. Typha X glauca	60%	Y	OBL
2. Epilobium saximontanum	20%	Y	FACW
3. Lemna minor	5%	N	OBL
4. Nasturtium officinale	5%	N	OBL
5. Cirsium arvense	3%	N	FAC
6. Rumex crispus	2%	N	FAC
7.			
8.			
9.			
10.			
11.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	60	x 2 =	120
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	155 (A)		265 (B)

Prevalence Index = B/A = 1.71

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community.

SOIL

Sampling Point: #18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					loamy sand	
4-5	10YR 3/1	90	10YR 6/8	2	C	PL	sand	
			10YR 7/1	10	D	M		
5-9	10Y 6/	99	10YR 6/8	1	C	PL	sand	moist-wet

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- + Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- : Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Boulders placed for drainage pipes

Depth (inches): 9 inches

Hydric Soil Present? Yes X No ____

Remarks:

The soil pit could not be extended beyond 9 inches where large boulders are present. The area is part of an artificial drainage area. Hydric soil indicators observed included a sandy gleyed matrix beginning within 6 inches of the soil surface (S4).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- + Surface Water (A1)
- - High Water Table (A2)
- + Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- : Hydrogen Sulfide Odor (C1)
- + Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- : Dry-Season Water Table (C2)
- : Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- : Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): <1 inch

Water Table Present? Yes ____ No X Depth (inches): not encountered*

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 5 inches

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

* The sampled area is associated with a constructed drainage swale. The water table was not encountered in the sampled area due to the presence of boulders at 9 inches. Hydrology indicators observed in the sample area included the presence of surface water in the center of the drainage area, saturation near the surface (5 inches depth), and oxidized rhizospheres along living roots.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/15/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #19

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): Toe of slope / drainage ditch Local relief (concave, convex, none): convex to concave Slope (%): 0- 10%

Subregion (LRR): E Lat: N 39 01.506' Long: W 104 50.285 Datum: WGS 84

Soil Map Unit Name: Pring coarse sandy loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Field work conducted in early October, which is approximately 6-10 weeks after the peak wet season months (July and August). A predominance of hydrophytic vegetation, the detection of a hydrogen sulfide odor between 0-6 inches, and the observation of saturation at 9 inches and a dry season water table at 11 inches indicate the sampled area is a wetland. Recent mowing in a portion of the sampled area prevented identification of some grasses and rushes.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: *)			
1. Panicum virgatum	50%	Y	FACW
2. Juncus balticus	30%	Y	FACW
3. Calamagrostis canadensis	10%	N	FACW
4. Juncus ensifolus	5%	N	FACW
5. Typha latifolia	5%	N	OBL
6. Salix exigua	2%	N	FACW
7.			
8.			
9.			
10.			
11.			
	102% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 2%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	97	x 2 =	194
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	102 (A)		199 (B)

Prevalence Index = B/A = 1.95

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community. Additional grass species present but unidentifiable due to lack of reproductive structures and recent mowing.

SOIL

Sampling Point: #19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2.5	10YR 3/2	100					sandy loam	
2.5-4.5	10YR 5/2	70	10YR 6/8	30	C	M	sand	
4.5-10	10YR 2/1	100					loamy sand	w OM
10-14	10YR 5/2	99					sand	coarse

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- \- Histosol (A1)
- \- Histic Epipedon (A2)
- \- Black Histic (A3)
- \+ Hydrogen Sulfide (A4)
- \- Depleted Below Dark Surface (A11)
- \- Thick Dark Surface (A12)
- \- Sandy Mucky Mineral (S1)
- \- Sandy Gleyed Matrix (S4)
- \- Sandy Redox (S5)
- \- Stripped Matrix (S6)
- \- Loamy Mucky Mineral (F1) (**except MLRA 1**)
- \- Loamy Gleyed Matrix (F2)
- \- Depleted Matrix (F3)
- \- Redox Dark Surface (F6)
- \- Depleted Dark Surface (F7)
- \- Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- \- 2 cm Muck (A10)
- \- Red Parent Material (TF2)
- \- Very Shallow Dark Surface (TF12)
- \- Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
Hydric soil indicators observed included a hydrogen sulfide odor from 0-6 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- \- Surface Water (A1)
- \- High Water Table (A2)
- \+ Saturation (A3)
- \- Water Marks (B1)
- \- Sediment Deposits (B2)
- \- Drift Deposits (B3)
- \- Algal Mat or Crust (B4)
- \- Iron Deposits (B5)
- \- Surface Soil Cracks (B6)
- \- Inundation Visible on Aerial Imagery (B7)
- \- Sparsely Vegetated Concave Surface (B8)
- \- Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- \- Salt Crust (B11)
- \- Aquatic Invertebrates (B13)
- \+ Hydrogen Sulfide Odor (C1)
- \- Oxidized Rhizospheres along Living Roots (C3)
- \- Presence of Reduced Iron (C4)
- \- Recent Iron Reduction in Tilled Soils (C6)
- \- Stunted or Stressed Plants (D1) (**LRR A**)
- \- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- \- Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- \- Drainage Patterns (B10)
- \+ Dry-Season Water Table (C2)
- \- Saturation Visible on Aerial Imagery (C9)
- \- Geomorphic Position (D2)
- \- Shallow Aquitard (D3)
- \- FAC-Neutral Test (D5)
- \- Raised Ant Mounds (D6) (**LRR A**)
- \- Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 11 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 9 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
* The sampled area a toe slope associated with roadside drainage swale north of North Gate Blvd. Hydrology indicators observed in the sample area included a hydrogen sulfide odor, the presence of saturation near the surface (9 inches depth), and a dry-season water table (11 inches depth). The site visit was conducted 6-10 weeks after the peak wet season months (July and August); therefore, it is reasonable to assume that the water table in the sampled area would reach the surface during the wet season.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/15/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #20

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): Toe of slope / drainage ditch Local relief (concave, convex, none): convex to concave Slope (%): 0- 10%

Subregion (LRR): E Lat: N 39 01.502' Long: W 104 50.304 Datum: WGS 84

Soil Map Unit Name: Pring coarse sandy loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Field work conducted in early October, which is approximately 6-10 weeks after the peak wet season months (July and August). The sampled area exhibited a predominance of hydrophytic vegetation but lacked hydric soil indicators. Oxidized rhizospheres on living roots were observed from 2-4 inches and 6-14 inches, but not at the depth and thickness necessary to meet hydric soil indicators. A follow-up visit during the wet season may result in the observation of additional hydrology indicators, but based on the field observations and the lack of hydric soil indicators, the sampled area is not a wetland. Recent mowing in a portion of the sampled area prevented identification of some grasses.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: * _____)			
1. Juncus balticus	70%	Y	FACW
2. Juncus ensifolius	30%	Y	FACW
3. Panicum virgatum	10%	N	FACW
4. Calamagrostis canadensis	5%	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	115% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	115	x 2 =	230
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	115 (A)		230 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community. Additional grass species present but unidentifiable due to lack of reproductive structures and recent mowing.

SOIL

Sampling Point: #20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					sandy loam	
2-4	10YR 2/2	90	7.5YR 5/8	10	C	PL	sandy loam	
4-6	10YR 2/2	100					sandy loam	
6-14	10YR 2/2	95	7.5YR 5/8	5	C	PL	loamy sand	
14-16	10YR 6/2	100					sand	
16-18	10Y 4/	80	10Y 7/	20	D	M	sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- _-_ Histosol (A1)
- _-_ Histic Epipedon (A2)
- _-_ Black Histic (A3)
- _-_ Hydrogen Sulfide (A4)
- _-_ Depleted Below Dark Surface (A11)
- _-_ Thick Dark Surface (A12)
- _-_ Sandy Mucky Mineral (S1)
- _-_ Sandy Gleyed Matrix (S4)
- _-_ Sandy Redox (S5)
- _-_ Stripped Matrix (S6)
- _-_ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- _-_ Loamy Gleyed Matrix (F2)
- _-_ Depleted Matrix (F3)
- _-_ Redox Dark Surface (F6)
- _-_ Depleted Dark Surface (F7)
- _-_ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- _-_ 2 cm Muck (A10)
- _-_ Red Parent Material (TF2)
- _-_ Very Shallow Dark Surface (TF12)
- _-_ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
No hydric soil indicators observed in the sampled area.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- _-_ Surface Water (A1)
- _-_ High Water Table (A2)
- _-_ Saturation (A3)
- _-_ Water Marks (B1)
- _-_ Sediment Deposits (B2)
- _-_ Drift Deposits (B3)
- _-_ Algal Mat or Crust (B4)
- _-_ Iron Deposits (B5)
- _-_ Surface Soil Cracks (B6)
- _-_ Inundation Visible on Aerial Imagery (B7)
- _-_ Sparsely Vegetated Concave Surface (B8)
- _-_ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- _-_ Salt Crust (B11)
- _-_ Aquatic Invertebrates (B13)
- _-_ Hydrogen Sulfide Odor (C1)
- _+_ Oxidized Rhizospheres along Living Roots (C3)
- _-_ Presence of Reduced Iron (C4)
- _-_ Recent Iron Reduction in Tilled Soils (C6)
- _-_ Stunted or Stressed Plants (D1) (**LRR A**)
- _-_ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- _-_ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- _-_ Drainage Patterns (B10)
- _-_ Dry-Season Water Table (C2)
- _-_ Saturation Visible on Aerial Imagery (C9)
- _-_ Geomorphic Position (D2)
- _-_ Shallow Aquitard (D3)
- _-_ FAC-Neutral Test (D5)
- _-_ Raised Ant Mounds (D6) (**LRR A**)
- _-_ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 23 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 22 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
* The sampled area a toe slope associated with roadside drainage swale north of North Gate Blvd. Hydrology indicators observed in the sample area included oxidized rhizospheres along living roots from 2-4 inches and 6-14 inches. The site visit was conducted 6-10 weeks after the peak wet season months (July and August); therefore, it is possible that additional hydrology indicators may be present during the wet season. However, since the matrix below 6 inches is sand, the sample area's dry season water table should be closer to 12 inches to meet the C2 secondary hydrology indicator.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/17/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #21

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): Toe of slope / drainage ditch Local relief (concave, convex, none): convex to concave Slope (%): 0- 10%

Subregion (LRR): E Lat: N 39 01.496' Long: W 104 50.338 Datum: WGS 84

Soil Map Unit Name: Pring coarse sandy loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Field work conducted in early October, which is approximately 6-10 weeks after the peak wet season months (July and August). The sampled area exhibited a predominance of hydrophytic vegetation, hydric soil indicators (redox dark surface), and various hydrology indicators including surface water in a portion of the sampled area, saturation at 10 inches, a water table of 12 inches, and oxidized rhizospheres on living roots from 0-4 inches. Recent mowing in a portion of the sampled area prevented identification of some grasses.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: *)			
1. Juncus balticus	70%	Y	FACW
2. Juncus ensifolius	30%	Y	FACW
3. Panicum virgatum	30%	Y	FACW
4. Schoenoplectus pungens	20%	N	OBL
5. Calamagrostis canadensis	15%	N	FACW
6. Cirsium vulgare	5%	N	FACU
7.			
8.			
9.			
10.			
11.			
	170% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	145	x 2 =	290
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	170 (A)		290 (B)

Prevalence Index = B/A = 1.94

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community. Additional grass species present but unidentifiable due to lack of reproductive structures and recent mowing.

SOIL

Sampling Point: #21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	60	7.5YR 6/8	40	C	PL	sandy loam	
2-4	10YR 2/2	95	7.5YR 6/8	5	C	PL	sandy loam	
4-14	10YR 2/2	100					loamy sand	moist -wet
14-17	10YR 6/1	75	10YR 6/8	25	C	M	sand	wet
17-23	10YR 5/3	100					sand	wet

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- + Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicators observed in the sampled area included redox dark surface (4 inch thickness with 5% or more prominent or distinct redox concentrations in the pore linings from 0-4 inches).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- + Surface Water (A1)
- + High Water Table (A2)
- + Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- + Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): <1 inch

Water Table Present? Yes X No _____ Depth (inches): 12 inches

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 10 inches

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

The sampled area is a toe slope associated with roadside drainage swale north of North Gate Blvd. Hydrology indicators observed in the sample area included surface water in portions of the sampled area, saturation at 10 inches and a water table at 12 inches during the dry season, and oxidized rhizospheres along living roots from 0-4 inches. The site visit was conducted 6-10 weeks after the peak wet season months (July and August); therefore, it is likely that the water table rises to saturate the surface during the wet season.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/17/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #22

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 1, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 0-45%

Subregion (LRR): E Lat: N 39 01.826' Long: W 104 50.537 Datum: WGS 84

Soil Map Unit Name: Kettle-Rock outcrop complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Field work conducted in late September and early October. The wet season is April-September, peaking in July and August. Due to the site visit being conducted 6-10 weeks after the peak of the wet season, hydrology could be naturally problematic for this community; however, the lack of hydric soil indicators and hydrophytic vegetation indicates that wet season hydrology in this community does not inundate or saturate soils for a sufficient frequency or duration to promote a prevalence of vegetation adapted to saturated soil conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: *)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus ponderosa	20%	Y	FACU
2.			
3.			
4.			
	20% = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: *)			
1. Bouteloua gracilis	50%	Y	UPL
2. Bromus inermis	35%	Y	UPL
3. Linaria vulgaris	30%	Y	UPL
4. Yucca glauca	10%	N	UPL
5. Verbascum thapsus	5%	N	FACU
6. Artemisia frigida	3%	N	UPL
7.			
8.			
9.			
10.			
11.			
	133% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	25	x 4 =	100
UPL species	128	x 5 =	640
Column Totals:	153 (A)		740 (B)

Prevalence Index = B/A = 4.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

- 2 - Dominance Test is >50%

- 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:
* Sampled entire plant community. Additional grasses present in sampled area but lack of reproductive structures made them unidentifiable during the site visit.

SOIL

Sampling Point: #22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					loamy sand	
6-14	10YR 6/4	100					sand	dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators observed. No redox concentrations, depletions, or greyed matrix observed to depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table and saturation absent at 14 inches below ground surface. Unable to extend soil boring below 14 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/18/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #23

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): artificial drainage ditch Local relief (concave, convex, none): concave Slope (%): 0- 10%

Subregion (LRR): E Lat: N 39 01.475' Long: W 104 50.337 Datum: WGS 84

Soil Map Unit Name: Pring coarse sandy loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Field work conducted in early October, which is approximately 6-10 weeks after the peak wet season months (July and August). Recent mowing in a portion of the sampled area prevented identification of some grasses and asphalt, likely from historic paving of North Gate Blvd, was encountered at 14 inches. A follow up visit during the wet season (May-August) would give a more accurate determination and additional hydrology indicators may be present at that time; however, the lack of hydric soil iand wetland hydrology ndicators suggests that the sampled area is not a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: *)			
1. Typha angustifolia	40%	Y	OBL
2. Typha latifolia	40%	Y	OBL
3. Cirsium arvense	20%	N	FAC
4. Verbascum thapsus	10%	N	FACU
5. Anaphalis margaritacea	10%	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	120% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	120 (A)		220 (B)

Prevalence Index = B/A = 1.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

* Sampled entire plant community. Additional grass species present but unidentifiable due to lack of reproductive structures and recent mowing.

SOIL

Sampling Point: #23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					loamy sand	
4-12	10YR 3/2	99	10YR 5/8	1	C	PL	loamy sand	
12-14	10YR 4/3	100					sand	dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- _-_ Histosol (A1)
- _-_ Histic Epipedon (A2)
- _-_ Black Histic (A3)
- _-_ Hydrogen Sulfide (A4)
- _-_ Depleted Below Dark Surface (A11)
- _-_ Thick Dark Surface (A12)
- _-_ Sandy Mucky Mineral (S1)
- _-_ Sandy Gleyed Matrix (S4)
- _-_ Sandy Redox (S5)
- _-_ Stripped Matrix (S6)
- _-_ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- _-_ Loamy Gleyed Matrix (F2)
- _-_ Depleted Matrix (F3)
- _-_ Redox Dark Surface (F6)
- _-_ Depleted Dark Surface (F7)
- _-_ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- _-_ 2 cm Muck (A10)
- _-_ Red Parent Material (TF2)
- _-_ Very Shallow Dark Surface (TF12)
- _-_ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
No hydric soil indicators observed in the sampled area. Asphalt encountered at 14 inches, believed to be associated with historic paving of North Gate Blvd.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- _-_ Surface Water (A1)
- _-_ High Water Table (A2)
- _-_ Saturation (A3)
- _-_ Water Marks (B1)
- _-_ Sediment Deposits (B2)
- _-_ Drift Deposits (B3)
- _-_ Algal Mat or Crust (B4)
- _-_ Iron Deposits (B5)
- _-_ Surface Soil Cracks (B6)
- _-_ Inundation Visible on Aerial Imagery (B7)
- _-_ Sparsely Vegetated Concave Surface (B8)
- _-_ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- _-_ Salt Crust (B11)
- _-_ Aquatic Invertebrates (B13)
- _-_ Hydrogen Sulfide Odor (C1)
- _-_ Oxidized Rhizospheres along Living Roots (C3)
- _-_ Presence of Reduced Iron (C4)
- _-_ Recent Iron Reduction in Tilled Soils (C6)
- _-_ Stunted or Stressed Plants (D1) **(LRR A)**
- _-_ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- _-_ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- _-_ Drainage Patterns (B10)
- _-_ Dry-Season Water Table (C2)
- _-_ Saturation Visible on Aerial Imagery (C9)
- _-_ Geomorphic Position (D2)
- _-_ Shallow Aquitard (D3)
- _-_ FAC-Neutral Test (D5)
- _-_ Raised Ant Mounds (D6) **(LRR A)**
- _-_ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): not encountered

Water Table Present? Yes _____ No X Depth (inches): not encountered

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): not encountered

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
*No hydrology indicators observed. The site visit was conducted 6-10 weeks after the peak wet season months (July and August); therefore, hydrology could be naturally problematic but the lack of hydric soil indicators suggests that wet season hydrology is insufficient in frequency and/or duration to create saturated soil conditions. The sampled area is associated with roadside drainage swale south of North Gate Blvd.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 10/18/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #24

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): artificial drainage ditch Local relief (concave, convex, none): concave Slope (%): 0- 10%

Subregion (LRR): E Lat: N 39 01.485' Long: W 104 50.292 Datum: WGS 84

Soil Map Unit Name: Pring coarse sandy loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
The site visit was conducted 6-10 weeks after the peak wet season months (July and August). The sampled area is associated with roadside drainage swale south of North Gate Blvd. A follow-up visit during the wet season may result in the observation of hydrology indicators. The asphalt layer at 12 inches could serve as an impermeable layer potentially retaining drainage water in the highly vegetated and gently sloping depression of the sampled area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: *)			
1. Typha angustifolia	40%	Y	OBL
2. Typha latifolia	40%	Y	OBL
3. Cirsium arvense	20%	N	FAC
4. Verbascum thapsus	10%	N	FACU
5. Anaphalis margaritacea	10%	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	120% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	120 (A)		220 (B)

Prevalence Index = B/A = 1.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

* Sampled entire plant community. Additional grass species present but unidentifiable due to lack of reproductive structures and recent mowing.

SOIL

Sampling Point: #24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100					silty loam	
4-12	10YR 3/1	90	10YR 5/8	10	C	PL	loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- ± Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Asphalt

Depth (inches): 12 inches

Hydric Soil Present? Yes X No ____

Remarks:

Hydric soil indicators observed in the sampled area included 10% prominent redox concentrations from 4-12 inches. The soil pit was not extended beyond 12 inches because asphalt was encountered at 12 inches. The asphalt at depth is believed to be associated with historic paving of North Gate Blvd.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- + Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): not encountered

Water Table Present? Yes ____ No X Depth (inches): not encountered

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): not encountered

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

*The site visit was conducted 6-10 weeks after the peak wet season months (July and August). The sampled area is associated with roadside drainage swale south of North Gate Blvd. Hydrology indicators observed in the sample area included oxidized rhizospheres along living roots from 4-12 inches. Surface water, saturation, and the water table were not observed in this sample area; however, a follow-up visit during the wet season may result in the observation of additional hydrology indicators. The asphalt layer at 12 inches could serve as an impermeable layer potentially retaining drainage water in the highly vegetated and gently sloping depression of the sampled area.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: US Air Force Academy's True North Commons EUL Area City/County: Colorado Springs, El Paso County Sampling Date: 11/20/18

Applicant/Owner: US Air Force Academy State: CO Sampling Point: #25

Investigator(s): T. Walsh & A. Davis Section, Township, Range: Section 12, Township 12 South, Range 67 West

Landform (hillslope, terrace, etc.): artificial drainage ditch Local relief (concave, convex, none): concave Slope (%): 0- 3%

Subregion (LRR): E Lat: N 39 01.572' Long: W 104 50.001 Datum: WGS 84

Soil Map Unit Name: Blendon sandy loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Field work conducted in mid November, which is approximately 12-16 weeks after the peak wet season months (July and August). A metal sheet, likely from historic paving of North Gate Blvd and/or construction of interstate I-25, was encountered at 14 inches. A follow up visit during the wet season (May-August) would give a more accurate determination and additional hydrology indicators may be present at that time; however, the lack of hydric soil and wetland hydrology indicators suggests that the sampled area is not a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: *_____)			
1. Salix exigua	95%	Y	FACW
2.			
3.			
4.			
5.			
	95% = Total Cover		
Herb Stratum (Plot size: *_____)			
1. Cirsium arvense	10%	Y	FAC
2. Panicum virgatum	10%	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	105	x 2 =	210
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	115 (A)		240 (B)

Prevalence Index = B/A = 2.09

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

+ 2 - Dominance Test is >50%

+ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Sampled entire plant community. Additional grass species present but unidentifiable due to lack of reproductive structures.

SOIL

Sampling Point: #25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/1	100					loamy sand	
10-11	10YR 3/6	100					loamy sand	10% asphalt in layer (10YR 2/1)
11-14	10YR 2/1	100					sand	with significant asphalt, moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- - Histosol (A1)
- - Histic Epipedon (A2)
- - Black Histic (A3)
- - Hydrogen Sulfide (A4)
- - Depleted Below Dark Surface (A11)
- - Thick Dark Surface (A12)
- - Sandy Mucky Mineral (S1)
- - Sandy Gleyed Matrix (S4)
- - Sandy Redox (S5)
- - Stripped Matrix (S6)
- - Loamy Mucky Mineral (F1) (**except MLRA 1**)
- - Loamy Gleyed Matrix (F2)
- - Depleted Matrix (F3)
- - Redox Dark Surface (F6)
- - Depleted Dark Surface (F7)
- - Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- - 2 cm Muck (A10)
- - Red Parent Material (TF2)
- - Very Shallow Dark Surface (TF12)
- - Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Metal sheeting

Depth (inches): 14 inches

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators observed in the sampled area. Metal sheeting encountered at 14 inches, believed to be associated with historic paving of North Gate Blvd and/or construction of Interstate I-25.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- - Surface Water (A1)
- - High Water Table (A2)
- - Saturation (A3)
- - Water Marks (B1)
- - Sediment Deposits (B2)
- - Drift Deposits (B3)
- - Algal Mat or Crust (B4)
- - Iron Deposits (B5)
- - Surface Soil Cracks (B6)
- - Inundation Visible on Aerial Imagery (B7)
- - Sparsely Vegetated Concave Surface (B8)
- - Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- - Salt Crust (B11)
- - Aquatic Invertebrates (B13)
- - Hydrogen Sulfide Odor (C1)
- - Oxidized Rhizospheres along Living Roots (C3)
- - Presence of Reduced Iron (C4)
- - Recent Iron Reduction in Tilled Soils (C6)
- - Stunted or Stressed Plants (D1) (**LRR A**)
- - Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- - Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- - Drainage Patterns (B10)
- - Dry-Season Water Table (C2)
- - Saturation Visible on Aerial Imagery (C9)
- - Geomorphic Position (D2)
- - Shallow Aquitard (D3)
- - FAC-Neutral Test (D5)
- - Raised Ant Mounds (D6) (**LRR A**)
- - Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): not encountered

Water Table Present? Yes _____ No X Depth (inches): not encountered

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): not encountered

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

*No hydrology indicators observed. The site visit was conducted 12-16 weeks after the peak wet season months (July and August); therefore, hydrology could be naturally problematic but the lack of hydric soil indicators suggests that wet season hydrology is insufficient in frequency and/or duration to create saturated soil conditions. The sampled area is associated with a roadside drainage ditch south of North Gate Blvd.

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): April 3, 2019

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Albuquerque District, U.S. Air Force Academy, True North Commons, SPA-2019-00045-SCO

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: **Colorado** County/parish/borough: **El Paso County** City: **Colorado Springs**
Center coordinates of site (lat/long in degree decimal format): Lat. **39.023111°**, Long. **-104.840323°**
Universal Transverse Mercator: **13 513822.22 4319353.33**
Name of nearest waterbody: **Monument Creek**
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: **John Martin Resevoir**
Name of watershed or Hydrologic Unit Code (HUC): **Upper Arkansas. Colorado., 11020003**
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form:

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: **February 28, 2019**
☒ Field Determination. Date(s): **January 17, 2019 and February 13, 2019**

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet, wide, and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known):

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: **Parcels A, B, & D includes a combined total of 0.59-acres of Isolated Wetlands with no surface connection to any Waters of the U.S (WOUS). Parcel E includes a combined total of 1.66-acres of Isolated Wetland communities with 1 Wetland and gully with a 0.481-acres wetland along with an ephemeral sheetflow beginning at the wetland site located upgradient of a 900 linear ft. natural drainage/gully that connects to Monument Creek (RPW).**

SECTION III: CWA ANALYSIS

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW:

Summarize rationale supporting determination:

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **0.1 square miles**
Drainage area: **0.1 square miles**
Average annual rainfall: **13-14** inches
Average annual snowfall: **37.7** inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Tributary flows through **3** tributaries before entering TNW.

Project waters are **30 (or more)** river miles from TNW.
Project waters are **1 (or less)** river miles from RPW.
Project waters are **30 (or more)** aerial (straight) miles from TNW.
Project waters are **1 (or less)** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: **N/A**

Identify flow route to TNW[5]: **Unnamed Tributary ("site" adjacent to Monument Creek) flows into Monument Creek, into Fountain Creek, into Arkansas River, and finally into John Martin Reservoir(TNW) totaling driving distance of 167-miles with an additional 10-miles for stream-miles.**

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Tributary stream order, if known: **1, 2, 3, 4**

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☒ Natural
☐ Artificial (man-made). Explain:
☐ Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):
Average width: **1** feet
Average depth: **0.083 to 0.167** feet
Average side slopes: **4:1 (or greater).**

Primary tributary substrate composition (check all that apply):
☒ Silts ☒ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☒ Muck
☐ Bedrock ☒ Vegetation. Type/% cover: **60-70**
☐ Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: **Stable gully with diverse vegetation.**
Presence of run/riffle/pool complexes. Explain: **N/A**
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): **30** %

(c) Flow:
Tributary provides for: **Ephemeral flow**
Estimate average number of flow events in review area/year: **2-5**
Describe flow regime: **mixture of stormwater flows and seepage run-off.**
Other information on duration and volume: **Undetermined**

Surface flow is: **Overland sheetflow.** Characteristics: **Predominant seepage flows down a 30% slope drainage with a 1-2 inches depth, 1 foot width full-year flows with 1-2 stormwater high flow events estimated at 1-2 cubic feet per second.**

Subsurface flow: **Unknown**. Explain findings: **No data available.**
☐ Dye (or other) test performed:

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
☐ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: **Clear trickling surface flows with good water quality, sheet flows through run-off events**
Identify specific pollutants, if known: **If any polluants exist they get filtered with wetland.**

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):
☐ Riparian corridor. Characteristics (type, average width):
☒ Wetland fringe. Characteristics: **dominated by shrubs and herbs.**
☒ Habitat for:
☐ Federally Listed species. Explain findings:
☐ Fish/spawn areas. Explain findings:
☐ Other environmentally-sensitive species. Explain findings:
☒ Aquatic/wildlife diversity. Explain findings: **Freshwater invertebrates**

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:
(a) General Wetland Characteristics:
Properties:
Wetland size: **.472** acres
Wetland type. Explain: **dominated by shrubs and herbs.**
Wetland quality. Explain: **Good quality water seepage sustaining a diverse emergent wetlland in a natural drainage supported by seepage dominated by Peachleaf Willow trees, Shrubs, herbs, Narrowleaf Willow, Common Duckweed and Rocky Mountain willowherb.**
Project wetlands cross or serve as state boundaries. Explain: **N/A**

(b) General Flow Relationship with Non-TNW:
Flow is: **Ephemeral flow**. Explain: **Stormwater run-off and seep flows.**

Surface flow is**: Overland sheetflow**
Characteristics: **The Ephemeral gully is assumed to be normally dry for most of the year, flowing for less than 3-6 days per year.**

Subsurface flow: **Unknown**. Explain findings: **No data available.**
☐ Dye (or other) test performed: **N/A**

(c) Wetland Adjacency Determination with Non-TNW:
☒ Directly abutting
☐ Not directly abutting
☐ Discrete wetland hydrologic connection. Explain:
☐ Ecological connection. Explain:
☐ Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW
Project wetlands are **30 (or more)** river miles from TNW.
Project waters are **30 (or more)** aerial (straight) miles from TNW.
Flow is from: **Wetland to navigable waters.**
Estimate approximate location of wetland as within the **2-year or less** floodplain.

(ii) Chemical Characteristics:
Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: **Water is clear, with good water quality flowing from wetlands to sheetflow to Monument Creek.**
Identify specific pollutants, if known: **sedimention**

(iii) Biological Characteristics. Wetland supports (check all that apply):
☒ Riparian buffer. Characteristics (type, average width): **5-20 feet**
☒ Vegetation type/percent cover. Explain: **60-70% coverage**
☒ Habitat for:
☐ Federally Listed species. Explain findings:
☐ Fish/spawn areas. Explain findings:
☐ Other environmentally-sensitive species. Explain findings:
☒ Aquatic/wildlife diversity. Explain findings: **Assumed invertabrates and anphibians**

3. Characteristics of all wetlands adjacent to the tributary (if any)
All wetland(s) being considered in the cumulative analysis: **15-20**
Approximately **2.721** acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

N	**.481**	**N**	**2.24**

Summarize overall biological, chemical and physical functions being performed: **The biological functions dominated by shrub and herbaceous wetland begins as a seep that flows downhill into a sheetflow forming an ephemral flow. Aquatic organisms are maintained within the wetland area only and are absent in the ephemeral sheetflow. The chemical functions are attributed to the wetland functions as the filtering mehanism providing clear ephemeral sheetflow towards Monument Creek (RPW). The physical functions are attributed to the wetland existence sustained by groundwater seeps and stormwater run-off creating ephemral sheetflows.**

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: **N/A**

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: **Flows begin in a low-gradient sloped wetland seep. Flows exit the wetland and sheetflows creating an ephemral flow within a 1,000 linear foot drainage(gully) into Monument Creek. It appears if a high rain event occurs; it would likely create an estimated volume amount of less than 5 cfs. of flow within the 1,000 linear foot drainage. During most years storm events in this area occur 2-5 times per year. The flows for a peak duration are estimated 1-4 hours based on intensity and duration of the storm event. We assume the flows from this drainage in relation to the TNW (167 miles away) would not have a significant physical, biological, and chemical nexus to the TNW due to the distance from the drainage to the TNW considering the low volumes, dilution ratios, evaporation rate, and the number of irrigation intake/outlet structures occurring along the path to the TNW (John Martin Reservoir). We conclude, that it would be speculative to demonstrate, flows from this drainage would have capacity of physical, biological, and chemical characteristics that would affect the integrity of the TNW, because of the presence of the multitude of variables of water uses and the distance from the site. It has been observed this site has no adjacent chemical industrial processes that contributes to the immediate area and in combination with the observed good quality of water, it would be speculative to say that any chemical affects could affect the integrity of the TNW. Based on elevation difference of habitat characteristics, it would also be speculative to say that present aquatic organisms would have the ability to reach the TNW because of present multitude variables of water uses and the distance from the site.**

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: **N/A**

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

☐ TNWs: linear feet, wide, Or acres.
☐ Wetlands adjacent to TNWs: acres.

2. RPWs that flow directly or indirectly into TNWs.
☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet wide.
☐ Other non-wetland waters: acres.
Identify type(s) of waters:

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet, wide.
☐ Other non-wetland waters: acres.
Identify type(s) of waters:

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]

[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain:
☐ Other factors. Explain:

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet, wide.
☐ Other non-wetland waters: acres.
Identify type(s) of waters:
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **Based on site visit and desktop evaluation it has been concluded, that it would be speculative to say, flows from this drainage/gully would have the capacity to physically, biologically or chemicalily have the characteristics that would affect the integrity of the TNW because of the established multitude of varibles of water uses and the distance through gully and 3 RPWs from the site therefore, it behoves our office not to assert jurisdiction on the basis the site does not meet the "Significant Nexus" standard.**
☐ Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, wide.
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: **1.653-acres drumlin slope wetland seeps/0.587-acres run-off, seeps and preciptiation**
☒ Wetlands: **2.24** acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): **1,000** linear feet, **20- 40 feet** wide.
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: **seeps, snow and precipitation**
☒ Wetlands: **0.481.** acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps:
☐ Corps navigable waters' study:
☒ U.S. Geological Survey Hydrologic Atlas: **110200030105**
☐ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☐ U.S. Geological Survey map(s). Cite scale & quad name:
☐ USDA Natural Resources Conservation Service Soil Survey. Citation:
☐ National wetlands inventory map(s). Cite name:
☒ State/Local wetland inventory map(s): **No designation wetlands in the area being evaluated.**
☒ FEMA/FIRM maps: **FIRM map (08041CO287G) does not have designated Floodplains in the this area.**
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): **March 21, 2019**
or ☐ Other (Name & Date):

- ☐ Previous determination(s). File no. and date of response letter:
- ☐ Applicable/supporting case law:
- ☐ Applicable/supporting scientific literature:
- ☐ Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD:

The field investigation included identification of potentially jurisdictional WOUS, verifying the consultant's wetland delineation report results on an undeveloped upland 57-acre boundary open space area located within the United States Air Force Academy's (USAFA) installation in Colorado Springs, Colorado.

For the purposes of illustrating investigative findings, the property is divided into 5 distinct parcels A-E referenced in the attached Maps 1, & 2) for the purposes of this evaluation. A summary of the findings and conclusion for each parcel are provided along with field photos and data collected from USGS (Appendix A) estimating water basin size and estimated annual flows for the site.

The parcels findings are summarized as follows:

Parcel A – An undeveloped open space combined with an established egress point for the new Santa Fe Trail located to the north and northeast of the parcel. It also includes a 1/2 –acre asphalt parking lot and access road for the Trailhead. All wetlands were verified to be isolated wetlands sustained by roadway and land stormwater run-off and seeps. All present 0.054-acres of wetlands have been identified to meet the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators asserting the wetlands to be isolated wetlands along the north side of Northgate Boulevard shoulder. It has been confirmed there are no other wetlands or water ways that connect to any WOUS.

Parcel B – An undeveloped open space consists of an established man-made drainage ditch that captures Northgate Boulevard's stormwater run-off and distributes it into parcel B. Located to the north of this parcel is the Santa Fe Trailhead access maintenance dirt road. All 0.23-acres of wetlands have been identified to meet the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators asserting the wetlands are isolated wetlands along the south side of Northgate Boulevard shoulder and within parcel B. It has been confirmed there is no connection to any WOUS.

Parcel C – An undeveloped open space entirely uplands with no wetlands present. No Wetlands present on this parcel and there is no connection to any WOUS.

Parcel D – An undeveloped open space consists of an established man-made drainage ditch connected to Northgate Blvd. drainage that captures all storm-water run-off and distributes into parcels D. All wetlands were verified to be isolated wetlands sustained by roadway and storm-water run-off. All 0.303-acres of wetlands have been identified to meet the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators asserting the wetlands are isolated wetlands along the south side of Northgate Boulevard shoulder and within parcel D. It has been confirmed there is no connection to other wetlands that connect to any WOUS.

Parcel E – An undeveloped open space contains approximately 1.653-acres of isolated drumlin slope wetlands sporadically located throughout the parcel. The isolated wetlands in the area are sustained by seeps with no water leaving each of the wetlands. All wetlands were identified to meet the criteria to be identified as a wetland based on the predominance of hydrophytic vegetation and the observation of hydric soil and wetland hydrology indicators asserting the wetlands are isolated drumlin slope wetlands.
In addition, the parcel contains one (1) 1,000 linear foot natural gully (unnamed tributary) oriented from east to west draining into Monument Creek (RPW). The gully crosses at the center of the parcel where a 0.481-acres PEM wetland begins at the start of the gully entrance, continuing 400 feet downstream of the gully being sustained by groundwater seep sheet flows and storm-water run-off. The wetland areas within the gully ends at 400 linear feet downstream, thus separating up gradient wetlands from the remaining 600 linear feet of gully directed into Monument Creek. It was observed that the gully has no physical characteristics or features that indicate that an ordinary high water mark exists and there is no defined bed and bank features.

In conclusion, a total of 2.721-acres of isolated wetlands were identified within the 57-acre property. The distribution of the total 2.721-acres of wetlands identified throughout the property are as follows:

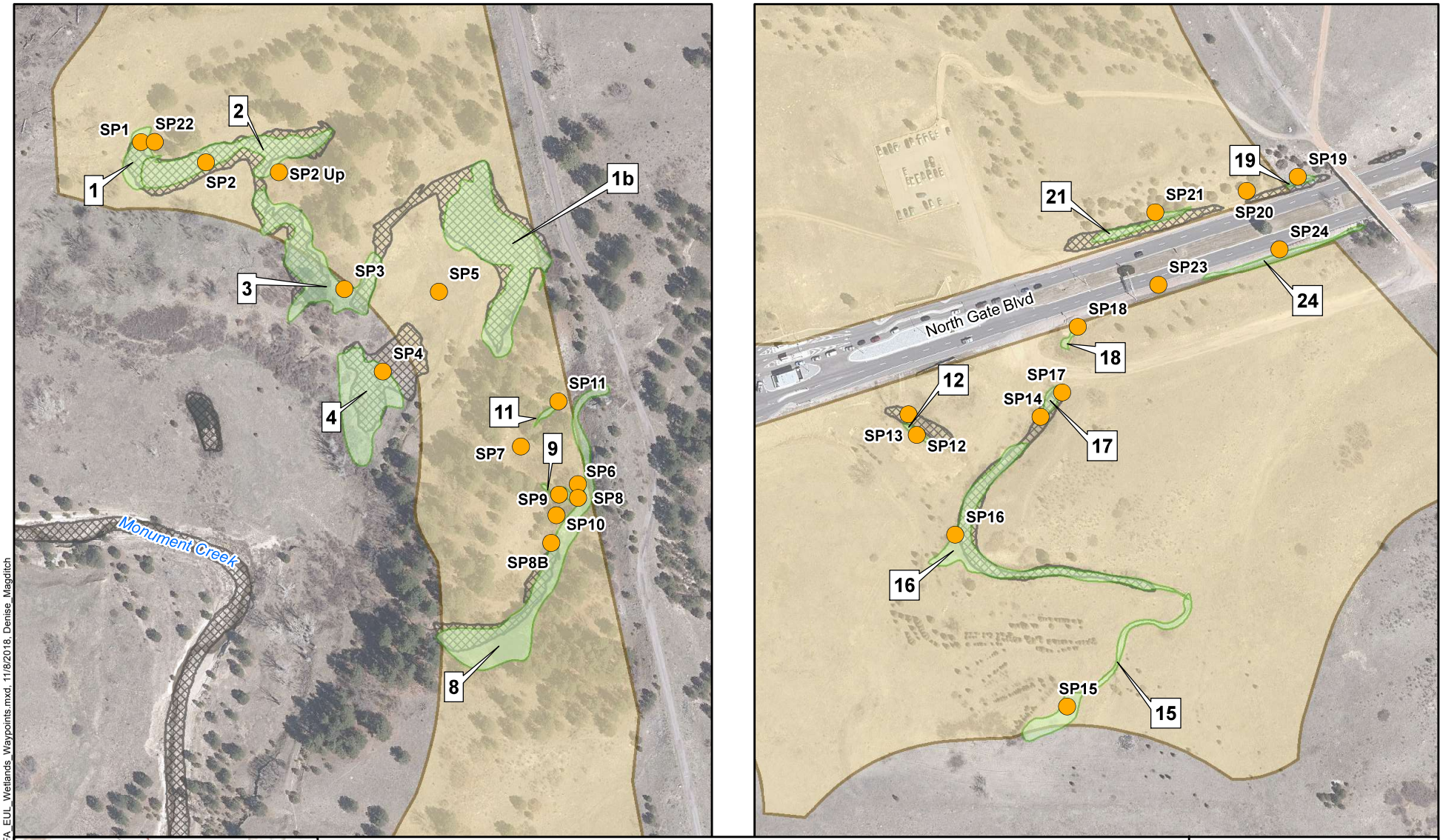
- 0.481-acres of isolated PEM wetlands are located 500-linear feet up-gradient of Monument Creek, a RPW. The 900 linear foot gully has an ephemeral sheet flow that drains into Monument Creek, a WOUS with no additional connection to other wetlands.

- 0.587-acres of wetlands are located within Parcels A through D, and verified to be isolated wetlands sustained primarily by roadside drainage, seep and preciptiation with no connection to other wetlands or any WOUS.

- 1.653-acres of wetlands are located within Parcel E, and were verified to be isolated drumlin slope wetlands located sporatically along the upland slopes sustained primarily by slope seeps and preciption that do not have any connection to other wetlands or any WOUS.

The cummultive analysis considered the size of basin area, physical, biological, chemical, ecological, geological features, ephemeral estimated volume, USGS basin data, and the proximity of the site to the TNW (Any volume flows through the site are assumed not to have the capacity to reach the TNW through the 3 RPWs and their contributing tributaries along the 167-miles path. Too many variables (evaporation, dilution, multitude of water uses, and water exchanges, etc.) exist that could capture any volumes of flows from the site. In conclusion, the site does not meet the Significant Nexus standard and it is highly unlikey that the TNW would be affected by flows from the site and it is speculative to state or demonstrate that flows from the site during seasonal flood events could have the capacity of physical, biological or chemical characteristics to reach and affect the integrity of the TNW, 167-miles away.

Map 1



United States Air Force Academy (USAFA)
True North Commons Enhanced Use Lease (EUL) Area
Wetland Delineation Boundaries

Sampling Point Location
EUL Boundary
Wetlands - 2018 Boundaries
1 Plant Community ID
Wetlands - 2002 Boundaries

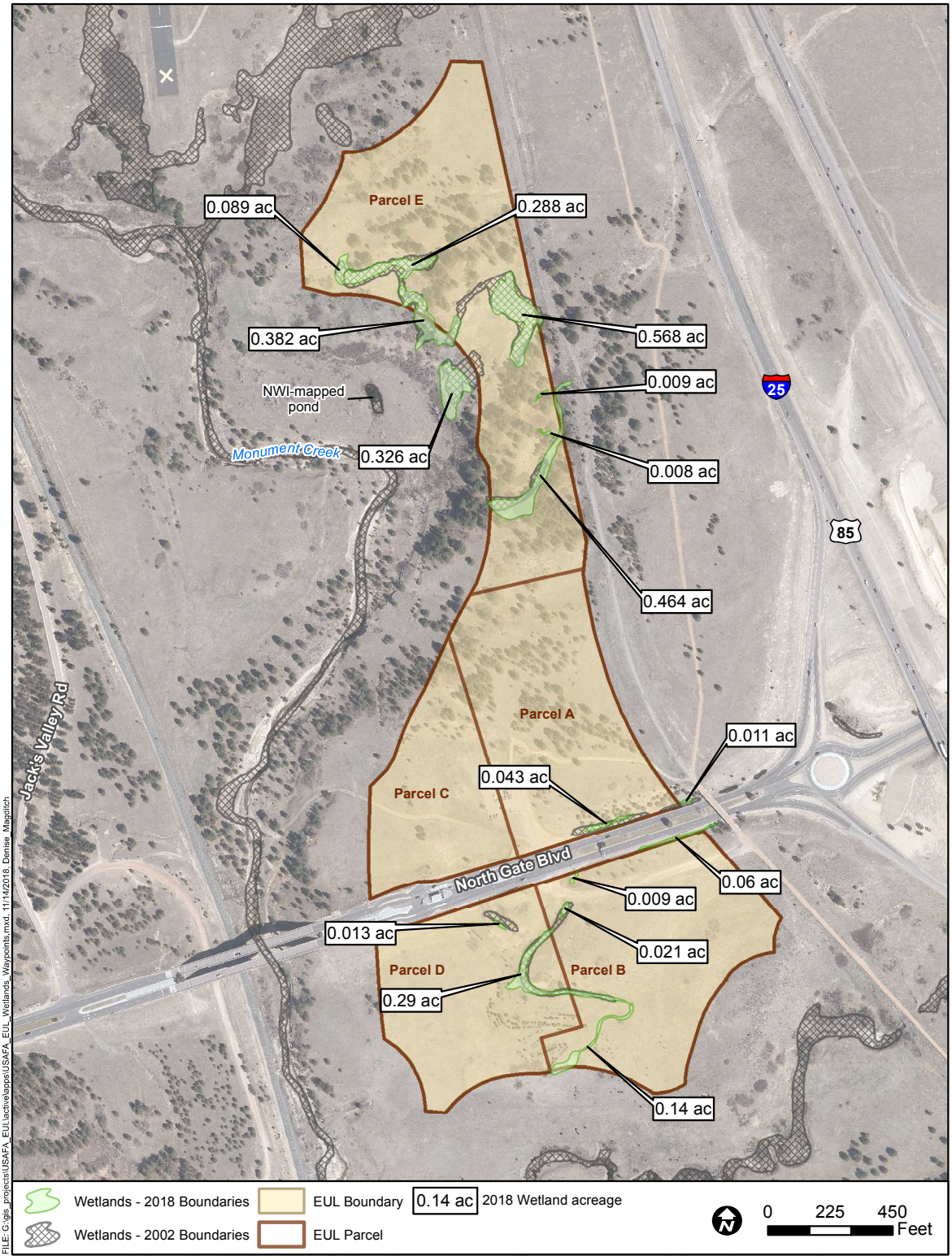
0 125 250 Feet

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\USAFA_EUL\activeApps\USAFA_EUL_Wetlands_Waypoints.mxd, 11/8/2018, Denise_Magditch

Map 2

Parcel Boundary Showing total of 2.721-acres of Isolated Wetlands.



Parcel A - 0.054-acres of Isolated wetlands along Northgate Blvd. North Shoulder w/no WOUS connection.
Parcel B - 0.230-acres of Isolated wetlands developed with man-made drainage, w/no WOUS connection.
Parcel C - No Wetlands found.
Parcel D - 0.303-acres of Isolated wetlands with no WOUS connection.
Parcel E - 1.653-acres of Isolated drumlin slope wetland seeps with no water leaving wetland. 900 linear ft. Gully has 0.481-acres of isolated wetlands seeping sheet flows separated with a 600-linear ft. drainage way connecting to Monument Creek (RPW).