

**APPENDIX A**  
**Agency Correspondence**



44265 Plymouth Oaks Blvd.  
Plymouth, MI 48170  
T 734-455-8600  
F 734-455-8608  
www.ttlassoc.com

Colorado Department of Human Services  
Colorado Mental Health Institute at Fort Logan  
3520 West Oxford Avenue  
Denver, Colorado 80236

January 26, 2017

**SUBJECT: Intergovernmental and Interagency Coordination of Environmental Planning (NEPA Scoping Letter) for the: Department of Veterans Affairs (VA) Proposed Fort Logan National Cemetery Expansion 3685 West Oxford Avenue Denver, Colorado**

To Whom It May Concern:

The US Department of Veterans Affairs (VA) is preparing environmental documentation to assist in the Federal decision-making process concerning the proposed acquisition of up to 66 acres of land (Site) located at 3685 West Oxford Avenue in the City of Denver, Denver County, Colorado for future expansion of the existing, adjacent Fort Logan National Cemetery (FLNC) located at 4400 West Kenyon Avenue. Fort Logan was established as a military post in the late 1880s. The fort closed in 1946 and the FLNC was established on the western 160 acres of the fort grounds (later expanded to 214 acres) in 1950. In 1960, approximately 308 acres of the closed fort were deeded to the State of Colorado to establish a state hospital (Fort Logan Mental Health Center). The hospital was renamed in 1991 as the Colorado Mental Health Institute at Fort Logan. The approximately 66 acres of land proposed for acquisition is part of the Colorado Mental Health Institute property owned by the State of Colorado and is located adjacent to the southeast of the current FLNC. The Site is mostly vacant with grassy vegetation and scattered trees. Four buildings, several former building foundations, and roads remain at the Site. The location of the Site is shown in **Attachments 1a – 1c**.

VA would use the 66-acre Site for the expansion of the FLNC. The proposed FLNC expansion would include the development of the necessary infrastructure (roads, grave sites, water supply, and fencing) associated with an expanded cemetery at the Site. However, the specific design for the proposed cemetery expansion has not been completed at this time.

VA is conducting an Environmental Assessment (EA) to evaluate the environmental, cultural, and socioeconomic issues associated with the proposed acquisition, development, and operation of the Site as an expanded FLNC pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code (USC) §4321 *et seq.*); the Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508); and VA's Implementing Regulations (38 CFR Part 26, *Environmental Analysis of VA Actions*).

**Information Request:** *Information your agency can provide on any of the following environmental issue areas (at or in the vicinity of the proposed Site) would be appreciated:*

- Potential environmental concerns or issues;
- Surface and groundwater resources, including streams, wetlands, floodplains, open water features, wells, and local aquifers;
- Federally or state listed threatened or endangered species, or any species proposed for such listing, or critical habitat for such species that may occur within a one-mile radius around the proposed Site;

- 
- Parks, nature preserves, conservation areas, designated wild or scenic rivers, migratory bird habitats, or special wildlife issues;
  - Natural resource issues;
  - Soils and geologic data, including lists of hydric soils;
  - Prime and unique farmland (*National Resources Conservation Services only*);
  - Traffic, noise, or socioeconomic concerns;
  - Air quality concerns; and
  - Additional environmental, cultural, land use, or socioeconomic information or concerns your agency may have with regard to the referenced Site.

Data that you make available will provide valuable and necessary input into the NEPA analytical process, and will serve to scope that analysis. As part of the NEPA process, local citizens, groups, and agencies, among others, will have opportunity to review and comment on the information and alternatives addressed in the document.

**Other Agencies and Organizations:** A listing of agencies and organizations to which this request was sent is provided in **Attachment 2**. VA will conduct separate consultation regarding the proposed FLNC expansion with the Colorado State Historic Preservation Office (SHPO). *Should you know of any additional agencies or organizations that may have data or concerns relevant to this project or Site, please forward them a copy of this letter, include their information in your response, or contact us directly with this information.*

We look forward to and welcome your participation in this process. **Please respond on or before February 28, 2017** to enable us to complete this phase of the project within the scheduled timeframe. TTL Associates, Inc. is assisting VA in conducting this NEPA process.

**Please send your written responses via regular or e-mail (preferred) to:**

TTL Associates, Inc.  
44265 Plymouth Oaks Boulevard  
Plymouth, Michigan 48170  
ATTN: Carrie Hess, Associate Geologist  
[chess@tlassoc.com](mailto:chess@tlassoc.com)

If you have any questions concerning this request, please direct them to Ms. Hess at (734) 582-4990.

Sincerely,

**TTL Associates, Inc.**

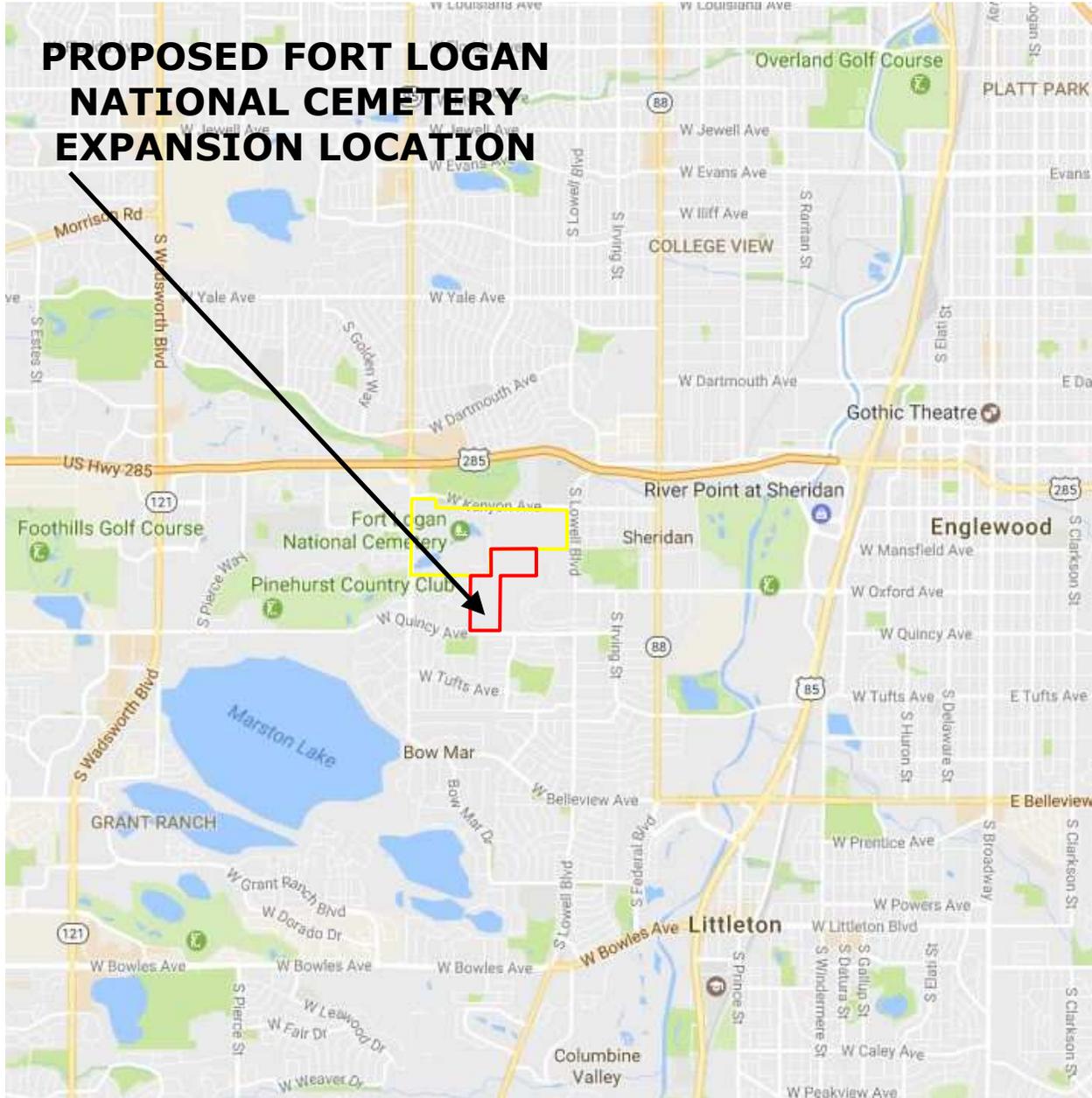
Carrie Hess  
Associate Geologist

Attachment 1a – 1c: Location Maps  
Attachment 2: List of Agencies and Organizations Contacted

**ATTACHMENTS 1A, 1B, AND 1C  
LOCATION MAPS**

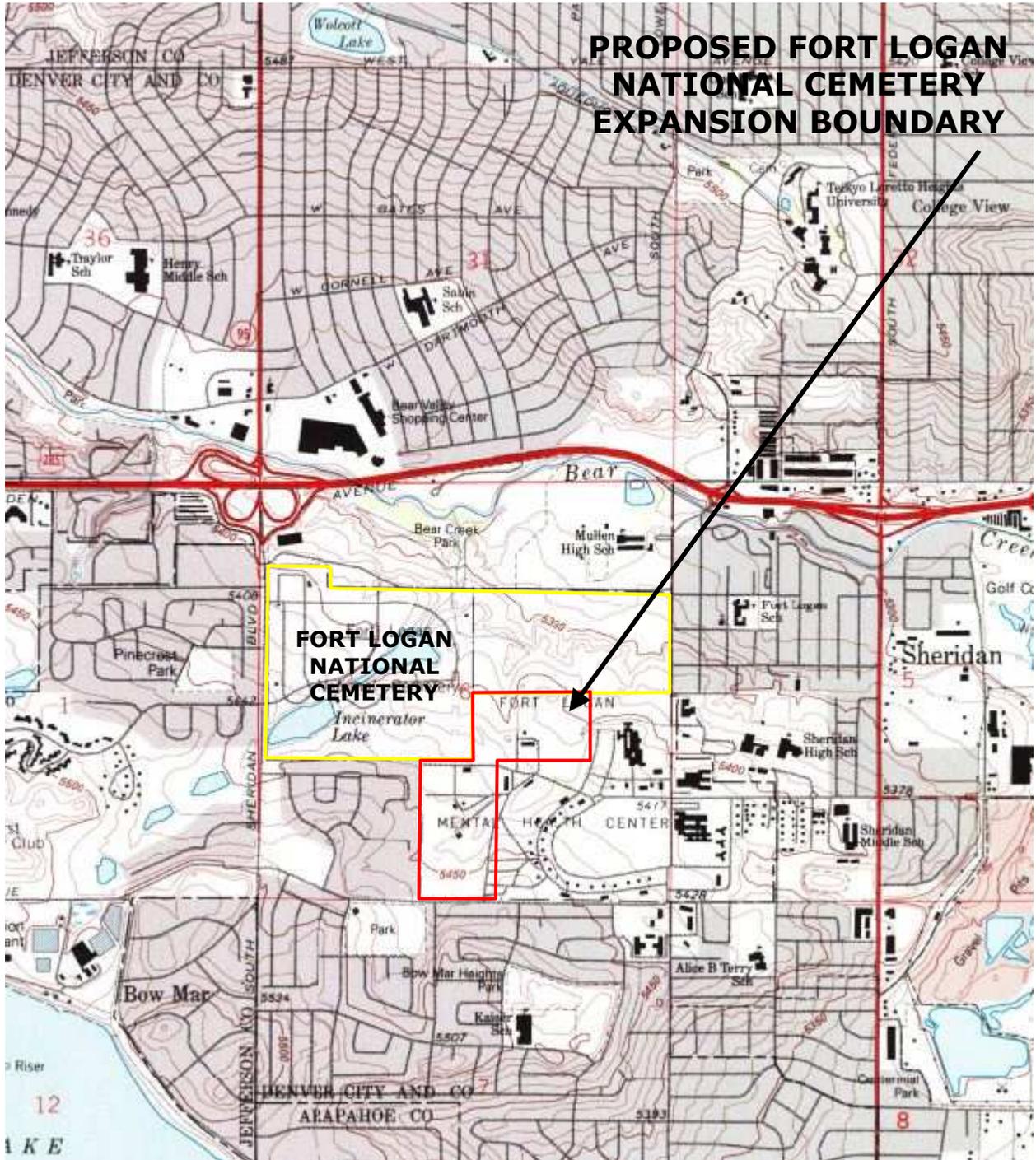
# ATTACHMENT 1a

## Location Map Proposed Fort Logan National Cemetery Expansion 3685 West Oxford Avenue Denver, Colorado



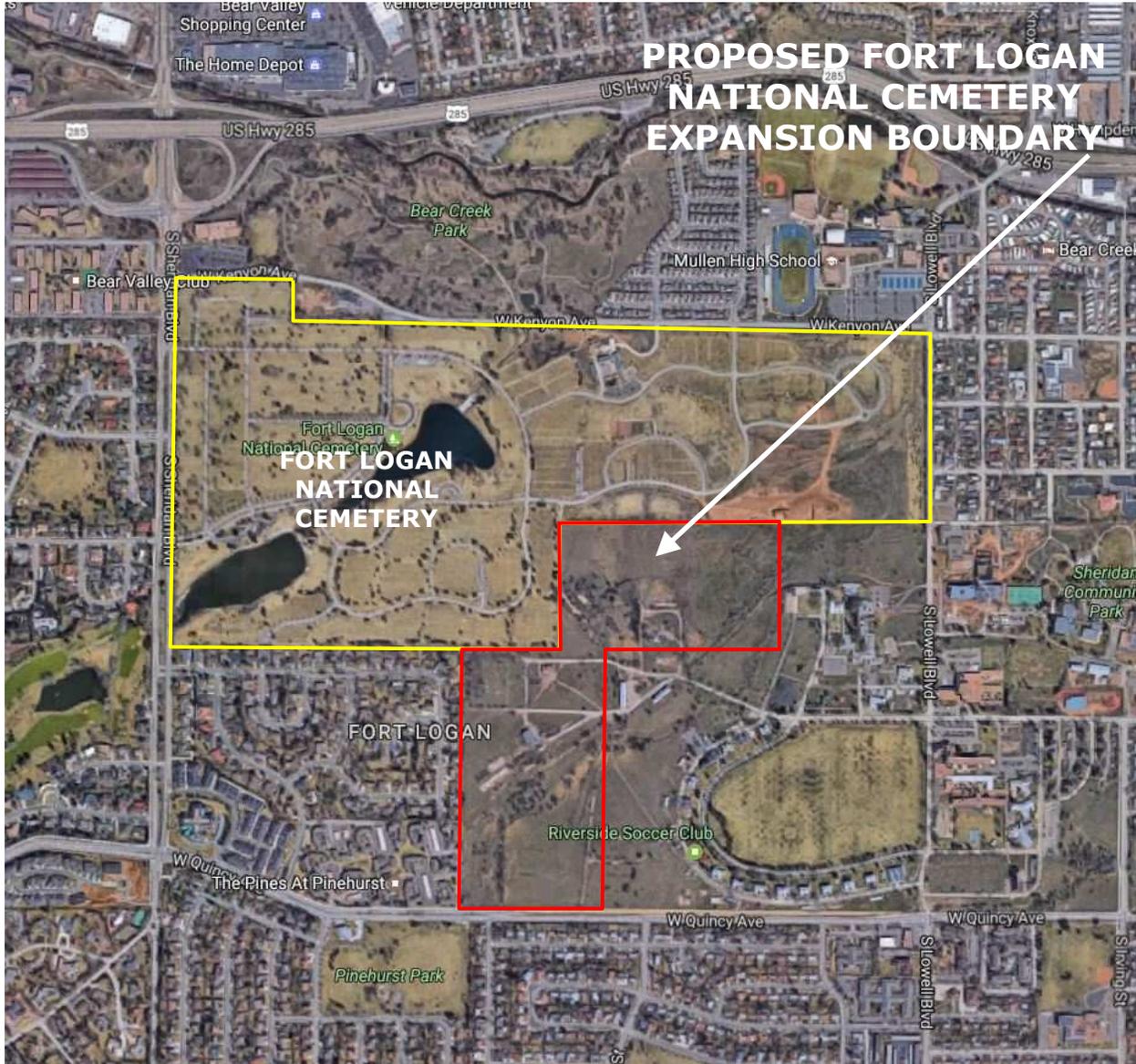
# ATTACHMENT 1b

Topographic Location Map  
Proposed Fort Logan National Cemetery Expansion  
3685 West Oxford Avenue  
Denver, Colorado



# ATTACHMENT 1c

## Aerial Location Map Proposed Fort Logan National Cemetery Expansion 3685 West Oxford Avenue Denver, Colorado



**ATTACHMENT 2**  
**LIST OF AGENCIES AND ORGANIZATIONS CONTACTED**

**Attachment 2**  
**List of Agencies and Organizations Contacted**  
**Department of Veterans Affairs**  
**Proposed Fort Logan National Cemetery Expansion**  
**3685 West Oxford Avenue**  
**Denver, Colorado**

**US Army Corps of Engineers – Omaha District**

9307 South Wadsworth Boulevard  
Littleton, Colorado 80128  
Phone: (303) 979-4120

**USDA Natural Resources Conservation Service**

**Brighton Service Center**

57 W Bromley Lane  
Brighton, Colorado 80601-3025  
Phone: (303) 659-0525

**US Environmental Protection Agency, Region 8**

80C-EISC  
1595 Wynkoop Street  
Denver, Colorado 80202-1129  
Phone: (303) 312-6312

**US Fish and Wildlife Service**

**Mountain-Prairie Region**

**Colorado Ecological Services Field Office**

Denver Federal Center  
P.O. Box 25486  
Denver, Colorado 80225-0486  
Phone: (303) 236-4005

**US Fish and Wildlife Service**

**Colorado Fish and Wildlife Conservation Office**

P.O. Box 25486, DFC  
Denver, Colorado 80225  
Phone: (303) 236-4216

**Colorado State Forest Service**

5060 Campus Delivery  
Fort Collins, Colorado 80523-5060  
Phone: (970) 491-6303

**Colorado Department of Natural Resources**

**Division of Water Resources**

1313 Sherman Street, Suite 821  
Denver, Colorado 80203  
Phone: (303) 866-3581

**Colorado Department of Natural Resources**

**Division of Water Conservation**

1313 Sherman Street, Room 718  
Denver, Colorado 80203  
Phone: (303) 866-3441

**Colorado Department of Natural Resources**

**Division of State Lands**

1327 Sherman Street, Suite 300  
Denver, Colorado 80203  
Phone: (303) 866-3454

**Colorado Department of Natural Resources**

**Parks & Wildlife**

1313 Sherman Street, 6<sup>th</sup> Floor  
Denver, Colorado 80203  
Phone: (303) 297-1192

**Colorado Department of Natural Resources**

**Parks & Wildlife – Northeast Region**

6060 Broadway  
Denver, Colorado 80216  
Phone: (303) 291-7227

**Colorado Department of Public Health & Environment**

**Air Pollution Control Division**

4300 Cherry Creek Drive South  
Denver, Colorado 80246  
Phone: (303) 692-3100

**Colorado Department of Public Health & Environment**

**Hazardous Materials and Waste Management Division**

4300 Cherry Creek Drive South  
HMWMD-B2  
Denver, Colorado 80246  
Phone: (303) 692-3300

**Colorado Department of Public Health & Environment**

**Water Quality Control Division**

4300 Cherry Creek Drive South  
WQCD-B2  
Denver, Colorado 80246  
Phone: (303) 692-3500

**Colorado Department of Transportation**

**Region 1**

2000 South Holly Street  
Denver, Colorado 80222  
Phone: (303) 757-9929

**Denver Community Planning and Development**

Wellington Webb Municipal Building  
201 West Colfax Avenue, Department 205  
Denver, Colorado 80202  
Phone: (720) 865-2915

**Denver Development Services**

201 West Colfax Avenue, Department 205  
Denver, Colorado 80202  
Phone: (720) 865-2705

**Denver Department of Environmental Health**

**Environmental Quality**

200 West 14<sup>th</sup> Avenue, 3<sup>rd</sup> Floor  
Denver, Colorado 80204  
Phone: (720) 865-5534

**Colorado Department of Human Services**

**Colorado Mental Health Institute at Fort Logan**

3520 West Oxford Avenue  
Denver, Colorado 80236  
Phone: (303) 866-7066

**Denver Department of Public Works**

201 West Colfax Avenue, Department 608  
Denver, Colorado 80202  
Phone: (720) 913-1311

**Attachment 2 (Continued)**  
**List of Agencies and Organizations Contacted**  
**Department of Veterans Affairs**  
**Proposed Fort Logan National Cemetery Expansion**  
**3685 West Oxford Avenue**  
**Denver, Colorado**

**Denver Department of Wastewater Management**

2000 West 3<sup>rd</sup> Avenue  
Denver, Colorado 80223  
Phone: (303) 446-3400

**Denver Parks & Recreation**

Wellington Webb Municipal Building  
201 West Colfax Avenue, Department 601  
Denver, Colorado 80202  
Phone: (720) 913-1311

**Friends of Historic Fort Logan**

P.O. Box 36011  
Denver, Colorado 80236  
Phone: (303) 789-3568

**Regional Air Quality Council**

1445 Market Street #260  
Denver, Colorado 80202  
Phone: (303) 629-5450



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2017-TA-0435

U.S. FISH AND WILDLIFE SERVICE	
<input type="checkbox"/>	NO CONCERNS
<input type="checkbox"/>	CONCUR NOT LIKELY TO ADVERSELY AFFECT
<input checked="" type="checkbox"/>	NO COMMENT
	DATE 2/17/17
DRUE L. DEBERRY ACTING COLORADO FIELD SUPERVISOR	

US Fish and Wildlife Service  
Colorado Fish and Wildlife Conservation Office  
P.O. Box 25486, DFC  
Denver, Colorado 80225

January 26, 2017

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**Information Request:** Information your agency can provide on any of the following environmental issue areas (at or in the vicinity of the proposed Site) would be appreciated:

- Potential environmental concerns or issues;
- Surface and groundwater resources, including streams, wetlands, floodplains, open water features, wells, and local aquifers;
- Federally or state listed threatened or endangered species, or any species proposed for such listing, or critical habitat for such species that may occur within a one-mile radius around the proposed Site;



DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, OMAHA DISTRICT  
DENVER REGULATORY OFFICE, 9307 SOUTH WADSWORTH BOULEVARD  
LITTLETON, COLORADO 80128-6901

**RE: Section 404 of the Clean Water Act Initial Comments**

To whom it concerns:

In accordance with Section 404 of the Clean Water Act, the Corps of Engineers regulates the discharge of dredged or fill material, and any excavation associated with a dredged or fill project, either temporary or permanent, into waters of the United States (WOUS). You should notify this office if the project proposed falls within these regulated activities because the project may require a Department of the Army Section 404 permit.

A WOUS may include ephemeral and/or perennial streams, wetlands, lakes, ponds, drainage ditches and irrigation ditches. A wetland delineation must be conducted, and verified by the Corps of Engineers, using the methods outlined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*: (using applicable Regional Supplement) to determine wetlands based on the presence of three wetland indicators: hydrophytic vegetation, hydric soils, and wetland hydrology. Wetland delineations must be conducted in the field by a qualified environmental consultant and any aquatic resource boundaries must be identified accordingly. Once the aquatic resources have been identified, only this office can determine if they are WOUS. Please note that development of the upland areas, avoiding stream and wetland resources, does not require authorization from this office.

Nationwide Permits (NWP) authorize common types of fill activities in WOUS that will result in a minimal adverse effect to the environment. Descriptions of the 52 types of nationwide permit activities and their general conditions can be found on our website:

<http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Colorado.aspx>.

Some fill activities require notifying the Corps before starting work. Also, some types/sizes of work may require additional information or mitigation.

Regional General Permits (RGP) authorize specific types of fill activities in WOUS that will result in a minimal adverse effect to the environment. Descriptions of the 4 types of regional general permit activities and their general conditions can be found on our website:

<http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Colorado/RegionalGeneralPermits.aspx>.

These fill activities require notifying the Corps before starting work, and possibly other local or state agencies. Also, some types/sizes of work may require additional information or mitigation. Please note several of the RGP's are applicant and location specific.

Individual permits may authorize fill activities that are not covered under the NWP or Regional General Permits (RGP's). This permit will be processed through the public interest review procedures, including public notice and receipt of comments. An alternative analysis (AA) must be provided with this permit action. The AA must contain an evaluation of environmental impacts for a range of alternatives. These alternatives should include the preferred action, no action alternative, and other action alternatives that would be the identified project purpose. Other action alternatives should include other practicable (with regards to cost, logistics, and technology) that meet the overall project purpose. The alternatives could include offsite alternatives and alternative designs. When evaluating individual permit applications, the Corps can only issue a permit for the least environmentally damaging practicable alternative (LEDPA). In some cases, the LEDPA may not be the applicant's preferred action. The individual permit application form and form instructions can be found on our website: <http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/ObtainPermit.aspx>.

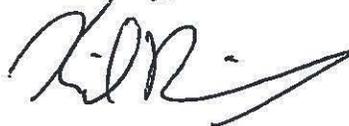
If the activity requires a Department of the Army permit as a result of any impacts to WOUS or any earth disturbances within that resource, a federal action will occur. For the Corps to make a permit decision, the applicant must provide enough information to demonstrate compliance with Section 106 of the National Historic Preservation Act (NHPA) and Section 7 of the Endangered Species Act (ESA).

The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to WOUS to the maximum extent practicable at the project site. Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal. Any loss of an aquatic site may require mitigation. Mitigation requirements will be determined during the Department of the Army permitting review.

If the information that was submitted could impact WOUS, which are jurisdictional resources, this office should be notified. If a section 404 permit is required, work in an aquatic site should be identified by the proponent of the project and be shown on a map identifying the Quarter Section, Township, Range and County, Latitude and Longitude, Decimal Degrees (example 39.55555; -104.55555) and the dimensions of work in each aquatic site.

If there are any questions, please call the Denver Regulatory Office at 303-979-4120.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kiel Downing', with a long horizontal flourish extending to the right.

Kiel Downing  
Chief, Denver Regulatory Office

**Enclosures:**

**-PCN requirements**

**-How to request a NWP verification letter**



## Pre-Construction Notification (PCN) Requirements

(Nationwide Permit General Condition No. 31  
from the February 21, 2012 Federal Register)

US Army Corps of Engineers,  
Omaha District, Denver Regulatory Office  
9307 South Wadsworth Blvd,  
Littleton, CO 80128  
Phone: (303) 979-4120

Website: <http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Colorado.aspx>

### Contents of Pre-Construction Notification:

The PCN must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed project;
- (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);
- (4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;
- (5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.
- (6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and
- (7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.



## How to Request a Nationwide Permit Verification Letter

US Army Corps of Engineers,  
Omaha District, Denver Regulatory Office  
9307 South Wadsworth Blvd,  
Littleton, CO 80128  
Phone: (303) 979-4120

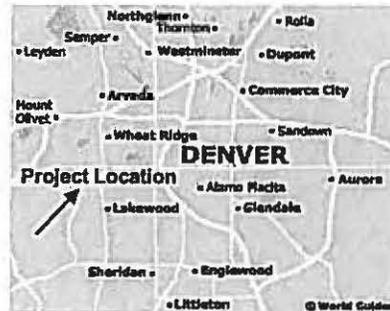
Website: <http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Colorado.aspx>

Nationwide permits authorize common types of fill activities in Waters of the US that will result in minimal adverse effects to the environment. Descriptions of the 52 types of Nationwide Permit activities and their general conditions can be found on our website. Some fill activities require notifying the Corps before starting work. Also, some types/sizes of work may require additional information or mitigation. Please call the Corps Denver Regulatory Office (303-979-4120) if you have questions. Upon receipt of your information, we may contact you with questions.

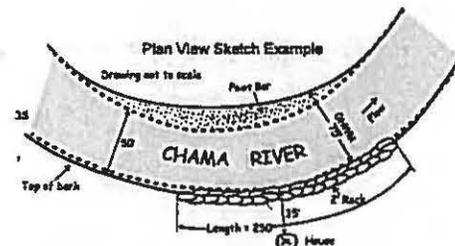
### Please provide the following to the Corps:

1. Applicant's name, address, phone, email.
2. Agent or Contractor name, address, phone, e-mail (if applicable).
3. Describe your project and its purpose (describe what you are trying to accomplish or what you plan to do to address the problem).
4. Location of work – Section, Township, Range, County and/or Latitude/Longitude coordinates.
5. River, stream, lake, or pond name and footprint of impact (length x width).
6. Describe any wetlands on the site, and describe footprint of impact (if applicable). If no wetlands present, or no wetlands impacted, please state this.
7. Describe the volume (cubic yards) of fill material or excavated material.
8. Attach map and sketches – examples shown here.

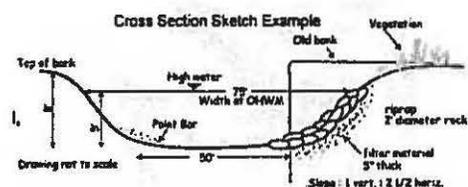
Location Map: Photocopy from road or topo map; indicate site location, any landmarks, etc.



Plan View Sketch: "Bird's-eye view"; include all features- distances, length and width; dimensions of features and stream/wetlands.



Cross Section Sketch: "Cut away view"; include heights, widths of structures, channel, wetland, bank slopes, etc.





Anymoh

44265 Plymouth Oaks Blvd.  
Plymouth, MI 48170  
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F 734-455-8608  
www.tlassoc.com

US Army Corps of Engineers – Omaha District  
9307 South Wadsworth Boulevard  
Littleton, Colorado 80128

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United States Department of Agriculture

Natural Resources Conservation Service  
Brighton Field Office  
57 West Bromley Lane  
Brighton, CO 80601

---

TTL Associates, Inc.  
44265 Plymouth Oaks Boulevard  
Plymouth, Michigan 48170  
ATTN: Carrie Hess, Associate Geologist

**SUBJECT: Intergovernmental and Interagency Coordination of Environmental Planning (NEPA Scoping Letter) for the: Department of Veterans Affairs (VA) Proposed Fort Logan National Cemetery Expansion 3685 West Oxford Avenue Denver, Colorado**

Carrie Hess:

The proposed Fort Logan National Cemetery Expansion project has been reviewed by the Natural Resources Conservation Service. Upon our review we were unable to access the necessary documentation to fully evaluate this site. It appears this site has not been mapped. Although, our professional judgement is that no potential effect would be present for the following environmental issue areas:

- Surface and groundwater resources
- Threatened or Endangered species
- Natural Areas, scenic rivers, migratory bird habitat
- Soils
- Prime and unique farmland
- Traffic or noise
- Air quality

Due to the history of the site we would be concerned about the cultural resources that may be present. Since this area has already been developed we see no issues with the proposed project of expansion of the Fort Logan National Cemetery.

If you have any questions concerning this response, please direct them to Ciara Ahrens at 303-659-0525.

Sincerely,

Ciara Ahrens  
Soil Conservationist

NRCS  
Helping People Help the Land

USDA is an equal opportunity provider and employer



U.S. Department of Veterans Affairs  
Office of Real Property  
Attention: Marianne Marinucci (6W.214B)  
425 I Street, NW (003C1E)  
Washington, DC 20001

DEC 08 2017

Re: DRAFT – Class III Cultural Resource Inventory for the Fort Logan National Cemetery  
Expansion, Denver, Colorado (HC #72063)

Dear Ms. Marinucci:

We are pleased to reply to correspondence dated October 20, 2017 and received on November 8, 2017 by our office regarding consultation under Section 106 of the National Historic Preservation Act (Section 106) for the subject undertaking. This current correspondence is in regards to the review of the subject draft report, submitted to the U.S. Department of Veterans Affairs (VA) by Environmental Research Group, LLC (ERG) and their subcontractor, Historical Research Associates, Inc. (HRA). Prior to the current submission, Section 106 consultation for the undertaking was initiated with our office by Dr. Lisa Smith, HRA, on April 17, 2017 via email. In an April 18, 2017 email, Jim Pritchard, ERG, provided a scope of work for our office to review and comment on prior to the Class III survey. Ed Jakaitis, OAHP, provided comment on the scope of work in an April 20, 2017 email, supporting the level of effort proposed for survey and suggesting documentation standards for reporting. On May 30, 2017, a memorandum was sent to Ed Jakaitis, summarizing the completed survey of the area of potential effects (APE). On the same day, Ed Jakaitis also received a request for guidance regarding the documentation standards for reporting of the Class III survey. Ed Jakaitis provided four follow-up emails in response to the guidance request, between May 31, 2017 and June 26, 2017. We have now reviewed the cultural resource inventory report and request that additional documentation be provided to our office that addresses the following unanswered questions.

1) What are the planned ground disturbing activities for specific locations within the area of potential effects? The introduction section of the report indicates that, “[t]he proposed undertaking will involve grading and debris removal of a 66-acre parcel...” (p. 1). We request that a description of the proposed ground disturbing activities that includes a description of the horizontal and vertical extents of the activities across the APE. This information may be most advantageously conveyed through maps of the APE with polygons that illustrate the descriptions of the proposed activities and resulting developments. This will provide the VA with a comprehensive project description and allow consulting parties to more accurately interpret the assessment of effects for the properties identified in the APE.

2) What is the historical progression of development for the built environment within the APE? A class I document search should provide identification of the historical extent of all buildings (i.e., offices, barracks, stables, guard stations, etc.), sites (i.e., training grounds, camps, dumps, ruins, etc.) structures (i.e., towers, scaffolds, earthwork, canals, etc.), or objects (i.e., monuments, markers, sculptures, etc.) that are found within the Fort Logan Historic District (SDV.694). We request additional documentation that may come in the form of historic plats, Sanborn maps, aerial photographs, or any other archival documents that may provide a greater understanding of the development within district SDV.694 during its period of significance (1887-1945).

3) Has the VA considered how cultural properties within the APE may contribute to the historic districts 5DV.694 and 5DV.4344? While it may be appropriate to consider the cultural properties within the APE as an extension of Fort Logan Historic District (5DV.694), has the VA considered the development that has occurred around this proposed district? If the properties within the APE have been separated from the 5DV.694 district space by demolition or new construction, this would not be considered appropriate for a discontinuous district format (National Register Bulletin 15).

The inventory report notes that consultation with the National Cemetery Administration lead the VA to recommend that the properties within the APE be included in the 5DV.694 district (p. 66). However, no mention of the Fort Logan National Cemetery Historic District (5DV.4344) is made in the report. The undertaking will result in the APE being subsumed within a the Fort Logan National Cemetery, thereby rendering the space inherently eligible for the NRHP as a part of the 5DV.4344 district. The VA should individually evaluate cultural properties within the APE and consider how they may contribute to 5DV.694 currently and to 5DV.4344 in the future.

4) Would the VA be able to provide consulting parties with documentation for all structures identified within the APE? Architectural Inventory Forms (OAHP 1403) are typically used to document buildings and structures recorded as part of an architectural inventory. The inventory report indicates that subcontractor ROW 10 Historic Preservation Solutions, LLC has completed these forms, but they were not provided with the submission. We request the opportunity to review these documents.

5) Would the VA be able to provide consulting parties with additional documentation of all properties defined as “feature locations” and “artifact scatters”? Management Data Forms (OAHP 1400) and Smithsonian trinomial designations are typically used to document any properties that are not isolates and identified as part of an archaeological inventory. The inventory report indicates that these properties were identified as features or scatters within a site. However, the previous survey documentation for district 5DV.694 shows that properties within the district were identified by independent Smithsonian trinomials and independently evaluated for the National Register of Historic Places (NRHP), in addition to the possible contribution of each resource to the historic district. We request the opportunity to review these newly recorded feature locations and artifact scatters as individual properties, documented on OAHP 1400 forms with Smithsonian trinomials and evaluated for their individual NRHP eligibility and contributing status within the historic district.

6) Would the VA be able to provide consulting parties with documentation of the full extent of linear resources transecting the APE and take into consideration the overall eligibility of the resource for the NRHP? Management Data Forms (OAHP 1400) typically identify the full extent of a linear resource, with linear component forms (OAHP 1418) designed to document individual segments of the resource within the APE. The OAHP 1400 forms provide a comprehensive identification of the entire extent of the linear resource which can often be defined by Class I documents research. This provides an overall context in which individual linear segments can be evaluated for their ability to support the NRHP eligibility of the entire resource. We request the opportunity to review the documentation of entire linear resources that transect the APE, as well as the linear segments that are within the APE and the evaluation of the resource’s overall NRHP eligibility and its contribution to the historic district.

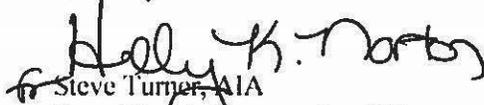
7) Would the VA be able to provide consulting parties documentation of isolated finds identified within the APE? Documentation of any isolated finds, consisting of individual manholes, culverts or any other feature or artifact, should be recorded with an Isolated Find/Feature Form (OAIIIP 1408). If any properties that were identified in the APE did not qualify as a structure, site or district, these properties should be documented as an isolated find.

8) I have all properties within the APE been independently assessed for adverse effects, pursuant to 36 CFR 800.5? While properties discussed in the inventory report did have some description that relates to the determination of eligibility for the NRHP, there was no discussion of the assessment of adverse effects in the results section of the report. While an overall assessment of effect for a project as a whole is recommended, it is advisable to evaluate the potential effects of the proposed undertaking to both individual resources and entire districts. As such, we request additional consideration of the potential effects of the proposed undertaking be made for the individual resources as well as the districts as a whole.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

Thank you for the opportunity to comment. If we may be of further assistance, please contact Edward Jakaitis, Section 106 Compliance Manager, at (303)866-4678 or [edward.jakaitis@state.co.us](mailto:edward.jakaitis@state.co.us).

Sincerely,

  
Steve Turner, AIA  
State Historic Preservation Officer  
1200 Broadway  
Denver, CO 80203

 OFFICE of ARCHAEOLOGY and HISTORIC PRESERVATION

U.S. Department of Veterans Affairs  
Office of Real Property  
Attention: Marianne Marinucci (6W.214B)  
425 I Street, NW (003C1E)  
Washington, DC 20001

MAY 25 2018

Re: Class III Cultural Resource Inventory for the Fort Logan National Cemetery Expansion, Denver, Colorado (HC #72063)

Dear Ms. Marinucci:

We received correspondence from Row 10 Historic Preservation Solutions (Row 10) on May 7, 2018 relating to the subject consultation under Section 106 of the National Historic Preservation Act (Section 106). This correspondence and updated report was provided as a response to our December 8, 2017 request for additional information, as well as a January 23, 2018 phone conversation between Marianna Marinucci, VA, Katy Coyle, Row 10, Richard Banchoff, ISI, and Mark Tobias and Ed Jakaitis, OAHP. Our request specified eight topics of concern for the review of historic properties within the subject undertaking's area of potential effect (APE). We will address these questions as they relate to the current reporting provided.

With regards to questions 1 and 2 of our December 8, 2017 letter, and discussed January 23, 2018, we believe that sufficient information has been provided regarding the planned ground disturbing activities within the APE, as well as the historical progression of development for the built environment within the APE.

Regarding questions 3 through 8 submitted December 8 and discussed January 23, we request additional documentation on OAHP Cultural Resource Survey forms submitted to our office for review, prior to our concurrence with recommended determinations of eligibility and findings of effect. We request *Architectural Inventory Forms* (OAHP 1403) for each structure identified within the APE (i.e., 5DV.9371, 5DV.9376, 5DV.9421, 5DV.9442), *Management Data Forms* (OAHP 1400) for all sites and linear resources, *Linear Component Forms* (OAHP 1418) for all individual segments of a linear resource identified within the APE, and *Isolated Find/Feature Forms* (OAHP 1408) for any resource that does not constitute a site. Please request Smithsonian trinomial designations for any newly documented resources, from the Information Management Unit of OAHP ([stephanie\\_boktor@state.co.us](mailto:stephanie_boktor@state.co.us), 303-866-5216). Full documentation of resources within the APE will allow our office to accurately comment on recommended determinations of eligibility and finding of effects.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

Thank you for the opportunity to comment. If we may be of further assistance, please contact Edward Jakaitis, Section 106 Compliance Manager, at (303)866-4678 or [edward.jakaitis@state.co.us](mailto:edward.jakaitis@state.co.us). All inquiries after May 25, 2018 should be directed to Mark Tobias, Intergovernmental Services Manager, at (303) 866-4674 or [mark.tobias@state.co.us](mailto:mark.tobias@state.co.us).

Sincerely,



Steve Turner, AIA  
State Historic Preservation Officer  
1200 Broadway  
Denver, CO 80203

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OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION

303-866-3392 \* Fax 303-866-2711 \* E-mail: [oahp@state.co.us](mailto:oahp@state.co.us) \* Internet: [www.historycolorado.org](http://www.historycolorado.org)



OFFICE of ARCHAEOLOGY and HISTORIC PRESERVATION

Marianne Marinucci  
6W.214B  
U. S. Department of Veterans Affairs  
Office of Real Property  
425 I Street, NW (003C1E)  
Washington, D. C. 20001

JUL 03 2018

Re: Class III Cultural Resource Inventory for the Fort Logan National Cemetery Expansion, Denver Colorado (HC# 72063)

Dear Ms. Marinucci:

On June 27, 2018, we received revised documentation including the report titled "Class III Cultural Resources Inventory for the Fort Logan National Cemetery Expansion, Denver, Colorado" from Katy Coyle, Partner, Row 10 Historic Preservation Solutions, Inc. for the subject undertaking. In accordance with Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) and its implementing regulations, "Protection of Historic Properties," (36 C.F.R. Part 800), I am providing supplemental comment to those contained within our May 25, 2018 letter.

After review of the provided information, we concur that 5DV.9421 is a contributing resource to the NRHP-eligible Fort Logan Historic District (5DV.694). We concur that 5DV.9376, 5DV.9442, 5DV.16777, 5DV.16778, 5DV.16779, 5DV.16780.1 and 5DV.34892 are not eligible for the NRHP and/or are noncontributing resources to the associated district. We concur that 5DV.4784.6 does not support the NRHP eligibility of the larger linear resource due to insufficient integrity.

We do not concur with the recommendation of not eligible or noncontributing for resource 5DV.9371 (Filling Station/Oil House). Although the gas pumps and tanks have been removed the property retains a high degree of integrity sufficient to convey its significance. The building was constructed during an important era of development for Fort Logan. Additionally, its construction date means it was likely associated with the \$1,000,000 rehabilitation performed on the base between 1937-1941 utilizing Works Progress Administration funds. As noted in the 2005 and 2017 architectural inventory forms, 5DV.9371 is "an excellent example of a contemporary fueling station known as 'house with a canopy gas station.'" The building retains a high degree of integrity, including its design and original materials—minus pumps and tanks—that then help express the workmanship and character defining features of the type. Furthermore, the building is in its original location and although residential areas have crept in from the west the immediate setting remains much the same as from its period of significance (1941-1946). These aspects together help maintain the feeling of a historic fueling station and its association with the development of the base.

There appears to be a discrepancy in earlier concurrence which may have lead to the current evaluation. As noted in the cultural resource report provided, the site form for 5DV.9371 from 2005 is marked "noncontributing." However, internal OAHp databases code the property as "contributing." There does not appear to have been grounds for disagreeing with the 2005 field determination of eligible and contributing.

In consideration of the above, and the fact that 12 years passed between evaluations, we currently believe that 5DV.9371 is eligible for the NRHP as well as contributing to a potential district.

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OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION

303-866-3392 \* Fax 303-866-2711 \* E-mail: oahp@state.co.us \* Internet: www.historycolorado.org

COLORADO HISTORICAL SOCIETY

Our office has reviewed the scope of work and assessment of adverse effects, we concur with the recommended finding of no historic properties affected [36 CFR 800.4(d)(1)] under Section 106 for resources 5DV.9376, 5DV.9442, 5DV.16777, 5DV.16778, 5DV.16779, 5DV.16780.1 and 5DV.34892. In addition, we believe that the undertaking will result in no adverse effect [36 CFR 800.5(d)] under Section 106 for 5DV.4784.6. We concur that the undertaking includes reasonably foreseeable effects from the expansion of the Fort Logan National Cemetery, including demolition of buildings. Demolition of 5DV.9421 will result in an adverse effect [36 CFR 800.5(d)(2)] to the FLHD (5DV.694). Additionally, because we believe that 5DV.9371 is eligible and contributing to the FLHD we suggest that this resource is also considered in the assessment of adverse effect under 36 CFR 800.5.

We anticipate further consultation regarding the development of a memorandum of agreement to resolve adverse effects as stipulated in 36 CFR 800.6(b) and (c). Please note that the VA shall notify the Advisory Council on Historic Preservation of the adverse effect finding as per 36 CFR 800.6(a)(1).

If we may be of further assistance, please contact Mark Tobias, Intergovernmental Services Manager, at (303) 866-4674 or [mark.tobias@state.co.us](mailto:mark.tobias@state.co.us) for archaeological issues or Jason O'Brien, Section 106 Compliance Manager, at (303) 866-2673 or [jason.obrien@state.co.us](mailto:jason.obrien@state.co.us) for questions related to the built environment.

Sincerely,

  
Steve Turner, AIA  
State Historic Preservation Officer

cc. Katy Coyle, Row 10 (via email)



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**

August 6, 2018

Steve Turner  
Executive Director  
Colorado State Historic Preservation Office  
1200 Broadway  
Denver, Colorado 80203

RE: Invitation for Section 106 Consultation on the Expansion of the Fort Logan National Cemetery

Dear Mr. Turner,

The National Cemetery Administration (NCA) of the U.S. Department of Veterans Affairs (VA) proposes to acquire a 49.42 acre site (project site) adjacent to the current southern boundary of the Fort Logan National Cemetery (FLNC) in Denver, Denver County, Colorado, to provide additional interment space for our nation's Veterans (Attachment A, B, and C – maps of the FLNC and project site). The NCA intends to acquire and develop this proposed site to include more headstones, public access roads, and a columbarium (Undertaking).

**Brief History of Fort Logan**

The proposed acquisition parcel was once part of Fort Logan, but is now part of the Colorado Mental Health Institute at Fort Logan (CMHIFL). Fort Logan was founded in 1887, as a military outpost to protect nascent Denver. Founded on the Johnson Tract ten miles southwest of the town, along the Morrison branch of the South Park Railroad, the outpost initially consisted of 640 acres.<sup>1</sup> Construction of the brick buildings was complete by 1894 to house 28 officers, two cavalry troops, eight infantry companies, and a band, and included over 17 buildings (USGS topographic quadrangle map, 1901<sup>2</sup>). The fort, named after General John Alexander Logan of Illinois, added an additional 333 acres in 1908.<sup>3</sup> Between the Spanish-American War and World War II, the fort was home to a recruitment center, a dirigible squadron, battalions of engineers, a supply camp for the Civilian Conservation Corps and a large receiving station for newly enlisted personnel. The fort was active until the end of World War II. In 1946, 577 acres of the fort were transferred to the Veterans Administration (now the US Department of Veterans Affairs [VA]), who operated the fort hospital as a makeshift health care facility for veterans, while the new facility in Denver was being constructed. In 1960, 308 acres of VA Land were transferred to the State of Colorado, to construct a new Mental Health Center. The VA retained 132 acres for the FLNC.<sup>4</sup>

**Area of Potential Effect**

The area of potential effect (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties. The proposed acquisition of the select parcel would alter the existing boundaries of the FLNC, and the Fort Logan portion of the Colorado Mental Health Institute at Fort Logan

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<sup>1</sup> Evan Edwards, "The Historical Background of Fort Logan." Denver Public Library Manuscript Collection, 1962, page 4.

<sup>2</sup> United States Geological Survey. *Topographic Quadrangle Map*. Edition of February 1901, reprinted 1932. Reston, Va: U.S. Department of the Interior. 1901.

<sup>3</sup> *Ibid*, 8.

<sup>4</sup> *Ibid*, 8-13.



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**Office of Construction & Facilities Management**  
**Washington DC 20420**

(CMHIFL); therefore, the FLNC, part of the historic Fort Logan Historic District, including the parade ground circle, is recommended as the APE (Attachment D – APE).

Proposed redevelopment of the parcel will include installation of headstones. These headstones could affect the viewshed of the former Fort Logan buildings. However, this possible effect would not be adverse, since the Fort has always included a cemetery.

### **Identification of Historic Properties**

NCA has determined the presence of two known historic properties within the APE: the CMHIFL National Register Historic District (CMHIDL NRHD) and the FLNC. The CMHIFL NRHD includes 54 buildings, 46 of which have been determined to contribute to the historic district. Inside the project site, four buildings are standing (5DV.9421, 5DV.9371, 5DV.9442, and 5DV.9376), and each has been evaluated for eligibility on the NRHP as contributing resources to the CMHIFL NRHD. Two of these buildings, 5DV.9421 (Building 64, Garage and Repair Shop), and 5DV.9371 (Combined Filling station and Oil House), have been found to be contributing elements to the CMHIFLNRHD (see Attachment E – Photographs). The FLNC (5DV.4344) was listed on the National Register of Historic Places in 1981 the NRHP for its association with events significant to our military, political, and social history during the late nineteenth and early twentieth century. All buildings surveyed lay outside the current boundaries of the FLNC.

As part of the required analysis for a Fort Logan NCA an archaeological survey of the proposed project site was conducted. During this survey, five historic sites were identified; however, none of these sites were found to possess the qualities of significance necessary for listing in the NRHP. The Colorado State Historic Preservation Office reviewed the report, and concurred with its findings (July 3, 2018).

No Traditional Cultural Properties (TCPs) have been identified on the proposed acquisition parcel, or in the recommended APE. However, this work did not include an ethnographic study. Discussions with Native American groups to definitively identify TCPs in the APE will be conducted as part of NCA’s ongoing Section 106 consultation process.

### **Effects of the Proposed Project on Historic Properties**

Adverse effects of an undertaking occur when the action directly or indirectly alters the characteristics of a historic property that qualify it for inclusion in the NRHP. Reasonably foreseeable effects that are caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative also need to be considered.

The proposed project will have a direct effect on the physical boundaries of the FLNC, which will expand from their current limitations. However, this effect is not adverse, because the National Park Service (NPS) policy clarification on national cemeteries specifically recognizes that “National cemeteries continue to expand,” and that they are “ever-changing.”<sup>5</sup> Additionally, two contributing elements to the CMHIFL NRHD will be adversely affected if the NCA acquires this property. This will be an adverse effect to the CMHIFL NRHD.

### **Resolution of Adverse Effects to Historic Properties**

Because this project will result in an adverse effect to two contributing element to the CMHIFL NRHD, NCA intends to execute a Memorandum of Agreement (MOA) as outlined in 36 CFR 800.6(c) to fulfill its National Historic Preservation Act Section 106 obligations. This letter serves as an invitation for your organization to participate in consultation regarding the proposed expansion of the FLNC.

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<sup>5</sup> National Park Service, National Register Eligibility of National Cemeteries – A Clarification of Policy – A Clarification of Policy (9/8/2011), September 2011.



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**Office of Construction & Facilities Management**  
**Washington DC 20420**

NCA is seeking input on this project. If your organization is interested in participating in this consultation, please send your comments on the project, the APE, the historic properties affected, and any ideas for appropriate mitigation measures. A list of proposed consulting parties is located in Attachment F. Please include any recommendations concerning organizations with a vested interest in historic properties potentially affected as a result of this undertaking. We would appreciate your input by 30 days from date of letter.

We thank you for your organization's ongoing support of historic properties in our state. If you have any questions about this project, please contact Marianne Marinucci at: (202) 632 -5468 or [Marianne.Marinucci@va.gov](mailto:Marianne.Marinucci@va.gov).

Sincerely,

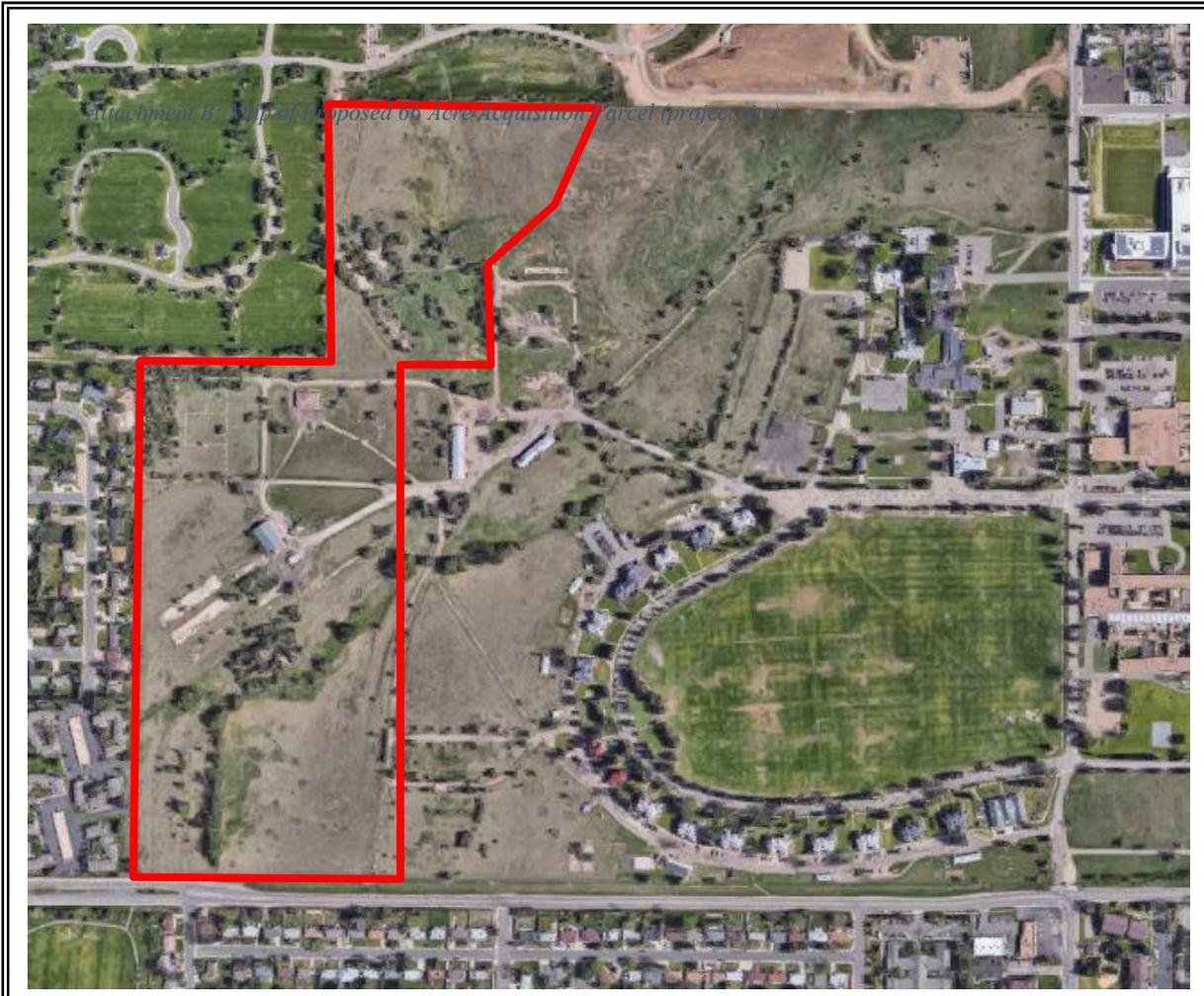
Glenn Madderom  
Chief, Cemetery Development & Improvement Service  
National Cemetery Administration





**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**

Fort Logan Expansion  
49.42 Acres of Land Area  
3685 West Oxford Avenue  
Denver, CO 80236





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**Office of Construction & Facilities Management**  
**Washington DC 20420**



*Attachment C – Fort Logan National Cemetery and Project Site on Denver County, Colorado  
Topographic Quadrangle Map*



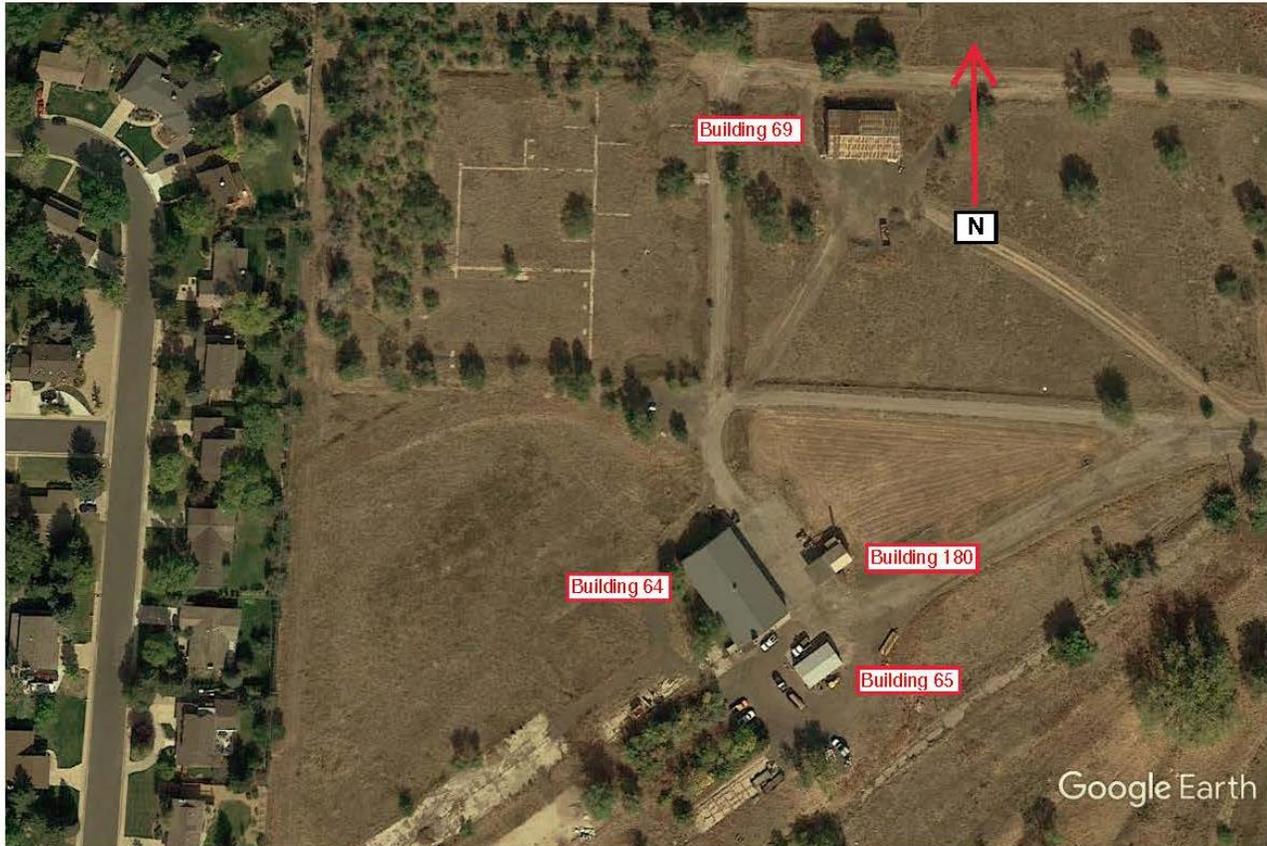
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**Office of Construction & Facilities Management**  
**Washington DC 20420**



Attachment D: Area of Potential Effect



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**Washington DC 20420**



*Attachment E (Figure 1) – Overview of Buildings in Project Site*



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**Office of Construction & Facilities Management**  
**Washington DC 20420**



*Attachment E (Figure 2) – 5DV.9421 (Building 64, Garage and Repair Shop) looking northwest*



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**Washington DC 20420**



*Attachment E (Figure 3) – 5DV.9421 (Building 64, Garage and Repair Shop) looking south*



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**Washington DC 20420**



*Attachment E (Figure 4) – 5DV.9371 (Combined Filling station and Oil House) looking north*



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**Washington DC 20420**



*Attachment E (Figure 5) – 5DV.9371 (Combined Filling station and Oil House) looking south*



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**Office of Construction & Facilities Management**  
**Washington DC 20420**

**Attachment F**  
**Consulting Parties**

<b>Organization</b>	<b>Contact</b>	<b>Street Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>	<b>Phone</b>	<b>Email</b>
Advisory Council on Historic Preservation	John Fowler, Executive Director	401 F Street NW, Suite 308	Washington	DC	20001-2637	202-517-0200	<a href="mailto:jfowler@achp.gov">jfowler@achp.gov</a> Note- should be submitted through e106@achp.gov. See below for form.
Advisory Council on Historic Preservation	Angela McArdle, VA Liaison	401 F Street NW, Suite 308	Washington	DC	20001-2637	202-517-0223	amcardle@achp.gov
Colorado State Historic Preservation Office	Steve Turner	1200 Broadway	Denver	CO	80203	303-866-2305	Steve.turner@state.co.us
Friends of Fort Logan		PO Box 36011	Denver	CO	80236		Historic.fort.logan@gmail.com
Colorado Mental Health Institute at Fort Logan	Christopher Burke, Ph.D.	3520 West Oxford Avenue	Denver	CO	80236	303-866-7066	Sheridan.garcia@state.co.us
Colorado Commission of Indian Affairs	Ernest House, Jr.	1300 Broadway, 6 <sup>th</sup> Floor	Denver	CO	80203	303-866-5470	Ernest.house@state.co.us
Sheridan Historical Society	Clifford Mueller	4104 S. Federal Blvd.	Sheridan	CO	80110		
Southern Ute Indian Tribe	Clement Frost, Chairman	P.O. Box 737	Ignacio	CO	81137	970-563-0100 x2319	
Ute Mountain Tribe	Manuel Heart, Chairman	General Delivery	Towoac	CO	80203	970-565-3751 x201	
Apache Tribe of Oklahoma	Lyman Guy, Chairman	PO Box 1330	Anadarko	OK	73005	(405) 247-9493	lguy93@hotmail.com
Arapaho Tribe of the Wind River Reservation, Wyoming	Devin B. Oldman, THPO	PO Box 67 St.	Stevens	WY	82524	(307-856-1628)	nathpodd@gmail.com



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**Office of Construction & Facilities Management**  
**Washington DC 20420**

Cheyenne and Arapaho Tribes, Oklahoma	Virginia Richey, THPO	100 Red Moon Circle	Concho	OK	73022	(405) 422-7630	
Comanche Nation, Oklahoma	Martina Callahan, THPO	6 SW D Avenue	Lawton	OK	73502	(580) 595-9618	<a href="mailto:martinac@comanchenation.com">martinac@comanchenation.com</a>
Fort Belknap Indian Community of the Fort Belknap Reservation of Montana	Michael Blackwolf, THPO	656 Agency Main Street	Harlem	MT	59526	(406) 353-8471	<a href="mailto:mblackwolf@ftbelknap.org">mblackwolf@ftbelknap.org</a>
Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana	Teanna Limpy, THPO	PO Box 128	Lame Deer	MT	59043	(406) 477-4839	<a href="mailto:Teanna.Limpy@cheyennenation.com">Teanna.Limpy@cheyennenation.com</a>



OFFICE of ARCHAEOLOGY and HISTORIC PRESERVATION

Glenn Madderom  
Chief, Cemetery Development & Improvement Service  
National Cemetery Administration  
Department of Veterans Affairs  
Office of Construction & Facilities Management  
Washington, DC 20420

**AUG 27 2018**

Re: Invitation for Section 106 Consultation on the Expansion of the Fort Logan National Cemetery (HC #72063)

Dear Mr. Madderom:

Thank you for your correspondence dated August 6, 2018 and received on August 13, 2018 by our office regarding the consultation of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).

We look forward to consulting with you and any other consulting parties in the development of a Memorandum of Agreement (MOA) for the adverse effect to 5DV.694.

Thank you again for the opportunity to consult. If there are any questions please contact Jason O'Brien, Section 106 Compliance Manager, at (303) 866-2673 or [Jason.obrien@state.co.us](mailto:Jason.obrien@state.co.us).

Sincerely,

*for* Steve Turner, AIA  
State Historic Preservation Officer



**DEPARTMENT OF VETERANS AFFAIRS**  
**NATIONAL CEMETERY ADMINISTRATION**  
**WASHINGTON DC 20420**

20 February 2019

Jason O'Brien  
Section 106 Compliance Officer  
State Historic Preservation Office  
History Colorado  
1200 Broadway  
Denver, CO 80203

Subject: Continued Section 106 Consultation for the Expansion of Fort Logan National Cemetery

Dear Mr. O'Brien

Thank you for participating in the consultation to resolve adverse effects to historic properties resulting from the Fort Logan National Cemetery Expansion. As noted in our previous correspondence (August 9, 2018) and in the attached draft Memorandum of Agreement (MOA), the area to be acquired is located in the Colorado Mental Health Institute at Fort Logan National Register Historic District (CMHIFL NRHD) and contains the former fort garage/repair shop (Building #180) and gas station (Building #64) which are contributing resources to the CMHIFL NRHD. These buildings are slated for demolition pursuant to project development at a future time, and therefore the undertaking will have an adverse effect on Buildings #180 and #64 of the CMHIFL NRHD, as well as to the district.

Attached is a draft MOA to mitigate the adverse effects of the undertaking on the historic properties. VA will host a webinar working session to discuss the draft MOA sometime in February; we will be sending you a follow-up communication with proposed dates; please indicate your preference and availability at that time. If you are interested in attending, please respond to me regarding the ability of your organization to participate in this working session and the names of those who will be participating.

We look forward to continuing consultation on this important effort with your organization, and in executing a successful MOA for this project.

Sincerely,

*W. Edward Hooker, III*

W. Edward Hooker, III  
Historic Architect, NCA

**MEMORANDUM OF AGREEMENT  
BETWEEN THE U.S.  
DEPARTMENT OF VETERANS  
AFFAIRS, NATIONAL  
CEMETERY ADMINISTRATION,  
AND THE  
COLORADO HISTORIC PRESERVATION OFFICER  
REGARDING THE  
EXPANSION OF THE FORT LOGAN NATIONAL CEMETERY**

**WHEREAS**, the U.S. Department of Veterans Affairs (VA) National Cemetery Administration (NCA) Fort Logan National Cemetery in Denver, Colorado (VA FLNC), plans to acquire and develop land formerly developed as Fort Logan, as shown in Attachment A, for the purposes of expanding the VA FLNC (undertaking); and

**WHEREAS**, the area to be acquired is located in the Colorado Mental Health Institute at Fort Logan National Register Historic District (CMHIFL NRHD) and contains the former fort garage/repair shop (Building #180) and gas station (Building #64) which are contributing resources to the CMHIFL NRHD (Attachment B); and

**WHEREAS**, VA FLNC has defined the undertaking's Area of Potential Effects (APE) as the boundaries of the VA FLNC and the Fort Logan portion of the Colorado Mental Health Institute at CMHIFL NRHD as shown in Attachment C; and

**WHEREAS** VA FLNC has determined that the undertaking will have an adverse effect on the Colorado Mental Health Institute at Fort Logan National Register Historic District (CMHIFL NRHD), which is eligible for listing in the National Register of Historic Places, and conducted a cultural resources survey in 2017 confirming that no other historic properties are present, and has consulted with the Colorado State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108); and

**WHEREAS**, VA FLNC has determined that the buildings are slated for demolition pursuant to project development at a future time, and therefore the undertaking will have an adverse effect on the CMHIFL NRHD, and has consulted with the SHPO pursuant to Section 106; and

**WHEREAS**, VA FLNC has consulted with the Apache Tribe of Oklahoma; the Arapaho Tribe of the Wind River Reservation, Wyoming; the Cheyenne and Arapaho Tribes, Oklahoma; the Comanche Nation, Oklahoma; the Fort Belknap Indian Community of the Fort Belknap Reservation of Montana; the Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana; the Ute Mountain Tribe; and the Southern Ute Indian Tribe of the Southern Ute Reservation, Colorado, and the Southern Ute Indian Tribe requested notification if unexpected discoveries are made during execution of the undertaking; and

**WHEREAS**, VA FLNC has consulted with Historic Denver, Inc. and the Sheridan Historical

Society regarding the effects of the undertaking on historic properties and has invited them to sign this memorandum of agreement (MOA) as concurring parties; and

**WHEREAS**, in accordance with 36 CFR § 800.6(a)(1), VA FLNC has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination with specified documentation, and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii); and

**NOW, THEREFORE**, VA FLNC and SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

## STIPULATIONS

VA FLNC shall ensure that the following measures are carried out:

- I. **APPLICABILITY**
  - a. The Anti-Deficiency Act, 31 U.S.C. 1341, prohibits federal agencies from incurring an obligation of funds in advance of or in excess of available appropriations. Accordingly, the parties agree that any requirement for the obligation of funds arising from the terms of this MOA shall be subject to the availability of appropriated funds for that purpose, and that this agreement shall not be interpreted to require the obligation of funds in violation of the Anti-Deficiency Act.
- II. **GENERAL**
  - a. All parties will send and accept official notices, comments, requests for further information and documentation, and other communications required by this MOA by e-mail.
  - b. Time designations are in calendar days. Failure to comment within specified time designations will allow VA FLNC to proceed to the next step in the process as outlined in this MOA.
- III. **MITIGATION**
  - a. VA FLNC will ensure that both Building#180 and #64 are documented as Historic Resource Documentation Level II, as outlined in the March 2013 History Colorado publication #1595, to include to include full descriptive and historical narrative (including relevant context(s), measured drawings, and digital photography, all in archivally stable format.
  - b. When documentation is complete, FLNC and VA Historic Preservation Office will retain copies. A disc and hard copy containing all photographs will be submitted to SHPO for inclusion in the files about the historical significance of the CMHIFL NRHD, and others will be archived locally at the Sheridan Historical Society and the Fort Logan Field Officer's Museum for public access.
- IV. **FUTURE CONSULTATION**
  - a. VA FLNC acknowledges that the Sheridan Historical Society has expressed concerns about future design features, as communicated in their letter dated August 21, 2018, and will continue consultation with them and other consulting parties pursuant to 36 CFR 800.4(b)(2) in order to avoid and/or minimize additional adverse effects to historic properties when the design phase for the expansion area of the VA FLNC has begun.

## V. ADMINISTRATION AND DURATION

- a. This MOA will be executed and effective immediately on the date it is filed with the ACHP.
- b. This MOA will be executed in counterparts, with a separate signature page for each Signatory.
- c. This MOA will expire if its terms are not carried out within ten (10) years from the date of its execution. Prior to such time, VA FLNC may consult with the SHPO to reconsider the terms of the MOA and amend it in accordance with Stipulation VIII below.

## VI. POST-REVIEW DISCOVERIES

- a. If properties are discovered that may be historically significant or unanticipated effects on historic properties found during implementation of this MOA, all ground disturbance will stop within 50 feet (15 meters) of the discovery, and the location of the discovery will be marked for avoidance.
  - i. A qualified archaeologist will recommend to VA FLNC whether the discovery is NRHP-eligible by evaluating it in accordance with 36 CFR § 60.4.
  - ii. VA FLNC will submit its finding to the SHPO for review and concurrence via e-mail.
    1. If VA FLNC finds that the archaeological resource is not eligible for the NRHP, and if the SHPO concurs or does not comment within 7 days, construction may proceed.
    2. If VA FLNC finds that the archaeological resource is eligible for the NRHP, and if the SHPO concurs or does not comment within 7 days, VA FLNC will seek to avoid the historic property. If it cannot avoid the resource, VA FLNC will prepare and implement a data recovery plan in consultation with SHPO.
    3. SHPO will have the opportunity to review and comment on reports describing all archaeological work.
- b. If human remains are discovered during construction, VA FLNC will follow procedures consistent with Colorado Revised Statutes Section 24-80-1302. If, upon inspection of the human remains, the Denver County Coroner determines that the remains are of Native American origin, VA shall proceed in accordance with the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA), 25 USC 3001.

## VII. MONITORING AND REPORTING

- a. Each 12 months following the execution of this MOA until it is fulfilled, expires or is terminated, VA FLNC shall provide all parties to this MOA a summary report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in VA FLNC's efforts to carry out the terms of this MOA.

## VIII. DISPUTE RESOLUTION

- a. Should either signatory to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, VA FLNC shall consult with the SHPO to resolve the objection. If VA FLNC determines that such objection cannot be resolved, VA FLNC will:
  - i. Forward all documentation relevant to the dispute, including the VA FLNC's proposed resolution, to the ACHP. The ACHP shall provide VA FLNC with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, VA FLNC shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, SHPO, and concurring

parties, and provide them with a copy of this written response. VA FLNC will then proceed according to its final decision.

- ii. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, VA FLNC may make a final decision on the dispute and

proceed accordingly. Prior to reaching such a final decision, VA FLNC shall prepare a written response that takes into account any timely comments regarding the dispute from the SHPO and concurring parties to the MOA and provide them and the ACHP with a copy of such written response.

- iii. VA FLNC's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

IX. AMENDMENTS

- a. This MOA may be amended when such an amendment is agreed to in writing by both signatories. The amendment will be effective on the date a copy signed by both signatories is filed with the ACHP.

X. TERMINATION

- a. If either signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatory to attempt to develop an amendment per Stipulation VIII, above. If within thirty (30) days (or another time period agreed to by both signatories) an amendment cannot be reached, either signatory may terminate the MOA upon written notification to the other signatory.
- b. Once the MOA is terminated, and prior to work continuing on the undertaking, VA FLNC must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. VA FLNC shall notify the SHPO as to the course of action it will pursue.

**EXECUTION AND IMPLEMENTATION** of this MOA, pursuant to 36 CFR 800.6(c), evidences that FLNC has afforded the ACHP a reasonable opportunity to comment on the Undertaking and its effects on historic properties, that FLNC has taken into account the effects of the Undertaking on historic properties, afforded the ACHP an opportunity to comment, and that FLNC has satisfied its Section 106 responsibilities.

**MEMORANDUM OF AGREEMENT  
BETWEEN THE U.S.  
DEPARTMENT OF VETERANS  
AFFAIRS, NATIONAL  
CEMETERY ADMINISTRATION,  
AND THE  
COLORADO HISTORIC PRESERVATION OFFICER  
REGARDING THE EXPANSION OF THE FORT LOGAN NATIONAL CEMETERY**

**SIGNATORY:**

Department of Veterans Affairs  
National Cemetery Administration  
Continental District

  
\_\_\_\_\_  
Director, NCA Continental District

Date 9 May 2019

**MEMORANDUM OF AGREEMENT  
BETWEEN THE U.S.  
DEPARTMENT OF VETERANS  
AFFAIRS, NATIONAL  
CEMETERY ADMINISTRATION,  
AND THE  
COLORADO HISTORIC PRESERVATION OFFICER  
REGARDING THE EXPANSION OF THE FORT LOGAN NATIONAL CEMETERY**

**SIGNATORY:**

Colorado State Historic Preservation Office

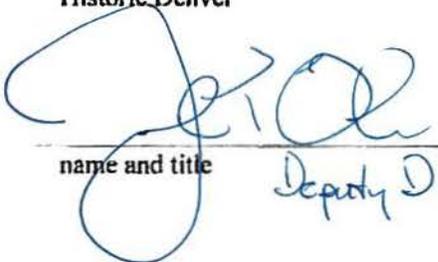
  
Colorado State Historic Preservation Officer

Date 5/13/19

**MEMORANDUM OF AGREEMENT  
BETWEEN THE U.S.  
DEPARTMENT OF VETERANS  
AFFAIRS, NATIONAL  
CEMETERY ADMINISTRATION,  
AND THE  
COLORADO HISTORIC PRESERVATION OFFICER  
REGARDING THE EXPANSION OF THE FORT LOGAN NATIONAL CEMETERY**

**CONCURRING PARTY:**

Historic Denver

  
name and title Deputy Director

Date

6/7/2019

**MEMORANDUM OF AGREEMENT  
BETWEEN THE U.S.  
DEPARTMENT OF VETERANS  
AFFAIRS, NATIONAL  
CEMETERY ADMINISTRATION,  
AND THE  
COLORADO HISTORIC PRESERVATION OFFICER  
REGARDING THE EXPANSION OF THE FORT LOGAN NATIONAL CEMETERY**

**CONCURRING PARTY:**

Sheridan Historical Society



name and title

Date 5/28/2019



Dedicated to protecting and improving the health and environment of the people of Colorado

February 17, 2016

Carrie Hess, Associate Geologist  
TTL Associates, Inc.  
44265 Plymouth Oaks Blvd.  
Plymouth, Michigan 48170

Re: Fort Logan National Cemetery Expansion

Dear Ms. Hess,

The Colorado Department of Public Health and Environment (CDPHE) has two comments on the proposed Fort Logan Cemetery Expansion both dealing with the existing buildings and structures on the proposed site. Our Solid Waste and Materials Handling group provided the following comment. If there are plans to demo the existing buildings, the VA or contractor need to follow Section 5 of 6 CCR 1007-2, Part 1, the *Regulations Pertaining to Solid Waste Sites and Facilities* for management of asbestos waste. I also received one comment from our Air Pollution Control Division (APCD).

The APCD requests that the VA or contractor ensure that all Air Quality Control Commission (AQCC) regulations are followed during the construction of the cemetery. Specifically, AQCC Regulations 8, 15, and 19 regarding the proper handling of asbestos, lead-based paint, and chlorofluorocarbons (CFCs) if the existing buildings on the property are going to be removed, renovated or remodeled and AQCC Regulation 3 regarding land development.

Please let me know if there questions we can help answer at 303-692-3662.

Sincerely,

*Kent Kuster*

Kent Kuster  
Environmental Specialist  
Colorado Department of Public Health and Environment





**COLORADO**  
Division of Water Resources  
Department of Natural Resources

John W. Hickenlooper  
Governor

Robert Randall  
Executive Director

Dick Wolfe, P.E.  
Director/State Engineer

February 24, 2017

Carrie Hess, Associate Geologist  
TTL Associates, Inc.  
Transmitted via email:  
[chess@ttlassoc.com](mailto:chess@ttlassoc.com)

Re: Department of Veterans Affairs' Proposed Fort Logan National Cemetery Expansion  
NEPA Scoping Letter  
Portion of of Section 6, Township 5 South, Range 68 West, 6<sup>th</sup> P.M.  
Water Division 1, District 9

Dear Ms. Hess,

We have reviewed the above referenced referral received January 31, 2017. As a part of the Veterans Affairs' (VA) proposed Fort Logan National Cemetery (FLNC) Expansion, your firm is assisting the VA in conducting a National Environmental Policy Act (NEPA) process for the 66-acre FLNC expansion. The expansion will be located next to the Fort Logan Mental Health Center at 3685 West Oxford Ave in Denver. In this referral you have requested assistance in identifying environmental issue areas, either at or in the vicinity of the proposed site. Relevant to our agency, you have requested assistance in identifying surface and groundwater resources including streams, open water features, wells and local aquifers.

Minimal water resources appear to be located within the site itself; however there are a range of resources in the site vicinity. What appear to be several storm water detention facilities are located just west of the property and Bear Creek is located north of the property. The diversion structure for the McBroom Ditch is located on Bear Creek north of the property; a municipal diversion off the McBroom Ditch is also located north of the property.

There are a number of well permits in the vicinity; however most of these well permits are used for water quality/quantity monitoring purposes only. The only two production well permits that have been issued in this section are well permit nos. 108487 (located in the NW ¼ of the NW ¼ of Section 6) and permit no. 46068 (located in the SE ¼ of the SE ¼ of Section 6). Well permits were not required by the State of Colorado until May 8, 1972 so there may be additional wells that were constructed prior to May 8, 1972 in the vicinity that this office is unaware of. In general, this site is located above the Denver Basin aquifers, which are a series of confined aquifers that encompass 6,000 + square miles of the Denver Metro area. Depending on the geology at the site, the upper most Denver Basin aquifer in this area may/may not be confined.

The application materials indicate that infrastructure, including water supply, will be developed for this site. The applicant should be aware that any water used for this site must either be provided by a municipal water supplier or, if the applicant desires to irrigate using a well, the applicant will need to first obtain a plan for augmentation through the Colorado Division One Water Court.

We encourage you to investigate these structures, along with the site, in more detail using our on-line mapping interface, MapViewer. MapViewer links can be found at this site:  
<http://water.state.co.us/DATAMAPS/GISANDMAPS/MAPVIEWER/Pages/FAQ.aspx>

Should you or the applicant have any questions, please contact Karlyn Armstrong at (303) 866-3581 x8275.



Sincerely,

A handwritten signature in blue ink that reads "Joanna Williams". The signature is written in a cursive style with a large initial "J" and "W".

Joanna Williams, P.E.  
Water Resource Engineer



**DENVER**  
THE MILE HIGH CITY

**Denver Environmental Health Department**

Division of Environmental Quality

200 W. 14<sup>th</sup> Avenue, Suite 300

Denver, CO 80204-2732

PHONE: 720-865-5484

FAX: 720-865-5531

[www.denvergov.org/health-environment](http://www.denvergov.org/health-environment)

## **INTERAGENCY MEMORANDUM**

**TO:** Carrie Hess, Associate Geologist, TTL Associates Inc., Plymouth, Michigan  
**FROM:** Dave Erickson, Denver Department of Environmental Health  
**DATE:** February 15, 2017

**SUBJECT: Proposed Fort Logan National Cemetery Expansion, 3685 West Oxford Avenue**

At your request, Denver Department of Environmental Health, Environmental Quality Division (EQ) conducted a limited environmental evaluation of a 66-acre site (Site) that is being investigated by the Department of Veterans Affairs for a proposed expansion of the Fort Logan National Cemetery located near 3685 West Oxford Avenue, Denver, Colorado.

### **Executive Summary and Recommendations**

Based on available information, it is EQ's opinion that the Site is not a likely source of petroleum or hazardous waste contamination; however:

- Areas of historical fill are present in several locations across the Site therefore there is a potential for the presence of solid waste, regulated materials and compaction issues; and
- An historical leaking underground storage tank (LUST) may have been located at 4390 West Oxford Avenue.

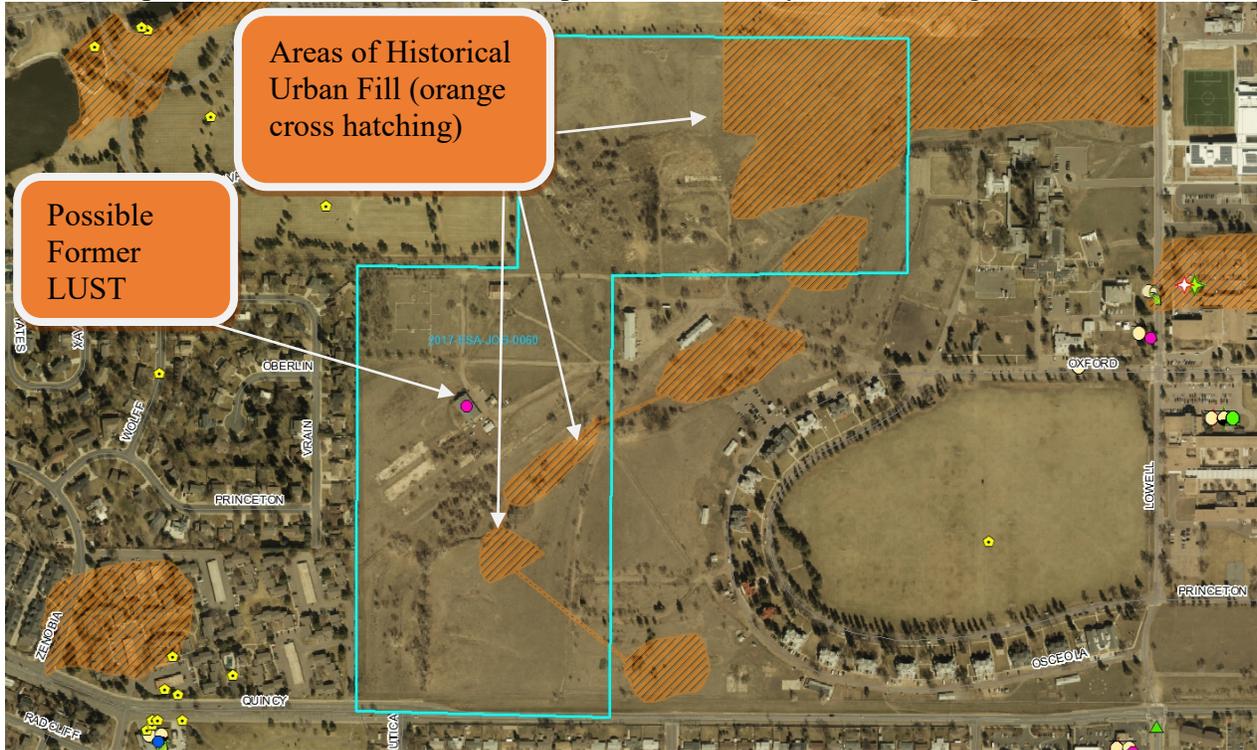
EQ recommends the soil be tested under the fill areas if excavation or construction is planned and proper handling and disposal if contaminated materials are encountered.

### **Project Description**

This evaluation was performed to obtain information that would indicate or identify environmental concerns in connection with the Site. The scope of the Site review tasks consisted of the following:

- Review of City and County of Denver Historical Landfill database (Pinyon 1997);
- Review of historical aerial photographs (1937, 1953, 1963, 1971, 1975, 1983, 1988, 1994, 1999, 2000, 2002, 2004, 2005, 2006, 2007, 2008, 2010, 2012, 2014, 2015 and 2016);
- Review of Sanborn® Fire Insurance maps (none available);
- Review of reverse telephone directories (1998);

- Review of county, state and federal lists of known potential hazardous waste sites or landfills, and sites currently under investigation for environmental violations, including any registered underground storage tanks (GeoSearch report run February 9, 2017);
- Preparation of this memorandum to present a summary of the findings.



**Figure 1. Aerial photograph (2016) showing approximate location of the Site (outlined in blue).**

### Findings and Summary

Based on information reviewed, it is EQ's opinion that the Site is not a likely source of asbestos, petroleum or hazardous waste contamination. However, there are areas on Site where artificial fill has been imported. Based on information provided in Denver's Historical Landfill Database the fill may contain wood, brick concrete and other debris. Additionally, asbestos could be present in the fill material and Colorado regulates asbestos in soil as part of their Regulations Pertaining to solid Waste Sites and Facilities (6 CCR 1007-2, Part 1, Section 5.5). Disturbance of regulated asbestos contaminated soil (RACS) generally requires notification of and approval by the State.

EQ's geographic information system (GIS) database identified a former LUST located at 4390 West Oxford Avenue within the Site. EQ was not able to obtain additional information regarding the former LUST from state-operated databases; accordingly, the listing of this LUST in EQ's database may be an error.

On February 9, 2017, EQ performed a regulatory database search for the Site. EQ reviewed the database report for potential sources of petroleum hydrocarbons or hazardous substances that were reasonably close to and up gradient of the Site. Information provided in Denver's GIS database indicates that groundwater is moving to the northeast. Locations to the southwest would be considered up gradient with respect to the Site. No sites were listed in the database report that would be considered an environmental concern for the Site with the following exception:

- A release of fuel from a LUST was identified in 1991 from Fire Station #28 located at 4306 South Wolff Street, Subsequently, remediation and monitoring occurred through August 2016 when the Colorado Department of Labor and Employment, Division of Oil and Public Safety (OPS) issued a Tier III Closure Letter for the site.

Because OPS evaluated and closed the LUST EQ does not considered it an environmental concern for the Site.

### **Limitations**

The limited scope of this environmental review must be understood. Future regulatory changes, agency interpretations, and/or concepts of due diligence industry standards are beyond the control of EQ.

EQ's objective is to perform our work with care, exercising the customary skill and competence of Environmental Property Assessment professionals in the relevant disciplines. The opinions presented herein apply to subject Property conditions existing at the time of our investigation and those reasonably foreseeable. EQ does not warrant or guarantee the subject Property suitable for any particular use or purpose, or certify that the subject Property is "clean".

As with any environmental concern, Denver's Department of Environmental Health, Environmental Quality Division is available to advise all city agencies and is pleased to be of service. If you have any questions or concerns that you would like to discuss regarding this limited Property assessment, please telephone Dave Erickson (720-865-5433).

## **APPENDIX B**

### **Native American Consultation**



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**

August 6, 2018

Michael Blackwolf  
THPO  
Fort Belknap Indian Community of the Fort Belknap Reservation of Montana  
656 Agency Main Street  
Harlem, Montana 59526

RE: Invitation for Section 106 Consultation on the Expansion of the Fort Logan National Cemetery

Dear Mr. Blackwolf,

The National Cemetery Administration (NCA) of the U.S. Department of Veterans Affairs (VA) proposes to acquire a 49.42 acre site (project site) adjacent to the current southern boundary of the Fort Logan National Cemetery (FLNC) in Denver, Denver County, Colorado, to provide additional interment space for our nation's Veterans (Attachment A, B, and C – maps of the FLNC and project site). The NCA intends to acquire and develop this proposed site to include more headstones, public access roads, and a columbarium (Undertaking).

**Brief History of Fort Logan**

The proposed acquisition parcel was once part of Fort Logan, but is now part of the Colorado Mental Health Institute at Fort Logan (CMHIFL). Fort Logan was founded in 1887, as a military outpost to protect nascent Denver. Founded on the Johnson Tract ten miles southwest of the town, along the Morrison branch of the South Park Railroad, the outpost initially consisted of 640 acres.<sup>1</sup> Construction of the brick buildings was complete by 1894 to house 28 officers, two cavalry troops, eight infantry companies, and a band, and included over 17 buildings (USGS topographic quadrangle map, 1901<sup>2</sup>). The fort, named after General John Alexander Logan of Illinois, added an additional 333 acres in 1908.<sup>3</sup> Between the Spanish-American War and World War II, the fort was home to a recruitment center, a dirigible squadron, battalions of engineers, a supply camp for the Civilian Conservation Corps and a large receiving station for newly enlisted personnel. The fort was active until the end of World War II. In 1946, 577 acres of the fort were transferred to the Veterans Administration (now the US Department of Veterans Affairs [VA]), who operated the fort hospital as a makeshift health care facility for veterans, while the new facility in Denver was being constructed. In 1960, 308 acres of VA Land were transferred to the State of Colorado, to construct a new Mental Health Center. The VA retained 132 acres for the FLNC.<sup>4</sup>

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<sup>1</sup> Evan Edwards, "The Historical Background of Fort Logan." Denver Public Library Manuscript Collection, 1962, page 4.

<sup>2</sup> United States Geological Survey. *Topographic Quadrangle Map*. Edition of February 1901, reprinted 1932. Reston, Va: U.S. Department of the Interior. 1901.

<sup>3</sup> *Ibid*, 8.

<sup>4</sup> *Ibid*, 8-13.



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**

**Area of Potential Effect**

The area of potential effect (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties. The proposed acquisition of the select parcel would alter the existing boundaries of the FLNC, and the Fort Logan portion of the Colorado Mental Health Institute at Fort Logan (CMHIFL); therefore, the FLNC, part of the historic Fort Logan Historic District, including the parade ground circle, is recommended as the APE (Attachment D – APE).

Proposed redevelopment of the parcel will include installation of headstones. These headstones could affect the viewshed of the former Fort Logan buildings. However, this possible effect would not be adverse, since the Fort has always included a cemetery.

**Identification of Historic Properties**

NCA has determined the presence of two known historic properties within the APE: the CMHIFL National Register Historic District (CMHIDL NRHD) and the FLNC. The CMHIFL NRHD includes 54 buildings, 46 of which have been determined to contribute to the historic district. Inside the project site, four buildings are standing (5DV.9421, 5DV.9371, 5DV.9442, and 5DV.9376), and each has been evaluated for eligibility on the NRHP as contributing resources to the CMHIFL NRHD. Two of these buildings, 5DV.9421 (Building 64, Garage and Repair Shop), and 5DV.9371 (Combined Filling station and Oil House), have been found to be contributing elements to the CMHIFLNRHD (see Attachment E – Photographs). The FLNC (5DV.4344) was listed on the National Register of Historic Places in 1981 the NRHP for its association with events significant to our military, political, and social history during the late nineteenth and early twentieth century. All buildings surveyed lay outside the current boundaries of the FLNC.

As part of the required analysis for a Fort Logan NCA an archaeological survey of the proposed project site was conducted. During this survey, five historic sites were identified; however, none of these sites were found to possess the qualities of significance necessary for listing in the NRHP. The Colorado State Historic Preservation Office reviewed the report, and concurred with its findings (July 3, 2018).

No Traditional Cultural Properties (TCPs) have been identified on the proposed acquisition parcel, or in the recommended APE. However, this work did not include an ethnographic study. Discussions with Native American groups to definitively identify TCPs in the APE will be conducted as part of NCA’s ongoing Section 106 consultation process.

**Effects of the Proposed Project on Historic Properties**

Adverse effects of an undertaking occur when the action directly or indirectly alters the characteristics of a historic property that qualify it for inclusion in the NRHP. Reasonably foreseeable effects that are caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative also need to be considered.

The proposed project will have a direct effect on the physical boundaries of the FLNC, which will expand from their current limitations. However, this effect is not adverse, because the National Park Service (NPS) policy clarification on national cemeteries specifically recognizes that “National cemeteries continue to expand,” and that they are “ever-changing.”<sup>5</sup> Additionally, two contributing elements to the CMHIFL NRHD will be adversely affected if the NCA acquires this property. This will be an adverse effect to the CMHIFL NRHD.

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<sup>5</sup> National Park Service, National Register Eligibility of National Cemeteries – A Clarification of Policy – A Clarification of Policy (9/8/2011), September 2011.



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**

**Resolution of Adverse Effects to Historic Properties**

Because this project will result in an adverse effect to two contributing elements to the CMHIFL NRHD, NCA intends to execute a Memorandum of Agreement (MOA) as outlined in 36 CFR 800.6(c) to fulfill its National Historic Preservation Act Section 106 obligations. This letter serves as an invitation for your organization to participate in consultation regarding the proposed expansion of the FLNC.

NCA is seeking input on this project. If your organization is interested in participating in this consultation, please send your comments on the project, the APE, the historic properties affected, and any ideas for appropriate mitigation measures. A list of proposed consulting parties is located in Attachment F. Please include any recommendations concerning organizations with a vested interest in historic properties potentially affected as a result of this undertaking. We would appreciate your input by 30 days from date of letter.

We thank you for your organization's ongoing support of historic properties in our state. If you have any questions about this project, please contact Marianne Marinucci at: (202) 632-5468 or [Marianne.Marinucci@va.gov](mailto:Marianne.Marinucci@va.gov)

Sincerely,

Glenn Madderom  
Chief, Cemetery Development & Improvement Service  
National Cemetery Administration

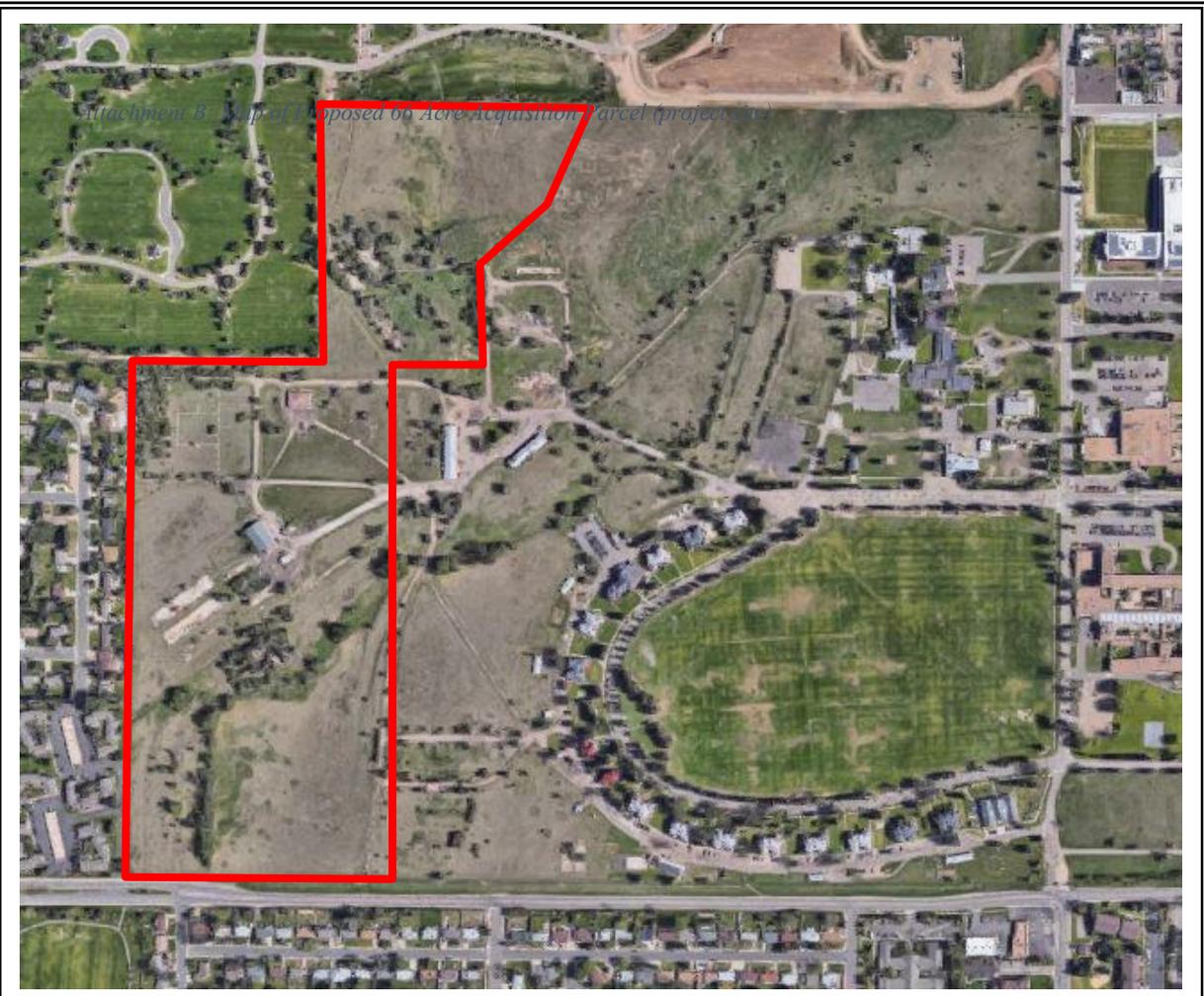




**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**

**UBJECT PROPERTY**

Fort Logan Expansion  
49.42 Acres of Land Area  
3685 West Oxford Avenue  
Denver, CO 80236





**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**



*Attachment C – Fort Logan National Cemetery and Project Site on Denver County, Colorado  
Topographic Quadrangle Map*



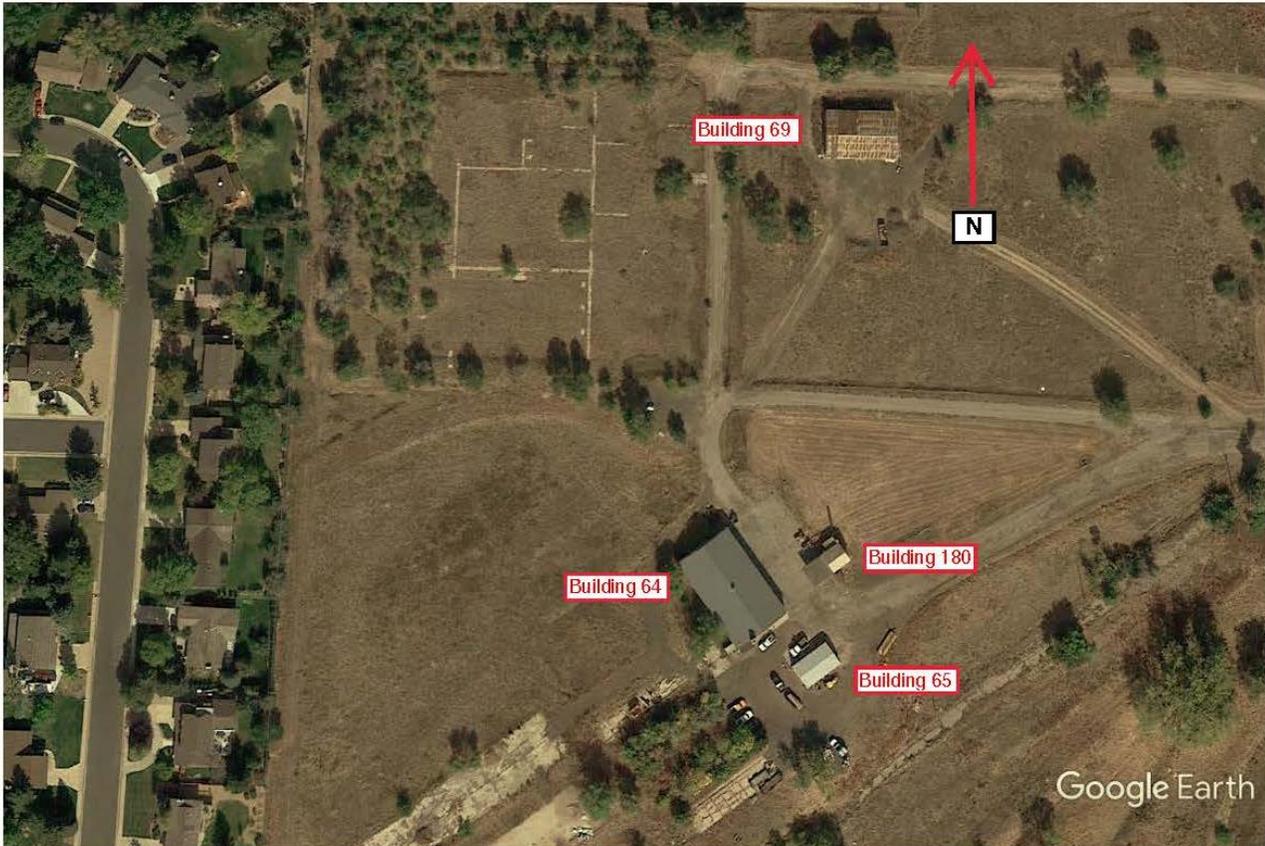
**DEPARTMENT OF VETERANS AFFAIRS**  
Office of Construction & Facilities Management  
Washington DC 20420



Attachment D: Area of Potential Effect



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**



*Attachment E (Figure 1) – Overview of Buildings in Project Site*



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**



*Attachment E (Figure 2) – 5DV.9421 (Building 64, Garage and Repair Shop) looking northwest*



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**



*Attachment E (Figure 3) – 5DV.9421 (Building 64, Garage and Repair Shop) looking south*



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**



*Attachment E (Figure 4) – 5DV.9371 (Combined Filling station and Oil House) looking north*



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**



*Attachment E (Figure 5) – 5DV.9371 (Combined Filling station and Oil House) looking south*



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**

**Attachment F**  
**Consulting Parties**

Organization	Contact	Street Address	City	State	Zip	Phone	Email
Advisory Council on Historic Preservation	John Fowler, Executive Director	401 F Street NW, Suite 308	Washington	DC	20001-2637	202-517-0200	<a href="mailto:jfowler@achp.gov">jfowler@achp.gov</a> Note- should be submitted through e106@achp.gov. See below for form.
Advisory Council on Historic Preservation	Angela McArdle, VA Liaison	401 F Street NW, Suite 308	Washington	DC	20001-2637	202-517-0223	amcardle@achp.gov
Colorado State Historic Preservation Office	Steve Turner	1200 Broadway	Denver	CO	80203	303-866-2305	Steve.turner@state.co.us
Friends of Fort Logan		PO Box 36011	Denver	CO	80236		Historic.fort.logan@gmail.com
Colorado Mental Health Institute at Fort Logan	Christopher Burke, Ph.D.	3520 West Oxford Avenue	Denver	CO	80236	303-866-7066	Sheridan.garcia@state.co.us
Colorado Commission of Indian Affairs	Ernest House, Jr.	1300 Broadway, 6 <sup>th</sup> Floor	Denver	CO	80203	303-866-5470	Ernest.house@state.co.us
Sheridan Historical Society	Clifford Mueller	4104 S. Federal Blvd.	Sheridan	CO	80110		
Southern Ute Indian Tribe	Clement Frost, Chairman	P.O. Box 737	Ignacio	CO	81137	970-563-0100 x2319	
Ute Mountain Tribe	Manuel Heart, Chairman	General Delivery	Towoac	CO	80203	970-565-3751 x201	
Apache Tribe of Oklahoma	Lyman Guy, Chairman	PO Box 1330	Anadarko	OK	73005	(405) 247-9493	lguy93@hotmail.com
Arapaho Tribe of the Wind River Reservation, Wyoming	Devin B. Oldman, THPO	PO Box 67 St.	Stevens	WY	82524	(307-856-1628)	nathpodd@gmail.com
Cheyenne and	Virginia	100 Red	Concho	OK	73022	(405) 422-	



**DEPARTMENT OF VETERANS AFFAIRS**  
**Office of Construction & Facilities Management**  
**Washington DC 20420**

Arapaho Tribes, Oklahoma	Richey, THPO	Moon Circle				7630	
Comanche Nation, Oklahoma	Martina Callahan, THPO	6 SW D Avenue	Lawton	OK	73502	(580) 595-9618	<a href="mailto:martinac@comanchenation.com">martinac@comanchenation.com</a>
Fort Belknap Indian Community of the Fort Belknap Reservation of Montana	Michael Blackwolf, THPO	656 Agency Main Street	Harlem	MT	59526	(406) 353-8471	<a href="mailto:mblackwolf@ftbelknap.org">mblackwolf@ftbelknap.org</a>
Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana	Teanna Limpy, THPO	PO Box 128	Lame Deer	MT	59043	(406) 477-4839	<a href="mailto:Teanna.Limpy@cheyennenation.com">Teanna.Limpy@cheyennenation.com</a>



# SOUTHERN UTE INDIAN TRIBE

Southern Ute Cultural & Preservation Department  
P.O. Box 737, Mail Stop #73, Ignacio CO 81137  
Phone: 970-563-0100 Fax: 970-563-1098

September 28, 2018

Marianne Marinucci  
Office of Construction & Facilities Management  
Washington DC 20420

Dear Ms. Marinucci,

I have reviewed your Consultation Request under section 106 of the National Historic Preservation Act regarding the Expansion of Fort Morgan National Cemetery project and offer the following response as indicated by the box that is checked.

- NO EFFECT: I have determined that there are no properties of religious and cultural significance to the Southern Ute Indian Tribe that are listed on the National Register within the area of potential effect or that the proposed project will have no effect on any such properties that may be present.
- NO ADVERSE EFFECT: I have identified properties of cultural and religious significance within the area of effect that I believe are eligible for listing in the National Register, for which there would be no adverse effect as a result of the proposed project.

Note: Inadvertent discoveries please notify us.

- ADVERSE EFFECT: I have identified properties of cultural and religious significance within the area of potential effect (APE) that are eligible for listing in the National Register. I believe the proposed project would cause an adverse effect on these properties.
- REQUEST FOR ADDITIONAL INFORMATION: The Southern Ute Indian Tribe requests additional information on the planned site for its impact on properties of religious and cultural importance to the Tribe as follows: \_\_\_\_\_

Please reply to Cassandra Atencio at [catencio@southernute-nsn.gov](mailto:catencio@southernute-nsn.gov) and Garrett Briggs at [gbriggs@southernute-nsn.gov](mailto:gbriggs@southernute-nsn.gov) and refer to \_\_\_\_\_ in future ongoing correspondence with this office.

Sincerely,

Ms. Cassandra Atencio  
NAGPRA Coordinator  
Southern Ute Cultural Department  
Southern Ute Indian Tribe

**APPENDIX C**  
**Photograph Log**

**SITE PHOTOGRAPHS  
 BUILDINGS**



Photo #1: Looking southerly at the north and east sides of site Building No. 64 – Automotive Repair.



Photo #2: Looking northeasterly at the west side of site Building No. 64.



Photo #3: Looking westerly at the east and south sides of site Building No. 64.



Photo #4: Interior of site Building No. 64 and 45-gallon containers of new oil storage.



Photo #5: Two approximately 100-gallon used oil aboveground storage tanks in site Building No. 64.



Photo #6: Looking southwesterly at the north side of site Building No. 65 – Storage.

**SITE PHOTOGRAPHS  
 BUILDINGS**

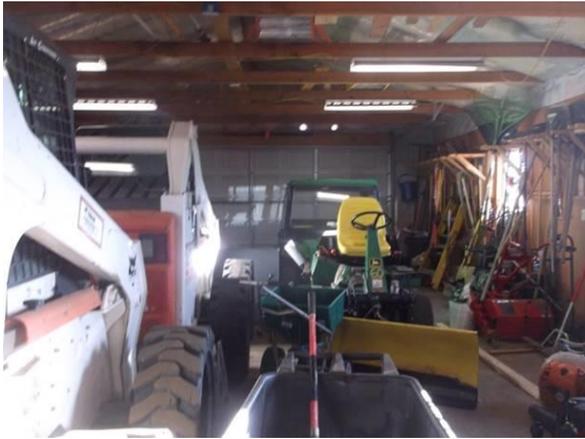


Photo #7: Interior of site Building No. 65.



Photo #8: Looking northwesterly at the south side of site Building No. 69 – Division of Facilities Management (DFM) Storage.



Photo #9: Looking northerly across the west side of site Building No. 69.



Photo #10: Looking southeasterly at the north side of site Building No. 69.



Photo #11: Looking westerly at the east side of site Building No. 69.



Photo #12: Interior of site Building No. 69.

**SITE PHOTOGRAPHS  
BUILDINGS**



Photo #13: Looking southeasterly at the north side of site Building No. 180 – Storage (Former Gasoline Station).



Photo #14: Looking northwesterly at the south side of site Building No. 180.



Photo #15: Interior of site Building No. 180 and former coal room.



Photo #16: Storage of materials and 55-gallon drums in site Building No. 180.

**SITE PHOTOGRAPHS  
 NORTHERN PORTION**



Photo #17: Looking southwesterly across the northern portion of the site.



Photo #18: Looking southerly across the northern portion of the site.



Photo #19: Looking northerly at the former gravel pit area (GP) in the north central portion of the site.



Photo #20: Looking westerly at the former salvage lot (SL) and former paint shop area (former Building No. 190) in the north central portion of the site.



Photo #21: Looking southerly toward the former salvage lot area in the north central portion of the site.



Photo #22: Looking westerly across a former building foundation located in the north central portion of the site.

**SITE PHOTOGRAPHS  
 NORTHERN PORTION**



Photo #23: Looking easterly at a dumpster and material storage area located in the north central portion of the site.



Photo #24: Looking southwesterly across the northwestern portion of the site.



Photo #25: Looking easterly across the northern site boundary.



Photo #26: Debris located in the vicinity of a former building foundation located in the northwestern portion of the site.



Photo #27: Looking northwesterly across a former building foundation located in the northwestern portion of the site.



Photo #28: Looking southerly along the northwestern site boundary.

**SITE PHOTOGRAPHS  
 SOUTHERN PORTION**



Photo #29: Looking southwesterly across the northwestern corner of the southern portion of the site.



Photo #30: Former infrastructure and sidewalks located in the northwestern corner of the southern portion of the site.



Photo #31: Looking northeasterly toward former Building No. 58-Coal Storage Shed.



Photo #32: Looking northerly at Area BB-Gasoline Tank.



Photo #33: Looking westerly at the floor drain drainage area from Building No. 64.



Photo #34: One 500-gallon diesel AST located north of Building No. 64.

**SITE PHOTOGRAPHS  
 SOUTHERN PORTION**



Photo #35: Looking southwesterly across a former building foundation located in the south central portion of the site.



Photo #36: Looking westerly towards the drainage ditch located in the south central portion of the site.



Photo #37: Looking southerly along the western site boundary and former coal yard area (CY).



Photo #38: Former building base located west of the drainage ditch and located in the south central portion of the site.



Photo #39: Floor of the building base.



Photo #40: Looking southerly along S. Stuart Street located along the south eastern site boundary and in the vicinity of Area No. 111-Coal Trestle.

## SITE PHOTOGRAPHS SOUTHERN PORTION



Photo #41: Looking northwesterly across the southern portion of the site.



Photo #42: Looking southeasterly across the southern portion of the site.



Photo #43: Looking northeasterly at remnant curbing located near the southeastern site boundary.



Photo #44: Single metal pole and concrete debris located near the intersection of S. Stuart Street and W. Princeton Avenue in the southeastern portion of the site.

**SITE PHOTOGRAPHS  
 ADJOINING PROPERTIES**



Photo #45: Northerly and northeasterly adjoining Fort Logan National Cemetery (4400 W. Kenyon Avenue) (area under construction).



Photo #46: Fort Logan National Cemetery.



Photo #47: Easterly adjoining Colorado Mental Health Institute of Fort Logan (3520 W. Oxford Avenue).



Photo #48: Easterly adjoining off-site Building No. 59 – DFM Maintenance and off-site Building No. 87 – DFM Warehouse.



Photo #49: Easterly adjoining Colorado Department of Public Health (CDPH) facilities.



Photo #50: Southerly adjoining residences located beyond West Quincy Avenue.

**SITE PHOTOGRAPHS  
ADJOINING PROPERTIES**



Photo #51: Southwesterly adjoining Pinehurst Park located beyond West Quincy Avenue.



Photo #52: Westerly adjoining residences.

## **APPENDIX D**

### **Other Relevant Environmental Data**

**Parcel Description**  
(PROVIDED BY LAND TITLE GUARANTEE COMPANY)

A PORTION OF THE SOUTH HALF OF SECTION 6, TOWNSHIP 5 SOUTH, RANGE 68 WEST OF THE 6TH P.M.

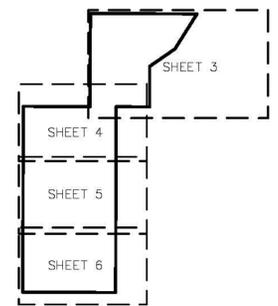
# ALTA/NSPS LAND TITLE SURVEY

A PORTION OF THE SOUTH HALF OF SECTION 6, TOWNSHIP 5 SOUTH,  
RANGE 68 WEST OF THE 6TH P.M.,  
CITY AND COUNTY OF DENVER, STATE OF COLORADO  
SHEET 1 OF 6  
TOTAL AREA = 2,152,682 SQ FT, OR 49.42 ACRES, MORE OR LESS

**Sheet Key**

- SHEET 1 - COVER SHEET
- SHEET 2 - BOUNDARY DETAIL AND BUILDING TIES
- SHEET 3 - TOPOGRAPHY AND IMPROVEMENTS
- SHEET 4 - TOPOGRAPHY AND IMPROVEMENTS
- SHEET 5 - TOPOGRAPHY AND IMPROVEMENTS
- SHEET 6 - TOPOGRAPHY AND IMPROVEMENTS

**Sheet Layout Diagram**



- Legend**
- FOUND ALIQUOT MONUMENT AS DESCRIBED
  - FOUND MONUMENT AS DESCRIBED
  - BM FOUND BENCHMARK AS DESCRIBED
  - CP SET CONTROL POINT #5 REBAR WITH 1 1/2" ALUMINUM CAP "FLATIRONS SURV 16406 CP"
  - SET 18" #5 REBAR WITH 1 1/2" ALUMINUM CAP "FLATIRONS SURV 16406"
  - CALCULATED POSITION (NOT FOUND OR SET)
  - (AM) AS MEASURED AT TIME OF SURVEY
  - (C) CALCULATED FROM RECORD AND AS MEASURED INFORMATION
  - (R1) AS PER ALTA/ACSM LAND TITLE SURVEY FILED IN THE RECORDED OF THE CITY AND COUNTY OF DENVER ON SEPTEMBER 17, 2009 IN BOOK 79 OF THE COUNTY SURVEYOR'S LAND SURVEY/RIGHT-OF-WAY SURVEYS AT PAGES 199-200, RECEPTION NO. L012110
  - (SEC) SECTION LINE LABEL
  - CONCRETE
  - EDGE OF ASPHALT
  - GRAVEL
  - FENCE
  - SIGN
  - BOLLARD
  - DECIDUOUS TREE
  - CONIFEROUS TREE
  - STUMP
  - WATER LINE
  - WATER VALVE
  - WATER METER
  - FIRE HYDRANT
  - SANITARY SEWER LINE
  - SANITARY SEWER MANHOLE
  - STORM SEWER LINE
  - STORM SEWER LINE SCALED FROM MAPS
  - STORM SEWER MANHOLE
  - ELECTRIC LINE
  - ELECTRIC METER
  - LIGHT POLE
  - OVERHEAD UTILITY LINE
  - UTILITY POLE
  - GUY WIRE
  - FIBEROPTIC RISER
  - TELEPHONE RISER
  - GAS LINE
  - GAS METER
  - UNIDENTIFIED MANHOLE
  - UNIDENTIFIED VALVE
  - LOCATION FINISHED FLOOR
  - TEST HOLE
  - CMP CORRUGATED METAL PIPE
  - RCP REINFORCED CONCRETE PIPE
  - AREA OF VEGETATION
  - WETLANDS LOCATION BASED ON FLAGGING SET BY OTHERS (SEE NOTE 18)
  - APPROXIMATE LIMITS OF LANDFILL BASED ON FLAGGING SET BY OTHERS (SEE NOTE 19)
  - XX TITLE EXCEPTION NUMBER



**Vicinity Map**  
NOT TO SCALE

**Notes**

1. LAND TITLE GUARANTEE COMPANY COMMITMENT NUMBER ABD70527435, DATED JANUARY 17, 2017 AT 5:00 P.M., WAS ENTIRELY RELIED UPON FOR RECORDED INFORMATION REGARDING RIGHTS-OF-WAY, EASEMENTS AND ENCUMBRANCES IN THE PREPARATION OF THIS SURVEY. THE PROPERTY SHOWN AND DESCRIBED HEREON IS A PORTION OF THE PROPERTY DESCRIBED IN SAID TITLE COMMITMENT.
2. ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
3. THIS ALTA/NSPS LAND TITLE SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF DEPARTMENT OF VETERANS AFFAIRS/UNITED STATE OF AMERICA AND LAND TITLE GUARANTEE COMPANY, NAMED IN THE STATEMENT HEREON. SAID STATEMENT DOES NOT EXTEND TO ANY UNNAMED PERSON WITHOUT AN EXPRESS STATEMENT BY THE SURVEYOR NAMING SAID PERSON.
4. THIS SURVEY IS VALID ONLY IF PRINT HAS SEAL AND SIGNATURE OF SURVEYOR.
5. BASIS OF BEARINGS: GPS DERIVED BEARINGS BASED ON A BEARING OF N00°02'06"E ALONG THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 6, T5S, R68W OF THE 6TH P.M., BETWEEN A FOUND 3-1/4" ALUMINUM CAP IN RANGE BOX MARKED "DWD, SEC COR, 6, 5, 7, 8, T5S, R68W, 1988, LS 16398", PER MONUMENT RECORD DATED 08/25/2003, AT THE SOUTHEAST CORNER OF SAID SECTION 6 AND A FOUND #6 REBAR 30" LONG WITH 3-1/4" ALUMINUM CAP MARKED "T5S, R68W, S6, S5, 1995, PLS 13155", PER MONUMENT RECORD DATED 02/23/2006, AT THE EAST QUARTER CORNER OF SAID SECTION 6 AS SHOWN HEREON. COLORADO STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM 1983 (NAD83). ALL BEARINGS SHOWN HEREON ARE RELATIVE THERETO.
6. WITH REGARD TO TABLE A, ITEM 11, SOURCE INFORMATION FROM PLANS AND MARKINGS HAVE BEEN COMBINED WITH OBSERVED EVIDENCE OF UTILITIES PURSUANT TO SECTION 5.E.I.V. TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. HOWEVER LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED. IN ADDITION, IN SOME JURISDICTIONS, B11 OR OTHER SIMILAR UTILITY LOCATE REQUESTS FROM SURVEYORS MAY BE IGNORED OR RESULT IN AN INCOMPLETE RESPONSE. A PRIVATE UTILITY LOCATOR WAS HIRED FOR THE PREPARATION OF THIS SURVEY. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES AND STRUCTURES. ALL UNDERGROUND UTILITIES MUST BE FIELD LOCATED BY THE APPROPRIATE AGENCY OR UTILITY COMPANY PRIOR TO ANY EXCAVATION, PURSUANT TO C.R.S. SEC. 9-1.5-103. (ALTA/NSPS LAND TITLE SURVEY TABLE A, OPTIONAL SURVEY RESPONSIBILITIES AND SPECIFICATIONS, ITEM 11)
7. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT AND/OR BOUNDARY MONUMENT OR ACCESSORY, COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE C.R.S. SEC 18-4-508. WHOEVER WILLFULLY DESTROYS, DEFACES, CHANGES, OR REMOVES TO ANOTHER PLACE ANY SECTION CORNER, QUARTER-SECTION CORNER, OR MEANDER POST, OR ANY GOVERNMENT LINE OF SURVEY, OR WILLFULLY CUTS DOWN ANY WITNESS TREE OR ANY TREE BLAZED TO MARK THE LINE OF A GOVERNMENT SURVEY, OR WILLFULLY DEFACES, CHANGES, OR REMOVES ANY MONUMENT OR BENCH MARK OF ANY GOVERNMENT SURVEY, SHALL BE FINED UNDER THIS TITLE OR IMPRISONED NOT MORE THAN SIX MONTHS, OR BOTH. 18 U.S.C. § 1858.
8. THE DISTANCE MEASUREMENTS SHOWN HEREON ARE U.S. SURVEY FOOT.
9. THE CONTOURS REPRESENTED HEREON WERE INTERPOLATED BY AUTOCAD CIVIL 3D (DIGITAL TERRAIN MODELING) SOFTWARE BETWEEN ACTUAL MEASURED SPOT ELEVATIONS. DEPENDING ON THE DISTANCE FROM A MEASURED SPOT ELEVATION AND LOCAL VARIATIONS IN TOPOGRAPHY, THE CONTOUR SHOWN MAY NOT BE AN EXACT REPRESENTATION OF THE SITE TOPOGRAPHY. THE PURPOSE OF THIS TOPOGRAPHIC MAP IS FOR SITE EVALUATION AND TO SHOW SURFACE DRAINAGE FEATURES. ADDITIONAL TOPOGRAPHIC OBSERVATIONS MAY BE NECESSARY IN SPECIFIC AREAS OF DESIGN. TOPOGRAPHY SHOWN HEREON COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.
10. BENCHMARK INFORMATION: ELEVATIONS BASED ON CITY AND COUNTY OF DENVER BENCHMARK POINT 162, WITH A PUBLISHED ELEVATION OF 5492.15 FEET (NAVD88), BEING A CITY AND COUNTY OF DENVER BRASS CAP IN CURB LOCATED AT THE SOUTHEAST CORNER OF THE INTERSECTION OF WEST QUINCY AVENUE AND WOLF STREET.
11. FLOOD INFORMATION: THE SUBJECT PROPERTY IS LOCATED IN ZONE X (UNSHADED), AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP; COMMUNITY-PANEL NO. 080046-0193 G, DATED NOVEMBER 17, 2005. FLOOD INFORMATION IS SUBJECT TO CHANGE (ALTA/NSPS LAND TITLE SURVEY TABLE A, OPTIONAL SURVEY RESPONSIBILITIES AND SPECIFICATIONS, ITEM 3).

**Notes (Continued)**

12. THE WORD "CERTIFY" AS SHOWN AND USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OF THIS SURVEY AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EXPRESSED OR IMPLIED.
13. THE TOTAL AREA OF THE SUBJECT PROPERTY IS 2,152,682 SQ. FT. OR 49.42 ACRES, MORE OR LESS. AREA AS SHOWN HEREON IS A DETERMINATIVE FACTOR, NOT A DETERMINATIVE FACTOR, AND MAY CHANGE SIGNIFICANTLY WITH MINOR VARIATIONS IN FIELD MEASUREMENTS OR THE SOFTWARE USED TO PERFORM THE CALCULATIONS. FOR THIS REASON, THE AREA IS SHOWN AS A "MORE OR LESS" FIGURE, AND IS NOT TO BE RELIED UPON AS AN ACCURATE FACTOR FOR REAL ESTATE SALES PURPOSES (ALTA/NSPS LAND TITLE SURVEY TABLE A, OPTIONAL SURVEY RESPONSIBILITIES AND SPECIFICATIONS, ITEM 4).
14. OWNERSHIP INFORMATION IS PER CITY AND COUNTY OF DENVER WEBSITE AS RESEARCHED ON FEBRUARY 22, 2017 AND IS SUBJECT TO CHANGE (ALTA/NSPS LAND TITLE SURVEY TABLE A, OPTIONAL SURVEY RESPONSIBILITIES AND SPECIFICATIONS, ITEM 13).
 

#12 DEC. 22, 1960	BOOK 1232, PAGE 373	CONSENT TO USE OF EASEMENT
(SEE SHEET 2 AND SHEET 6)		
#14 NOV. 27, 1961	BOOK 1304, PAGE 224	RIGHT-OF-WAY AGREEMENT
#15 JUL. 30, 1963	BOOK 9072, PAGE 477	SEWER EASEMENT
(SEE SHEET 2)		
#16 OCT. 27, 1964	BOOK 1555, PAGE 469	EASEMENT AND RIGHT-OF-WAY
(ARAPAHOE COUNTY RECORDS)		
(SEE SHEET 2 AND SHEET 6)		
#16 NOV. 27, 1964	BOOK 9343, PAGE 438	EASEMENT AND RIGHT-OF-WAY
(DENVER COUNTY RECORDS)		
(SEE SHEET 2 AND SHEET 6)		
15. THE FOLLOWING DOCUMENTS ARE MENTIONED IN THE ABOVE REFERENCED TITLE DOCUMENT AND ARE SHOWN GRAPHICALLY HEREON. THE FOLLOWING LIST CONTAINS THE TITLE DOCUMENT EXCEPTION NUMBER, DATE RECORDED, RECEPTION NUMBER AND/OR BOOK AND PAGE.
 

#9 JUL. 01, 1872	RIGHT TO EXTRACT ORE AS RESERVED IN PATENT FOR THE SOUTHEAST 1/4 OF SECTION 6 (NO RECORDING INFORMATION GIVEN)
#10 NOV. 01, 1875	RIGHT TO EXTRACT ORE AS RESERVED IN PATENT FOR THE SOUTH 1/2 OF THE SOUTHWEST 1/4 OF SECTION 6 (NO RECORDING INFORMATION GIVEN)
#11 SEP. 13, 1887	RIGHT TO EXTRACT ORE AS RESERVED IN PATENT FOR THE NORTH 1/2 OF THE SOUTHWEST 1/4 OF SECTION 6 (NO RECORDING INFORMATION GIVEN)
#12 AUG. 10, 1960	BOOK 1207, PAGE 56 BILL OF SALE WITH EASEMENT (BLANKET EASEMENT)
#13 MAR. 25, 1960	BOOK 8490, PAGE 169 COVENANTS, CONDITIONS, RESTRICTIONS, AGREEMENTS AND RESERVATIONS (DENVER COUNTY RECORDS)
#13 APR. 22, 1960	BOOK 1186, PAGE 228 COVENANTS, CONDITIONS, RESTRICTIONS, AGREEMENTS AND RESERVATIONS (ARAPAHOE COUNTY RECORDS)
#13 DEC. 12, 1960	BOOK 1230, PAGE 537 COVENANTS, CONDITIONS, RESTRICTIONS, AGREEMENTS AND RESERVATIONS (ARAPAHOE COUNTY RECORDS)
#13 JAN. 09, 1961	BOOK 1234, PAGE 491 RELEASE OF CONDITIONS (ARAPAHOE COUNTY RECORDS)
17. FENCE LINES ARE NOT COINCIDENT WITH PROPERTY LINES AS SHOWN HEREON.
18. WETLANDS DELINEATION MARKERS WERE OBSERVED IN THE PROCESS OF CONDUCTING THE FIELDWORK AND ARE SHOWN HEREON. (ALTA/NSPS LAND TITLE SURVEY TABLE A, OPTIONAL SURVEY RESPONSIBILITIES AND SPECIFICATIONS, ITEM 18).
19. APPROXIMATE LANDFILL LIMITS PROVIDED BY COLE GARNER GEOTECHNICAL, OBSERVED ON JULY 5, 2017.
20. DATES OF FIELDWORK: JANUARY 19-30, 2017 ORIGINAL FIELDWORK, BEING UPDATED WITH WETLANDS INFORMATION ONLY ON MARCH 28, 2017, BEING UPDATED WITH NEW BORE HOLES AND LANDFILL LIMITS ONLY ON JULY 5, 2017 (S. LYTLE)

**Surveyor's Certificate**

TO DEPARTMENT OF VETERANS AFFAIRS/UNITED STATE OF AMERICA AND LAND TITLE GUARANTEE COMPANY:

THIS IS TO CERTIFY THAT THIS MAP OR PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 7, 8, 10, 11, 12 AND 13 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON JANUARY 30, 2017.

PURSUANT TO COLORADO STATE BOARD OF LICENSURE FOR PROFESSIONAL SURVEYORS RULE 6.2.2 THE UNDERSIGNED FURTHER CERTIFIES THAT THIS MAP OR PLAN WAS PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, IS ACCURATE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, IS IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE AND IS NOT A WARRANTY OR WARRANTY. THESE EXPRESSIONS OR IMPLIED.

JOHN B. CUMMINS - COLORADO P.L.S.# 15608  
CHAIRMAN & CEO, FLATIRONS, INC.

**DRAFT**  
WORKING COPY ONLY. ONLY FINAL VERSION WILL HAVE STAMP AND SIGNATURE

**Indexing Statement**

DEPOSITED THIS \_\_\_\_\_ DAY  
OF \_\_\_\_\_ 20\_\_\_\_ AT \_\_\_\_\_ M., IN  
BOOK \_\_\_\_\_ OF THE COUNTY SURVEYOR'S LAND  
SURVEY/RIGHT-OF-WAY SURVEYS AT PAGE(S) \_\_\_\_\_, RECEPTION  
NUMBER \_\_\_\_\_

\_\_\_\_\_  
COUNTY SURVEYOR/DEPUTY COUNTY SURVEYOR

DATE	
REVISION	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

ALTA/NSPS LAND TITLE SURVEY  
PREPARED FOR  
ISI Professional Services & Others (See Note 9)  
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Surveying, Engineering & Geomatics  
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FAX: (303) 776-4355 FAX: (303) 443-9830

655 FOURTH AVE  
LONGMONT, CO 80501  
PH: (303) 776-1733  
FAX: (303) 776-4355

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WILL HAVE STAMP  
AND SIGNATURE

JOB NUMBER:  
17-68,560  
DATE:  
11-08-2017  
DRAWN BY:  
B. OELKE  
CHECKED BY:

SHEET 1 OF 6

BY:BOELKE FILE:68560\_ALTA\_EXCLUDES LANDFILL\_C17.DWG DATE:11/8/2017 2:50 PM

# ALTA/NSPS LAND TITLE SURVEY

A PORTION OF THE SOUTH HALF OF SECTION 6, TOWNSHIP 5 SOUTH,  
RANGE 68 WEST OF THE 6TH P.M.,  
CITY AND COUNTY OF DENVER, STATE OF COLORADO  
SHEET 2 OF 6

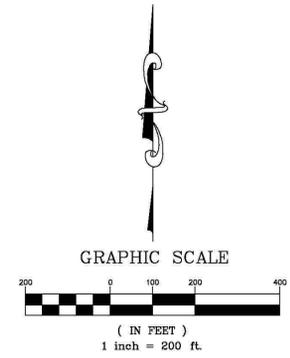
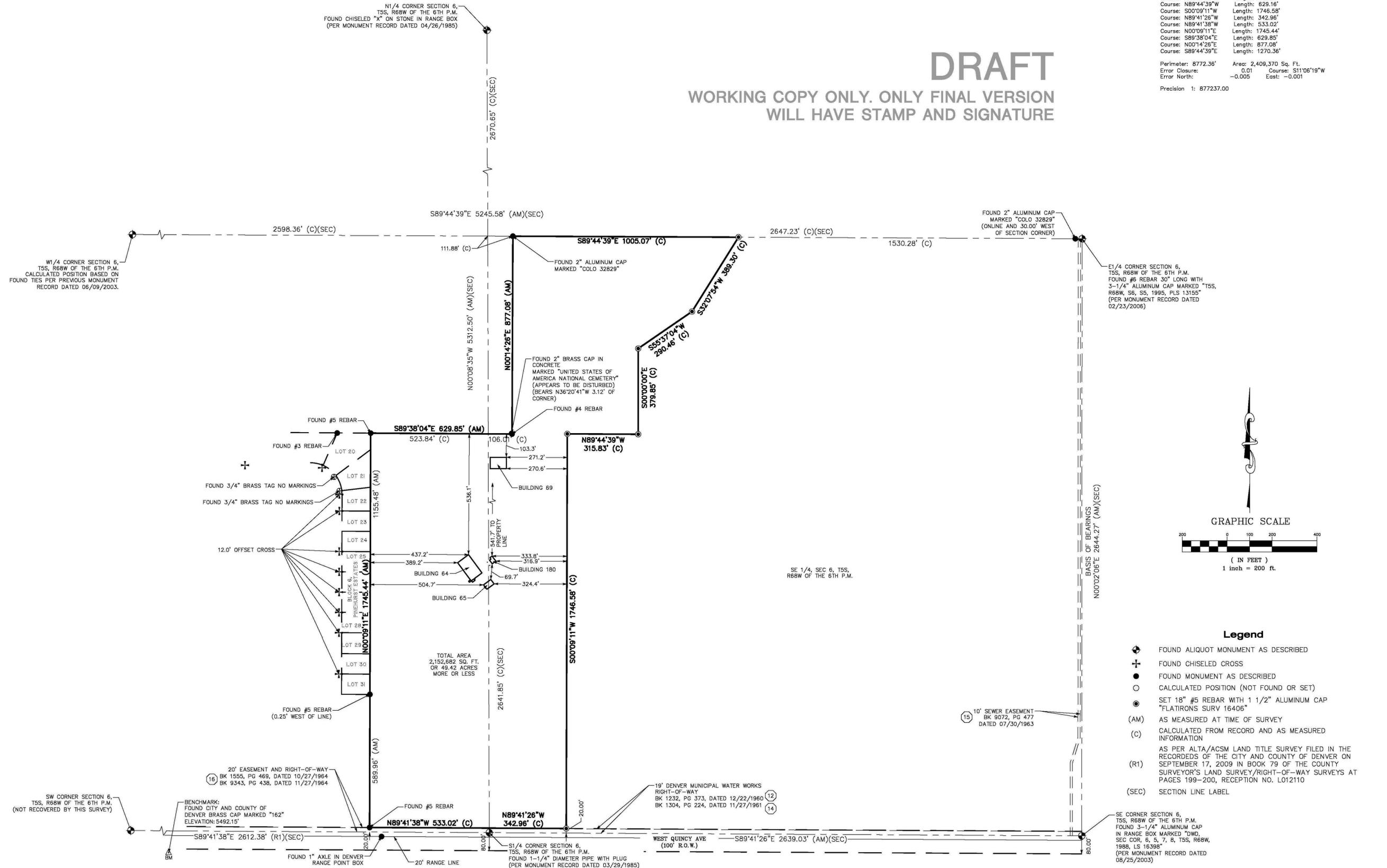
### Boundary Closure Report

Course: S34°35'31"W	Length: 702.35'
Course: S00°00'00"E	Length: 295.57'
Course: N89°44'39"W	Length: 629.16'
Course: S00°09'11"W	Length: 1746.58'
Course: N89°41'26"W	Length: 342.96'
Course: N89°41'38"W	Length: 533.02'
Course: N00°09'11"E	Length: 1745.44'
Course: S89°38'04"E	Length: 629.85'
Course: N00°14'26"E	Length: 877.08'
Course: S89°44'39"E	Length: 1270.36'

Perimeter: 8772.36' Area: 2,409,370 Sq. Ft.  
Error Closure: 0.01 Course: S11°06'19"W  
Error North: -0.005 East: -0.001  
Precision 1: 877237.00

# DRAFT

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- ### Legend
- ⊕ FOUND ALIQUOT MONUMENT AS DESCRIBED
  - ⊕ FOUND CHISELED CROSS
  - FOUND MONUMENT AS DESCRIBED
  - CALCULATED POSITION (NOT FOUND OR SET)
  - SET 18" #5 REBAR WITH 1 1/2" ALUMINUM CAP "FLATIRON'S SURV 16406"
  - (AM) AS MEASURED AT TIME OF SURVEY INFORMATION
  - (C) CALCULATED FROM RECORD AND AS MEASURED INFORMATION
  - (R1) AS PER ALTA/ACSM LAND TITLE SURVEY FILED IN THE RECORDED DEEDS OF THE CITY AND COUNTY OF DENVER ON SEPTEMBER 17, 2009 IN BOOK 79 OF THE COUNTY SURVEYOR'S LAND SURVEY/RIGHT-OF-WAY SURVEYS AT PAGES 199-200, RECEPTION NO. L012110
  - (SEC) SECTION LINE LABEL

REVISION	DATE
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ALTA/NSPS LAND TITLE SURVEY  
PREPARED FOR  
ISI Professional Services  
&  
Others (See Note 3)  
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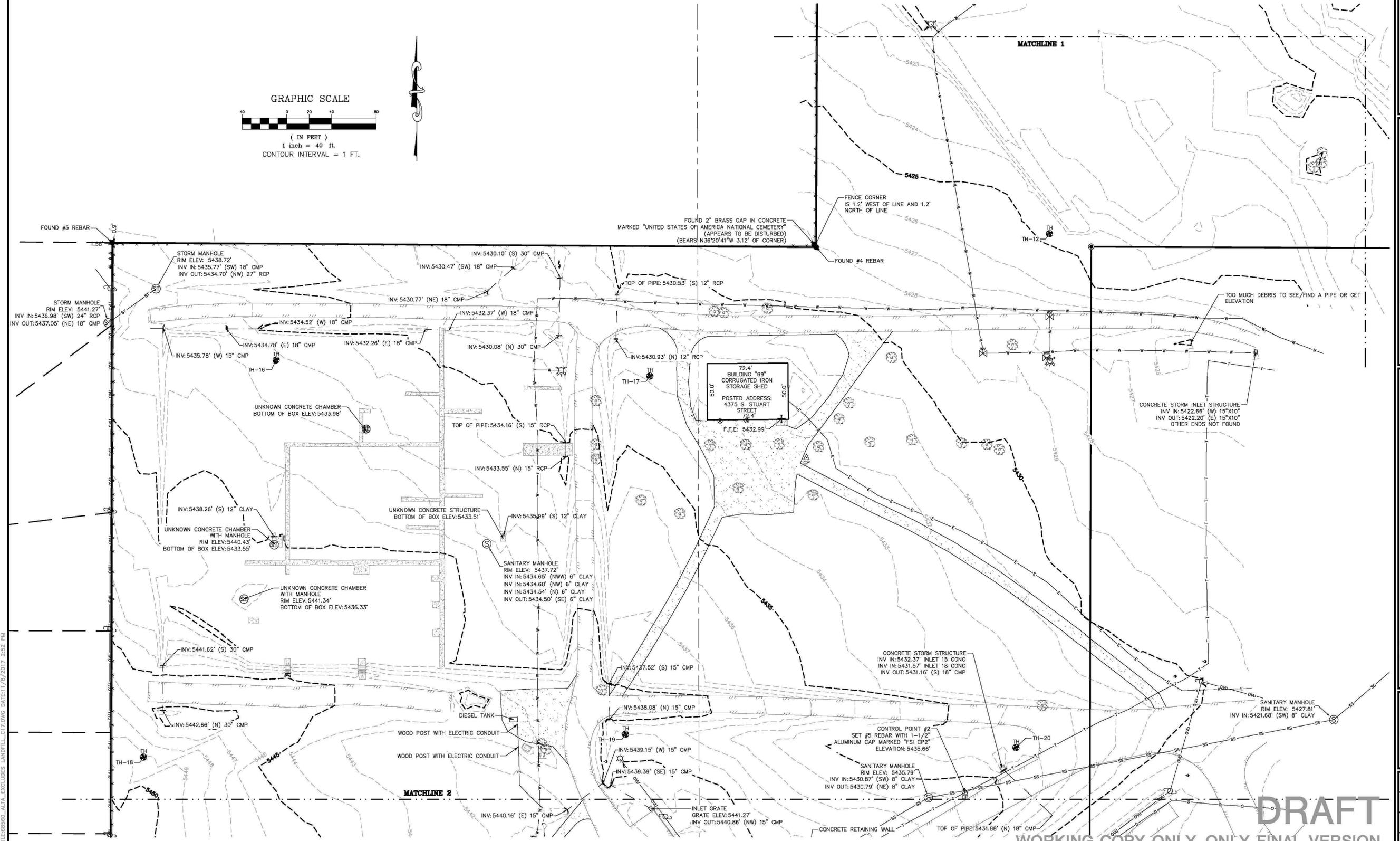
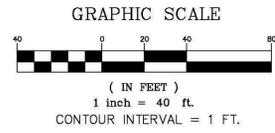
JOB NUMBER:  
17-68,560  
DATE:  
11-08-2017  
DRAWN BY:  
B. OELKE  
CHECKED BY:

BY:BOELKE FILE:68560\_ALTA\_EXCLUDES\_LANDFILL\_C17.DWG DATE:11/8/2017 2:58 PM



# ALTA/NSPS LAND TITLE SURVEY

A PORTION OF THE SOUTH HALF OF SECTION 6, TOWNSHIP 5 SOUTH,  
RANGE 68 WEST OF THE 6TH P.M.,  
CITY AND COUNTY OF DENVER, STATE OF COLORADO  
SHEET 4 OF 6



BY:BOELKE FILE:68560\_ALTA\_EXCLUDES\_LANDFILL\_C17.DWG DATE:11/8/2017 2:52 PM

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FAX: (303) 776-4355 FAX: (303) 443-9830 PH: (303) 936-6997



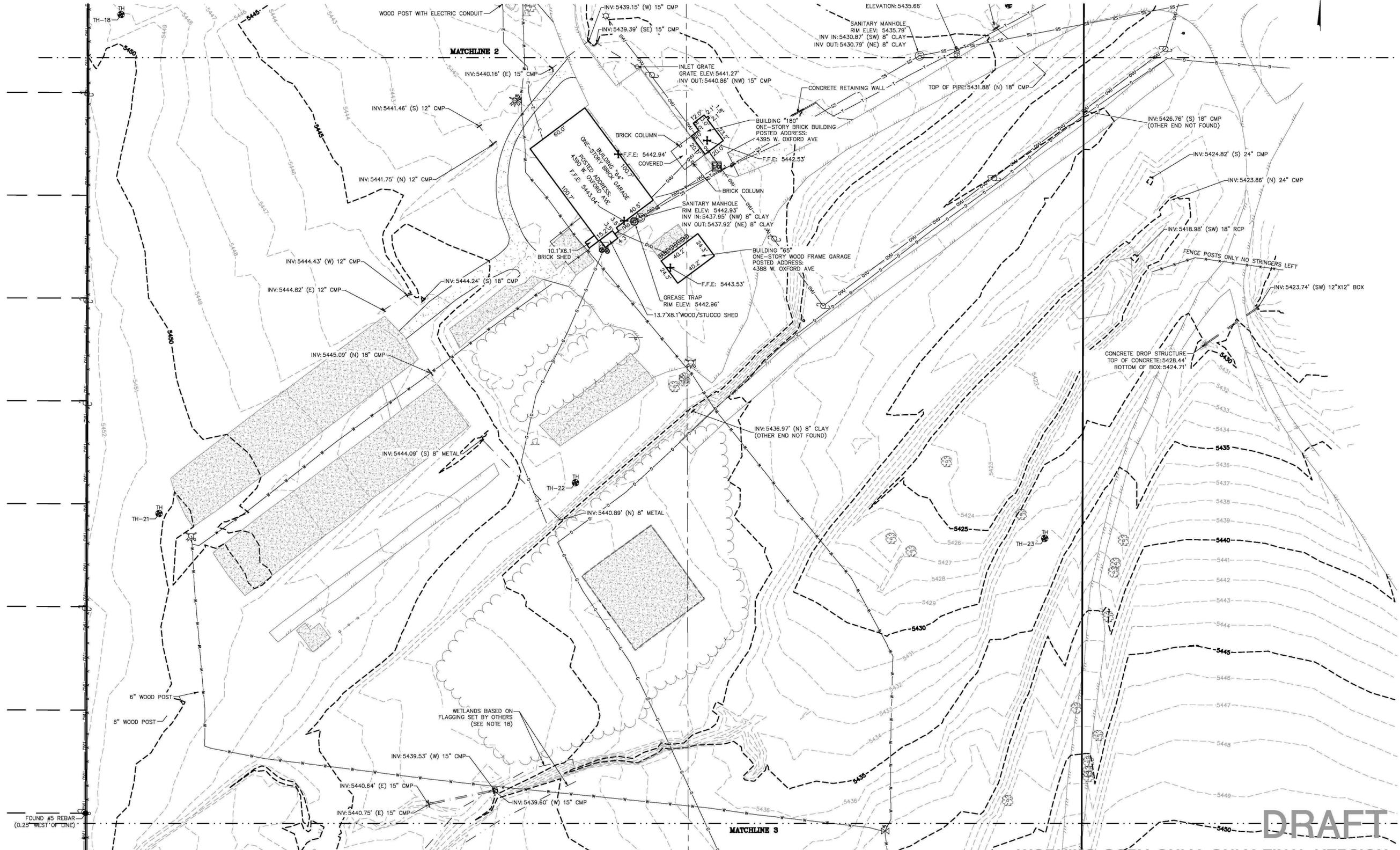
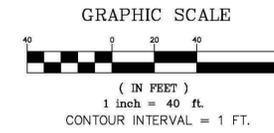
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CITY AND COUNTY OF DENVER, STATE OF COLORADO  
SHEET 5 OF 6



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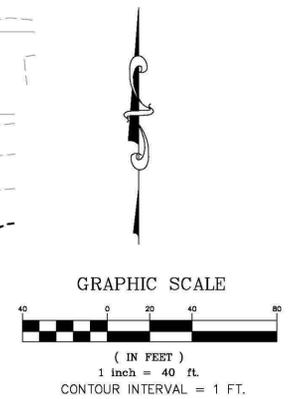
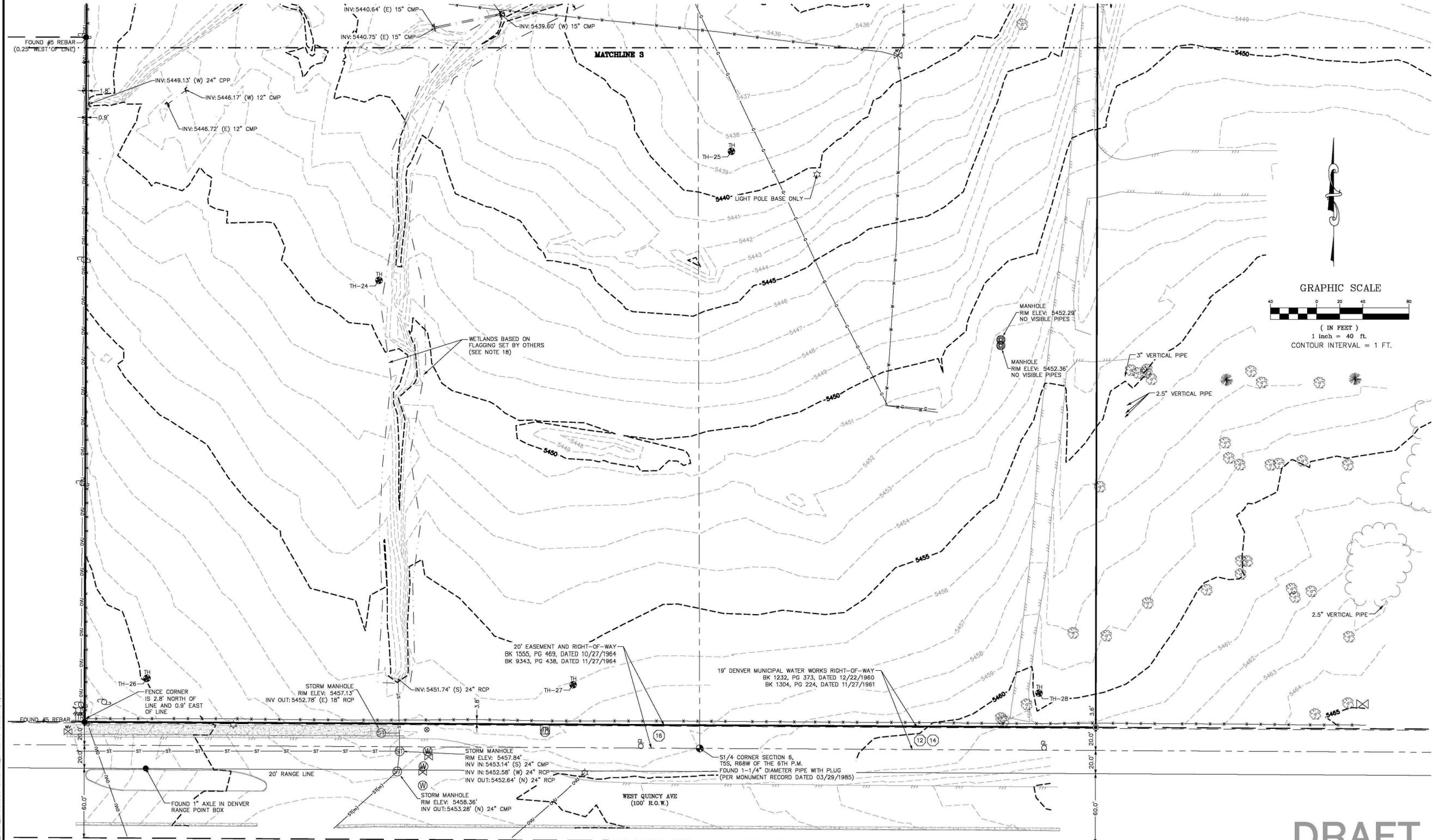
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FOUND #5 REBAR  
(0.25' WEST OF LINE)

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# ALTA/NSPS LAND TITLE SURVEY

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RANGE 68 WEST OF THE 6TH P.M.,  
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SHEET 6 OF 6



REVISION	DATE
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# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Colorado Ecological Services Field Office  
Denver Federal Center  
P.O. Box 25486  
Denver, CO 80225-0486  
Phone: (303) 236-4773 Fax: (303) 236-4005  
<http://www.fws.gov/coloradoES>  
<http://www.fws.gov/platteriver>

In Reply Refer To:

September 06, 2018

Consultation Code: 06E24000-2017-SLI-0735

Event Code: 06E24000-2018-E-04042

Project Name: Proposed FLNC Expansion

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Migratory Birds
  - Wetlands
-

# Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Colorado Ecological Services Field Office**

Denver Federal Center  
P.O. Box 25486  
Denver, CO 80225-0486  
(303) 236-4773

---

## Project Summary

Consultation Code: 06E24000-2017-SLI-0735

Event Code: 06E24000-2018-E-04042

Project Name: Proposed FLNC Expansion

Project Type: LAND - ACQUISITION

Project Description: Proposed FLNC Expansion

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/39.64246214494742N105.04416203951061W>



Counties: Denver, CO

---

## Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 5 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.
-

## Birds

NAME	STATUS
<p>Least Tern <i>Sterna antillarum</i></p> <p>Population: interior pop.</p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/8505">https://ecos.fws.gov/ecp/species/8505</a></p>	Endangered
<p>Piping Plover <i>Charadrius melodus</i></p> <p>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.</p> <p>There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a></p>	Threatened
<p>Whooping Crane <i>Grus americana</i></p> <p>Population: Wherever found, except where listed as an experimental population</p> <p>There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/758">https://ecos.fws.gov/ecp/species/758</a></p>	Endangered

## Fishes

NAME	STATUS
<p>Pallid Sturgeon <i>Scaphirhynchus albus</i></p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/7162">https://ecos.fws.gov/ecp/species/7162</a></p>	Endangered

## Flowering Plants

NAME	STATUS
<b>Ute Ladies'-tresses <i>Spiranthes diluvialis</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2159">https://ecos.fws.gov/ecp/species/2159</a>	<b>Threatened</b>
<b>Western Prairie Fringed Orchid <i>Platanthera praeclara</i></b> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"><li>▪ Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.</li></ul> Species profile: <a href="https://ecos.fws.gov/ecp/species/1669">https://ecos.fws.gov/ecp/species/1669</a>	<b>Threatened</b>

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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# USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

REFUGE INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.  
PLEASE CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

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# Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a>	Breeds Oct 15 to Jul 31
Burrowing Owl <i>Athene cunicularia</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9737">https://ecos.fws.gov/ecp/species/9737</a>	Breeds Mar 15 to Aug 31

---

NAME	BREEDING SEASON
<b>Golden Eagle</b> <i>Aquila chrysaetos</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/1680">https://ecos.fws.gov/ecp/species/1680</a>	Breeds Jan 1 to Aug 31
<b>Lark Bunting</b> <i>Calamospiza melanocorys</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 15
<b>Lesser Yellowlegs</b> <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a>	Breeds elsewhere
<b>Long-billed Curlew</b> <i>Numenius americanus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/5511">https://ecos.fws.gov/ecp/species/5511</a>	Breeds Apr 1 to Jul 31
<b>Semipalmated Sandpiper</b> <i>Calidris pusilla</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
<b>Whimbrel</b> <i>Numenius phaeopus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9483">https://ecos.fws.gov/ecp/species/9483</a>	Breeds elsewhere
<b>Willet</b> <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
<b>Willow Flycatcher</b> <i>Empidonax traillii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/3482">https://ecos.fws.gov/ecp/species/3482</a>	Breeds May 20 to Aug 31

## Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### **Breeding Season (■)**

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### **Survey Effort (|)**

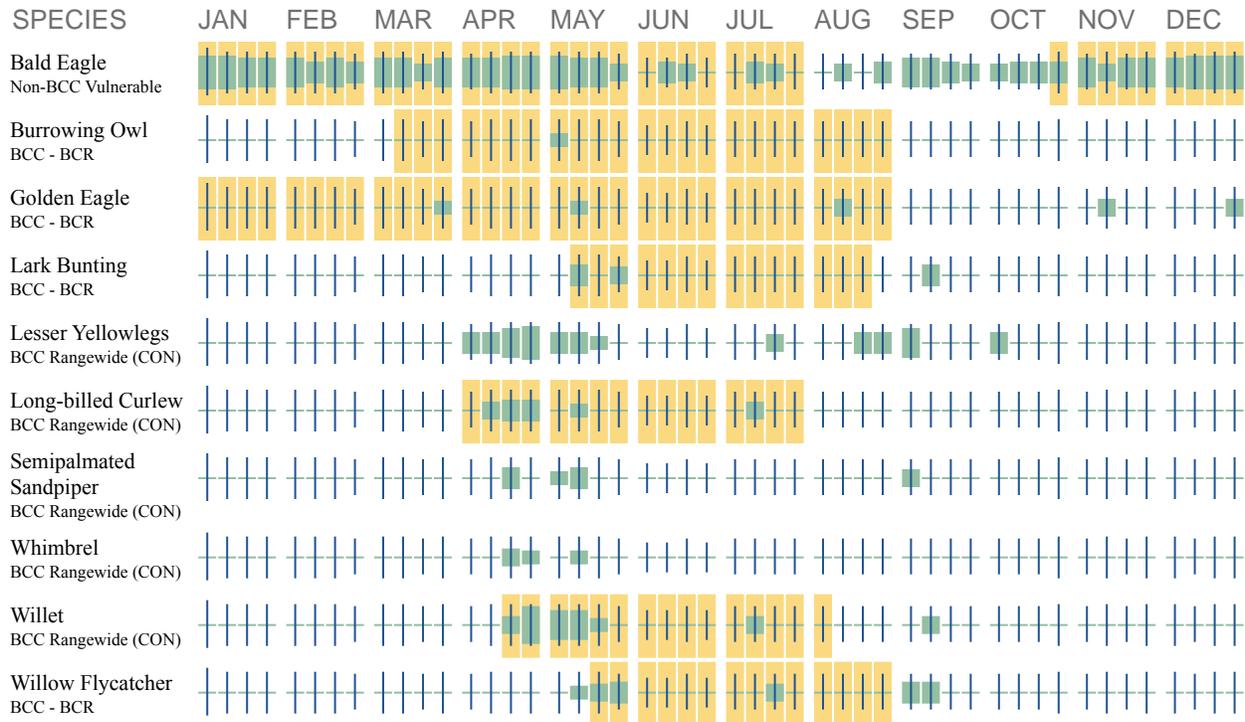
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

### **No Data (—)**

A week is marked as having no data if there were no survey events for that week.

### **Survey Timeframe**

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

## Migratory Birds FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
  2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
-

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell

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me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

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# Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

## FRESHWATER EMERGENT WETLAND

- [PEM1Cx](#)

## FRESHWATER FORESTED/SHRUB WETLAND

- [PFOA](#)
-

## COLORADO PARKS &amp; WILDLIFE



## Threatened and Endangered List

COMMON NAME	SCIENTIFIC NAME	STATUS*
<b>AMPHIBIANS</b>		
Boreal Toad	<i>Bufo boreas boreas</i>	SE
Couch's Spadefoot	<i>Scaphiopus couchii</i>	SC
Great Plains Narrowmouth Toad	<i>Gastrophryne olivacea</i>	SC
Northern Cricket Frog	<i>Acris crepitans</i>	SC
Northern Leopard Frog	<i>Rana pipiens</i>	SC
Plains Leopard Frog	<i>Rana blairi</i>	SC
Wood Frog	<i>Rana sylvatica</i>	SC
<b>BIRDS</b>		
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	SC
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC
Burrowing Owl	<i>Athene cunicularia</i>	ST
Columbian Sharp-Tailed Grouse	<i>Tympanuchus phasianellus columbianus</i>	SC
Ferruginous Hawk	<i>Buteo regalis</i>	SC
Greater Sage Grouse	<i>Centrocercus urophasianus</i>	SC

Greater Sandhill Crane	<i>Grus canadensis tabida</i>	SC
Gunnison Sage-Grouse	<i>Centrocercus minimus</i>	FT, SC
Least Tern	<i>Sterna antillarum</i>	FE, SE
Lesser Prairie-Chicken	<i>Tympanuchus pallidicinctus</i>	ST
Long-Billed Curlew	<i>Numenius americanus</i>	SC
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	FT, ST
Mountain Plover	<i>Charadrius montanus</i>	SC
Plains Sharp-Tailed Grouse	<i>Tympanuchus phasianellus jamesii</i>	SE
Piping Plover	<i>Charadrius melodus circumcinctus</i>	FT, ST
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	FE, SE
Western Snowy Plover	<i>Charadrius alexandrinus</i>	SC
Western Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>	SC
Whooping Crane	<i>Grus americana</i>	FE, SE
<b>FISH</b>		
Arkansas Darter	<i>Etheostoma cragini</i>	ST
Bonytail	<i>Gila elegans</i>	FE, SE
Brassy Minnow	<i>Hybognathus hankinsoni</i>	ST
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	FE, ST
Colorado River Cutthroat Trout	<i>Oncorhynchus clarki pleuriticus</i>	SC
Colorado Roundtail Chub	<i>Gila robusta</i>	SC
Common Shiner	<i>Luxilus cornutus</i>	ST
Flathead Chub	<i>Platygobio gracilus</i>	SC

Greenback Cutthroat Trout	<i>Oncorhynchus clarki stomias</i>	FT, ST
Humpback Chub	<i>Gila cypha</i>	FE, ST
Iowa Darter	<i>Etheostoma exile</i>	SC
Lake Chub	<i>Couesius plumbeus</i>	SE
Mountain Sucker	<i>Catostomus playtrhynchus</i>	SC
Northern Redbelly Dace	<i>Phoxinus eos</i>	SE
Plains Minnow	<i>Hybognathus placitus</i>	SE
Plains Orangethroat Darter	<i>Etheostoma spectabile</i>	SC
Rio Grande Chub	<i>Gila pandora</i>	SC
Rio Grande Cutthroat Trout	<i>Oncorhynchus clarki virginalis</i>	SC
Rio Grande Sucker	<i>Catostomus plebeius</i>	SE
Razorback Sucker	<i>Xyrauchen texanus</i>	FE, SE
Southern Redbelly Dace	<i>Phoxinus erythrogaster</i>	SE
Stonecat	<i>Noturus flavus</i>	SC
Suckermouth Minnow	<i>Phenacobius mirabilis</i>	SE
<b>MAMMALS</b>		
Black-Footed Ferret	<i>Mustela nigripes</i>	FE, SE
Black-Tailed Prairie Dog	<i>Cynomys ludovicianus</i>	SC
Botta's Pocket Gopher	<i>Thomomys bottae rubidus</i>	SC
Gray Wolf	<i>Canis lupus</i>	FE, SE
Grizzly Bear	<i>Ursus arctos</i>	FT, SE
Kit Fox	<i>Vulpes macrotis</i>	SE

Lynx	<i>Lynx canadensis</i>	FT, SE
Northern Pocket Gopher	<i>Thomomys talpoides macrotis</i>	SC
Preble's Meadow Jumping Mouse	<i>Zapus hudsonius preblei</i>	FT, ST
River Otter	<i>Lontra canadensis</i>	ST
Swift fox	<i>Vulpes velox</i>	SC
Townsend's Big-Eared Bat	<i>Corynorhinus townsendii pallescens</i>	SC
Wolverine	<i>Gulo gulo</i>	SE
<b>REPTILES</b>		
Triploid Checkered Whiptail	<i>Cnemidophorus neotesselatus</i>	SC
Midget Faded Rattlesnake	<i>Crotalus viridis concolor</i>	SC
Longnose Leopard Lizard	<i>Gambelia wislizenii</i>	SC
Yellow Mud Turtle	<i>Kinosternon flavescens</i>	SC
Common King Snake	<i>Lampropeltis getula</i>	SC
Texas Blind Snake	<i>Leptotyphlops dulcis</i>	SC
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	SC
Roundtail Horned Lizard	<i>Phrynosoma modestum</i>	SC
Massasauga	<i>Sistrurus catenatus</i>	SC
Common Garter Snake	<i>Thamnophis sirtalis</i>	SC
<b>MOLLUSKS</b>		
Rocky Mountain Capshell	<i>Acroloxus coloradensis</i>	SC
Cylindrical Papershell	<i>Anodontoides ferussacianus</i>	SC

## \*Status Codes

- FE = Federally Endangered
- FT = Federally Threatened
- SE = State Endangered
- ST = State Threatened
- SC = State Special Concern (not a statutory category)

## Resources

- [Species Profiles](#)

## Colorado's State Wildlife Action Plan (SWAP)



The approved [State Wildlife Action Plan](#) identifies priority species & habitats that need conservation efforts in the state, & potential conservation actions that can address threats these species & habitats face.

[>>Read More](#)



**WETLAND DELINEATION**

**Fort Logan National Cemetery  
3685 West Oxford Avenue  
Denver, Colorado**

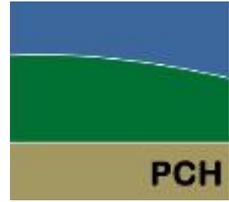
**Project No. 17.113.06  
Report Issuance Date: March 22, 2017**

**Prepared for:  
*ISI Professional Services  
Washington, DC***

**and**

***US Department of Veterans Affairs***

**Prepared by:  
PICKERING, COLE & HIVNER LLC  
Westminster, Colorado**



March 22, 2017

ISI Professional Services  
1201 15<sup>th</sup> Street, NW, Suite 200  
Washington, DC 20005

Attn: Mr. Richard Banchoff, Legal Counsel

Re: Wetland Delineation  
Fort Logan National Cemetery  
Denver, Colorado  
Project No. 17.113.06

Dear Mr. Banchoff:

Pickering, Cole, and Hivner LLC (PCH) is pleased to submit this report of the Wetland Delineation for the above referenced site. This investigation was performed in accordance with our proposal dated November 29, 2016.

We appreciate the opportunity to perform these services for you. Please contact me at 303.720.1116 if you have questions regarding the information provided in the report.

Sincerely,

**Pickering, Cole & Hivner LLC**

A handwritten signature in blue ink, appearing to read "R. Pickering", is written over a faint, light blue circular watermark.

Russell Pickering, MS  
Principal

# TABLE OF CONTENTS

	Page No.
<b>1.0 INTRODUCTION .....</b>	<b>1 !</b>
<b>2.0 FIELD ACTIVITIES.....</b>	<b>2 !</b>
<b>3.0 METHODS .....</b>	<b>3 !</b>
<b>4.0 RESULTS .....</b>	<b>5 !</b>
<b>5.0 FINDINGS AND RECOMMENDATIONS.....</b>	<b>5 !</b>

## APPENDICES

- Appendix A: Figure 1 - Location Map, Figure 2 - Wetland Plot Locations, Figure 3 – Identified Wetland Locations
- Appendix B: Wetland Determination Data Forms
- Appendix C: Photo Log

# WETLAND DELINEATION

Fort Logan National Cemetery  
3685 West Oxford Avenue  
Denver, Colorado

Project No. 17.113.06  
March 22, 2017

## 1.0 INTRODUCTION

SITE DESCRIPTION	
Site Name	Fort Logan National Cemetery
Site Location/Address	3685 West Oxford Avenue
Land Area	Approximately 66 acres

A topographic map is included as Figure 1, and a site plan is included as Figure 2 of Appendix A. Figure 3, Appendix A, illustrates approximate potentially jurisdictional wetland boundaries on site.

### Scope of Work

PCH has conducted a Wetland Delineation at the above referenced site in Denver, Colorado. The purpose of this Wetland Delineation was to identify wetlands and/or waters of the US on the property in support of development plans for the site. The Wetland Delineation was conducted in accordance with PCH's Proposal P11.517.06.16, dated November 29, 2016. The work was conducted per client direction.

### Standard of Care

PCH's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. PCH makes no warranties, either expressed or implied, regarding the findings, conclusions or recommendations. PCH does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These limited services were performed in accordance with the scope of work agreed upon by the client, as reflected in our proposal, and were not restricted by any other document(s). PCH

recommends the evaluation of survey results with respect to the future use of the property in consultation with regulatory agencies, civil engineers, architects, and other professionals in determining the proper course of action regarding avoiding and/or mitigating wetland impacts.

The US Army Corps of Engineers (USACE) has the authority to make decisions regarding the jurisdictional status of a wetland. Therefore, USACE should be contacted prior to disturbance of any area investigated during this delineation. Areas determined to be wetlands and/or Waters of the US and which met the three wetland criteria outlined by USACE during this survey are hereafter referred to as potential jurisdictional wetlands.

### **Additional Scope Limitations**

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of wetlands may have been latent, inaccessible, unobservable, non-detectable or not present during these services, and we cannot represent that the site contains or does not contain wetlands or Waters of the United States beyond those identified during this Wetland Delineation. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

### **Reliance**

This report has been prepared for the exclusive use of ISI Professional Services and the US Department of Veterans Affairs and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of ISI Professional Services and the US Department of Veterans Affairs and PCH. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the proposal, the report, and the agreed upon Terms and Conditions. The limitation of liability defined in the terms and conditions is the aggregate limit of PCH's liability to the client and all relying parties unless otherwise agreed in writing.

## **2.0 FIELD ACTIVITIES**

Preliminary data reviews indicated a potential wetland area and/or Waters of the United States on the southern portion of the site. The *USACE Wetland Delineation Manual* and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* each require a delineation when sufficient data does not exist to preclude a delineation. No wetlands or Waters of the United States were identified on the *National Wetlands Inventory* (NWI) map for the site. Soil Survey data were unavailable for the area of the site, therefore

identifying wetland soils using the National List of Hydric Soils was not possible. Sufficient data was not available to either clear the project site for wetlands or to establish wetland presence, therefore a delineation was performed.

Russell Pickering and Cheryl Courtney conducted field activities on March 8 and 20, 2017. As part of the approved and client directed scope of work, eight wetland delineation plots were evaluated by PCH.

Figure 1 presents the general location and topography of the site on portions of the appropriate USGS topographic quadrangle map (Appendix A). Figure 2 presents the approximate plot (Appendix A).

### **3.0 FIELD METHODS**

In order for an area to be considered a jurisdictional wetland, it must have evidence of hydrophytic vegetation, hydric soils, and wetland hydrology. Under normal circumstances, the absence of any one of the three parameters results in a non-wetland determination. If disturbed conditions are present, then consideration must be given to what conditions would have been present had the disturbance not occurred.

A delineation with an on-site inspection was conducted for areas greater than 5 acres in size as part of this wetland delineation effort, per the guidelines outlined in the *USACE Wetland Delineation Manual, 1987* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region, March 2208*.

A baseline (approximately 2,400 feet in length) was established generally following the southwest to northeast topography of the site with three transects positioned approximately 800 meters apart along and generally perpendicular to the baseline with some adjustments to include all vegetative communities along the transects. A wetlands determination was made at each major plant community represented along each transect.

Plant communities and the dominant plant species within each community were identified to determine the presence or absence of hydrophytic vegetation. An ocular estimation of percent cover was used to determine dominant plants at each sample site. The National List of Plant Species That Occur in Wetlands (USACE website) was used to determine the indicator status of dominant plants within each community. It should be noted that the investigation was conducted during a non-flowering season. Plant identification is complicated by dry conditions. Additional site visits during flowering periods may be necessary to more specifically identify dominant plant species.

Soil profiles were examined for hydric soil characteristics within each plant community to determine if hydric soil indicators were present, where appropriate per USACE guidance. Moist

soil color was determined using Munsell Color Charts. Additional soils information was obtained from the soil survey for the area including the subject property, if available.

Geomorphic and hydrologic characteristics of the site were investigated to determine if wetland hydrology was present at each sample plot. Observations of surface drainage patterns and depth to groundwater in each plant community were the principle components of this portion of the field investigation, along with an evaluation of secondary indicators of wetland hydrology.

If potentially jurisdictional wetlands were determined to be present on site, wetland boundaries were delineated with pin flags post survey and areas identified as wetlands were surveyed and mapped and total acreages within each distinct wetland area were computed using computer mapping software.

#### 4.0 RESULTS

The following table presents the wetland sample transect/plot identifier and wetland status determination for each plot sampled as part of this survey. Plot locations and wetland determination data forms for each plot are included in Appendices A and B, respectively. Areas determined to meet wetland criteria are illustrated on Figure 3, Appendix A.

##### Wetland Sample Plot Results

Transect Number	Vegetative Community	Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Wetland Determination	Wetland Area (ac)
1	A	-	-	-	Non-wetland	
1	B	-	-	+	Non-wetland	
1	C	+	+	+	Wetland	0.8
2	A	-	-	-	Non-wetland	
2	D	-	-	-	Non-wetland	
3	A	-	-	-	Non-wetland	
3	E	-	-	+	Non-wetland	
3	F	-	-	-	Non-wetland	

(-) indicates absence of indicator, (+) indicates presence of indicator

#### 5.0 FINDINGS AND RECOMMENDATIONS

The pertinent findings of this investigation are as follows:

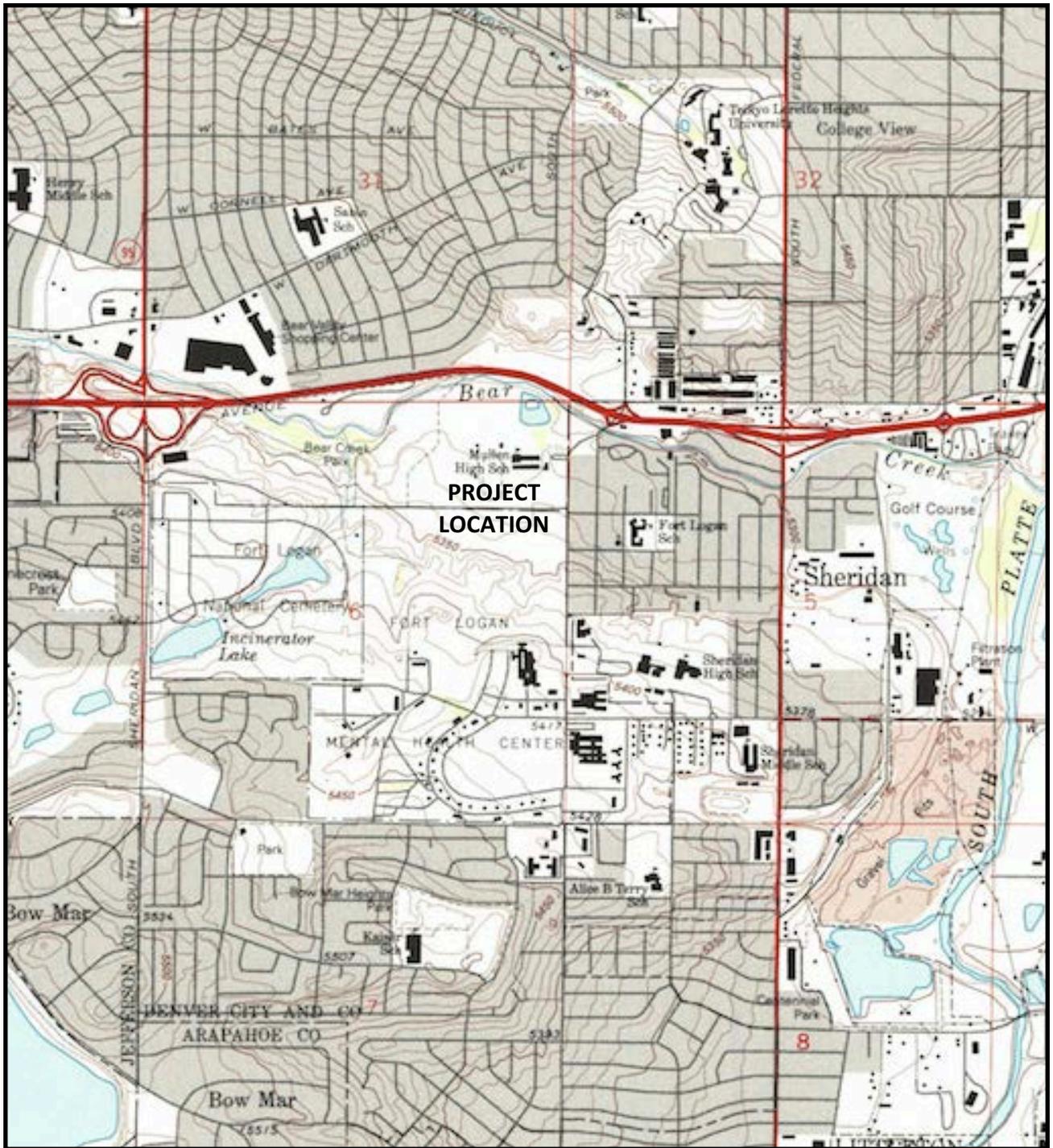
- No wetlands were identified for the site on the appropriate National Wetland Inventory maps of the area.
- A drainage present on the southern portion of the site appears to convey/hold water during storm events and/or spring runoff. This drainage may or may not qualify as a Waters of the United States per USACE site specific determination.
- Areas of wetlands have been identified on the site, as illustrated on Figure 3, Appendix A. A single area totaling approximately 0.8 acres was identified on the southern portion of the site.

##### Recommendations

Wetlands totaling approximately 0.8 acres were identified during this evaluation. USACE permitting may be required for the project, dependant upon specific development plans, and USACE should be consulted prior to any wetland disturbance. Further, a discussion with USACE is recommended regarding whether the wetlands identified are present within a Waters of the United States. USACE has the authority to make the final decision regarding the jurisdictional status of a wetland. Therefore, the determination of wetlands during this survey may require an on site evaluation by USACE personnel, in conjunction with the information provided in this report.

## **APPENDIX A**

- Figure 1 – Project Location Map**
- Figure 2 - Wetland Plot Locations**
- Figure 3 - Wetland Locations**



Fort Logan SGS Quadrangle



North

Figure 1  
Project Location

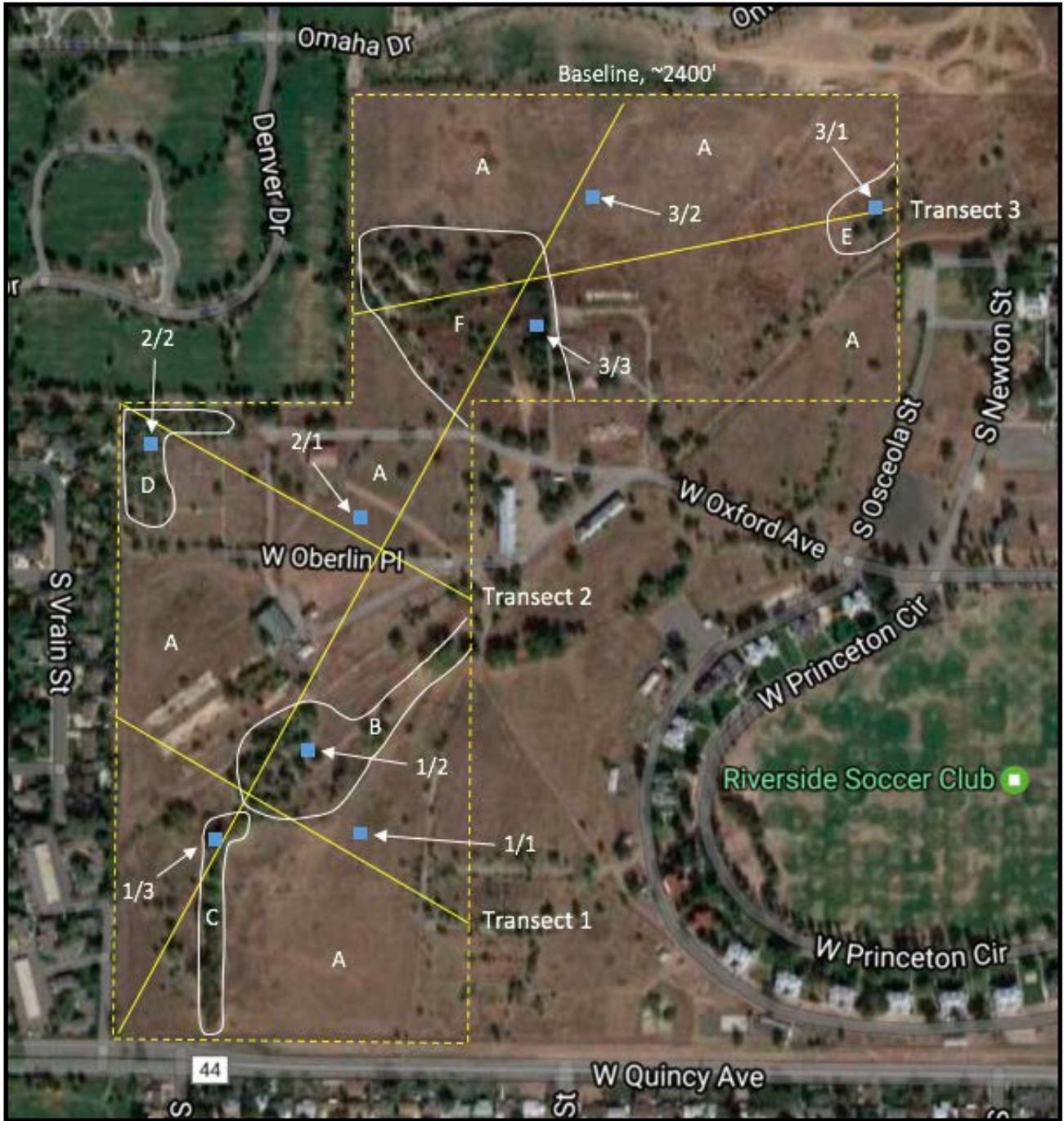
Pickering, Cole & Hivner  
Geotechnical and Environmental Engineers



Ft. Logan Cemetery

Denver Colorado

Project No: 17.113.06



North

Figure 2  
Site Plan

**Pickering, Cole & Hivner**  
Geotechnical and Environmental Engineers



Wetland Transects/Plots  
Ft. Logan Cemetery

Denver Colorado

Project No: 17.113.06



**APPENDIX B**

**Wetland Determination Data Forms**

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Ft Logan Cemetery City/County: Denver Sampling Date: 3.8.17  
 Applicant/Owner: NA State: \_\_\_\_\_ Sampling Point: 1/1  
 Investigator(s): Pickering / Courtney Section, Township, Range: S6 T55 R68 W  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope (%): 1-3  
 Subregion (LRR): \_\_\_\_\_ Lat: 39.6402 Long: -105.0436 Datum: \_\_\_\_\_  
 Soil Map Unit Name: NA for area on WSS NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
--	--

Remarks:

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30 m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>NA</u>				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____				
3. _____				
4. _____				
Sapling/Shrub Stratum (Plot size: <u>5 ft</u> ) = Total Cover <u>50/20 Rule</u>				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = <u>—</u>
1. <u>Yucca glauca</u>	<u>10</u>	<u>4</u>	<u>UPL</u>	
2. <u>Chrysothamnus nauseosus</u>	<u>10</u>	<u>4</u>	<u>UPL</u>	
3. <u>Oxyactia macrohiza</u>	<u>5</u>	<u>4</u>	<u>UPL</u>	
4. _____				
Herb Stratum (Plot size: <u>5 ft</u> ) = Total Cover <u>25</u>				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Baccharis dioctylodes</u>	<u>70</u>	<u>4</u>	<u>FACU</u>	
2. <u>Grindelia squarrosa</u>	<u>40</u>	<u>N</u>	<u>UPL</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Woody Vine Stratum (Plot size: <u>5 ft</u> ) = Total Cover <u>40</u>				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>
1. <u>NA</u>				
2. _____				
% Bare Ground in Herb Stratum <u>5</u> = Total Cover <u>0</u>				

Remarks:



**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Ft Logan City/County: Denver Sampling Date: 3-8-17  
 Applicant/Owner: VA State: CO Sampling Point: 11002  
 Investigator(s): Pickering/Courtney Section, Township, Range: S6 T55 R68 W  
 Landform (hillslope, terrace, etc.): slight swale Local relief (concave, convex, none): slightly concave Slope (%): 1  
 Subregion (LRR): \_\_\_\_\_ Lat: 39.6408 Long: -105.0436 Datum: \_\_\_\_\_  
 Soil Map Unit Name: NA NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>in swale - manmade possibly, wetland characteristics not present though clearly a stormwater channel</u>	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Populus deltoides</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>1</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				
4. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
<u>20</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>5ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>NA</u>				Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species <u>20</u> x 3 = <u>60</u>
5. _____				FACU species <u>70</u> x 4 = <u>280</u>
<u>0</u> = Total Cover				UPL species _____ x 5 = _____
				Column Totals: <u>90</u> (A) <u>340</u> (B)
				Prevalence Index = B/A = <u>3.8</u>
Herb Stratum (Plot size: <u>5ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Yucca - Schedonorus sp?</u>	<u>70</u>	<u>Y</u>	<u>FACU</u>	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Asclepias speciosa</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	<input type="checkbox"/> 2 - Dominance Test is >50%
3. _____				<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup>
4. _____				<input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
5. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
<u>80</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Footnote:
1. _____				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>25</u>				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>

Remarks:

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	7.5YR 3/1						Silt	roots - no oxid
3-8	" 3/2						Sand	roots - no oxid
8-18	" 4/4						Sand/Clay	coal chunks
18-24	" 4/4						clay/silt	coal chunks

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

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

Indicators for Problematic Hydric Soils<sup>3</sup>:

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Histosol (A1)                             | <input type="checkbox"/> Sandy Gleyed Matrix (S4)      | <input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)  |
| <input type="checkbox"/> Histic Epipedon (A2)                      | <input type="checkbox"/> Sandy Redox (S5)              | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)  |
| <input type="checkbox"/> Black Histic (A3)                         | <input type="checkbox"/> Stripped Matrix (S6)          | <input type="checkbox"/> Dark Surface (S7) (LRR G)  |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                     | <input type="checkbox"/> Loamy Mucky Mineral (F1)      | <input type="checkbox"/> High Plains Depressions (F16)  |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F)            | <input type="checkbox"/> Loamy Gleyed Matrix (F2)      | <input type="checkbox"/> (LRR H outside of MLRA 72 & 73)  |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)              | <input type="checkbox"/> Depleted Matrix (F3)          | <input type="checkbox"/> Reduced Vertic (F18)   |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)         | <input type="checkbox"/> Redox Dark Surface (F6)       | <input type="checkbox"/> Red Parent Material (TF2)  |
| <input type="checkbox"/> Thick Dark Surface (A12)                  | <input type="checkbox"/> Depleted Dark Surface (F7)    | <input type="checkbox"/> Very Shallow Dark Surface (TF12)   |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                  | <input type="checkbox"/> Redox Depressions (F8)        | <input type="checkbox"/> Other (Explain in Remarks)   |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)      | <input type="checkbox"/> (MLRA 72 & 73 of LRR H)       |   |

Restrictive Layer (if present):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No

Remarks: *sandy silt w/ clay - loamy  
no indicators*

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (minimum of two required)

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Salt Crust (B11)                           | <input type="checkbox"/> Surface Soil Cracks (B6)                   |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Invertebrates (B13)                | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)    |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                 | <input type="checkbox"/> Drainage Patterns (B10)                    |
| <input checked="" type="checkbox"/> Water Marks (B1)               | <input checked="" type="checkbox"/> Dry-Season Water Table (C2)     | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) | <input type="checkbox"/> (where tilled)                             |
| <input checked="" type="checkbox"/> Drift Deposits (B3)            | <input type="checkbox"/> (where not tilled)                         | <input type="checkbox"/> Crayfish Burrows (C8)                      |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Presence of Reduced Iron (C4)              | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)  |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)                     | <input type="checkbox"/> Geomorphic Position (D2)                   |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks)                 | <input type="checkbox"/> FAC-Neutral Test (D5)                      |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 |   | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)          |

Field Observations:

Surface Water Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
Water Table Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
Saturation Present? Yes \_\_\_\_\_ No  Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

Wetland Hydrology Present? Yes  No \_\_\_\_\_

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

Remarks:

**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Ft Logan Cemetery City/County: Denver Sampling Date: 3.8.17  
 Applicant/Owner: VA State: CO Sampling Point: 1103  
 Investigator(s): Pickering / Courtney Section, Township, Range: S6 T55 R68W  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): Concave Slope (%): 1-3  
 Subregion (LRR): \_\_\_\_\_ Lat: 39.6402 Long: -105.0450 Datum: \_\_\_\_\_  
 Soil Map Unit Name: NA NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>incised channel bordered by willow/cottonwood community - sandy soil in adjacent to channel</u>	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Populus deltoides</u>	<u>60</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A)	
2. <u>Prunus americana</u>	<u>10</u>	<input type="checkbox"/>	<u>UPL</u>		
3. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
4. _____	_____	_____	_____		
<u>70</u> = Total Cover				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)	
Sapling/Shrub Stratum (Plot size: <u>5ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Willow - Salix exigua</u>	<u>80</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>80</u> x 2 = <u>160</u> FAC species <u>60</u> x 3 = <u>180</u> FACU species <u>50</u> x 4 = <u>200</u> UPL species _____ x 5 = _____ Column Totals: <u>290</u> (A) <u>540</u> (B)  Prevalence Index = B/A = <u>1.86</u>	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
<u>80</u> = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
Herb Stratum (Plot size: <u>5ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Fescue - Schedonura</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FACU</u>		<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
<u>50</u> = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____	
Woody Vine Stratum (Plot size: <u>5ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>NA</u>	_____	_____	_____		
2. _____	_____	_____	_____		
<u>0</u> = Total Cover					
% Bare Ground in Herb Stratum <u>40</u>					

Remarks: \_\_\_\_\_

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	7.5YR3/1						gravel sand moist	
4-18	3/1						clay silt moist	
18-24	4/3						sand gravel moist	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input checked="" type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	(LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input checked="" type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	

Restrictive Layer (if present):  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks: *organic matter present in near surface horizon  
 no streaks  
 no organic matter in deeper profile*

HYDROLOGY

Wetland Hydrology Indicators:	
<u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	

Remarks: *- dry season - no saturation -  
 - plot located in area that would pond during / after storm events or spring runoff*

WETLAND DETERMINATION DATA FORM – Great Plains Region

3.8.17

Project/Site: F+ Logan Cemetery City/County: Denver Sampling Date: 3.8.17  
 Applicant/Owner: VA State: \_\_\_\_\_ Sampling Point: 2/1  
 Investigator(s): Pickering / Courtney Section, Township, Range: S6 T55 R68W  
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): 0  
 Subregion (LRR): \_\_\_\_\_ Lat: 39.6426 Long: -105.0434 Datum: \_\_\_\_\_  
 Soil Map Unit Name: NA NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	

Remarks:

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30 u</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>NA</u>				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>5 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Chrysothamnus Squarrose</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>	Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species _____ x 2 = _____
4. _____				FAC species _____ x 3 = _____
5. _____				FACU species <u>50</u> x 4 = <u>200</u>
<u>30</u> = Total Cover				UPL species <u>30</u> x 5 = <u>150</u>
_____ = Total Cover				Column Totals: <u>80</u> (A) <u>350</u> (B)
_____ = Total Cover				Prevalence Index = B/A = <u>4.375</u>
Herb Stratum (Plot size: <u>5 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Baccharis distachyoides</u>	<u>50</u>	<u>Y</u>	<u>FACU</u>	___ 1 - Rapid Test for Hydrophytic Vegetation
2. _____				___ 2 - Dominance Test is >50%
3. _____				___ 3 - Prevalence Index is ≤3.0 <sup>1</sup>
4. _____				___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
5. _____				___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
<u>50</u> = Total Cover				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: <u>5 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
1. <u>NA</u>				
2. _____				
_____ = Total Cover				
<u>40</u> = Total Cover				

Remarks:



**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Ft Logan Cemetery City/County: Denver Sampling Date: 3/8/17  
 Applicant/Owner: VA State: CO Sampling Point: 2/2  
 Investigator(s): Pickering Courtney Section, Township, Range: S6 T55 R68W  
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): 0  
 Subregion (LRR): \_\_\_\_\_ Lat: 39.6432 Long: -105.0456 Datum: \_\_\_\_\_  
 Soil Map Unit Name: NA NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	

Remarks:

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>1</u> (A)
1. <u>Alnus americana</u>	<u>65</u>	<u>4</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
Total Cover = <u>65</u>				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
Sapling/Shrub Stratum (Plot size: <u>5ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>A americana</u>	<u>35</u>	<u>4</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
5. _____				
Total Cover = <u>35</u>				Prevalence Index worksheet:
				Total % Cover of: _____ Multiply by: _____
				OBL species _____ x 1 = _____
				FACW species _____ x 2 = _____
				FAC species <u>100</u> x 3 = <u>300</u>
				FACU species _____ x 4 = _____
				UPL species <u>50</u> x 5 = <u>250</u>
				Column Totals: <u>150</u> (A) <u>550</u> (B)
				Prevalence Index = B/A = <u>3.66</u>
Herb Stratum (Plot size: <u>5ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Buchloe dactyloides</u>	<u>50</u>	<u>4</u>	<u>FACU</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Total Cover = <u>50</u>				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>NA</u>				
2. _____				
Total Cover = _____				
% Bare Ground in Herb Stratum <u>50</u>				
Total Cover = _____				

Remarks:



**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Ft Logan Cemetery City/County: Denver Sampling Date: 3.8.17  
 Applicant/Owner: VA State: CO Sampling Point: 3/1  
 Investigator(s): Pickering/Courtney Section, Township, Range: 56 T 55 R 68 W  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1-3  
 Subregion (LRR): \_\_\_\_\_ Lat: 39.6451 Long: -105.0385 Datum: \_\_\_\_\_  
 Soil Map Unit Name: NA NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/>	Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>		Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
--	---	---	--	--

Remarks:

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																	
1. <u>Ulmus americanus</u>	<u>10</u>	<u>4</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A)																	
2. <u>Populus deltoides</u>	<u>5</u>	<u>7</u>	<u>FAC</u>																		
3. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)																	
4. _____																					
<u>15</u> = Total Cover				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>30</u> (A/B)																	
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Prevalence Index worksheet:</th> </tr> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species <u>75</u></td> <td>x 5 = <u>450</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>495</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>5.5</u></td> </tr> </tbody> </table>					Prevalence Index worksheet:		Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species _____	x 4 = _____	UPL species <u>75</u>	x 5 = <u>450</u>	Column Totals: <u>90</u> (A)	<u>495</u> (B)	Prevalence Index = B/A = <u>5.5</u>
Prevalence Index worksheet:																					
Total % Cover of:	Multiply by:																				
OBL species _____	x 1 = _____																				
FACW species _____	x 2 = _____																				
FAC species <u>15</u>	x 3 = <u>45</u>																				
FACU species _____	x 4 = _____																				
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Column Totals: <u>90</u> (A)	<u>495</u> (B)																				
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<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Hydrophytic Vegetation Indicators:</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</td> <td></td> </tr> <tr> <td><input type="checkbox"/> 2 - Dominance Test is &gt;50%</td> <td></td> </tr> <tr> <td><input type="checkbox"/> 3 - Prevalence Index is ≤3.0<sup>1</sup></td> <td></td> </tr> <tr> <td><input type="checkbox"/> 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</td> <td></td> </tr> </tbody> </table>				Hydrophytic Vegetation Indicators:		<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation		<input type="checkbox"/> 2 - Dominance Test is >50%		<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup>		<input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)		<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)							
Hydrophytic Vegetation Indicators:																					
<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation																					
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<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Hydrophytic Vegetation Present?</th> </tr> </thead> <tbody> <tr> <td>Yes _____</td> <td>No <input checked="" type="checkbox"/></td> </tr> </tbody> </table>				Hydrophytic Vegetation Present?		Yes _____	No <input checked="" type="checkbox"/>														
Hydrophytic Vegetation Present?																					
Yes _____	No <input checked="" type="checkbox"/>																				

Remarks:



**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Ft Logan Cemetery City/County: Denver Sampling Date: 3-8-17  
 Applicant/Owner: VA State: CO Sampling Point: 312  
 Investigator(s): Pickering/Courtney Section, Township, Range: S6T55R88W  
 Landform (hillslope, terrace, etc.): Plot Local relief (concave, convex, none): none Slope (%): 1  
 Subregion (LRR): \_\_\_\_\_ Lat: 39.6453 Long: -105.0406 Datum: \_\_\_\_\_  
 Soil Map Unit Name: NA NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks:	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>NA</u>				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. _____				
3. _____				
4. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species <u>80</u> x 4 = <u>320</u> UPL species <u>40</u> x 5 = <u>200</u> Column Totals: <u>120</u> (A) <u>520</u> (B)  Prevalence Index = B/A = <u>4.33</u>
<b>Sapling/Shrub Stratum (Plot size: <u>5m</u>)</b>				
1. <u>Yucca glauca</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>	
2. <u>Chrysothamnus nauseosus</u>	<u>10</u>	<u>Y</u>	<u>UPL</u>	
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
<b>Herb Stratum (Plot size: <u>5ft</u>)</b>				
1. <u>Baccharis dracunculoides</u>	<u>80</u>	<u>Y</u>	<u>FACU</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
<b>Woody Vine Stratum (Plot size: <u>5m</u>)</b>				
1. <u>NA</u>				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>20</u> _____ = Total Cover				
<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>				
Remarks:				



**WETLAND DETERMINATION DATA FORM – Great Plains Region**

Project/Site: Ft Logan Cemetery City/County: Denver / Denver Sampling Date: 3-8-12  
 Applicant/Owner: VA State: CO Sampling Point: 3/3  
 Investigator(s): Pickering / Courtney Section, Township, Range: 56T55R68W  
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): 1-3  
 Subregion (LRR): \_\_\_\_\_ Lat: 39.6440 Long: -105.0418 Datum: \_\_\_\_\_  
 Soil Map Unit Name: NA NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
--	--

Remarks:

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>30m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Ulmus americana</u>	<u>50</u>	<u>4</u>		<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
2. _____				
3. _____				
4. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species <u>70</u> x 3 = <u>210</u> FACU species _____ x 4 = _____ UPL species <u>25</u> x 5 = <u>125</u> Column Totals: <u>95</u> (A) <u>335</u> (B) Prevalence Index = B/A = <u>3.52</u>
Sapling/Shrub Stratum (Plot size: <u>5m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Ulmus americana</u>	<u>20</u>	<u>4</u>		
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>57+</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Eleocharis acicularis</u>	<u>15</u>	<u>4</u>		
2. <u>Ambrosia artemisiifolia</u>	<u>10</u>	<u>4</u>		
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>40</u> _____ = Total Cover				

**Hydrophytic Vegetation Indicators:**  
 \_\_\_ 1 - Rapid Test for Hydrophytic Vegetation  
 \_\_\_ 2 - Dominance Test is >50%  
 \_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes \_\_\_\_\_ No

Remarks:



## **APPENDIX C**

### **Photo Log**



**Photo #1** Transect 1, Plot 1



**Photo #2** Transect 1, Plot 2



**Photo #3** Transect 1, Plot 3



**Photo #4** Transect 2, Plot 1



**Photo #5** Transect 2, Plot 2



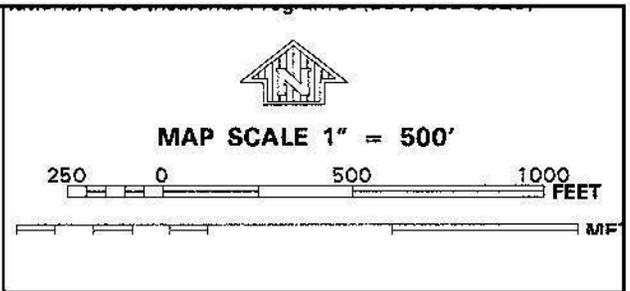
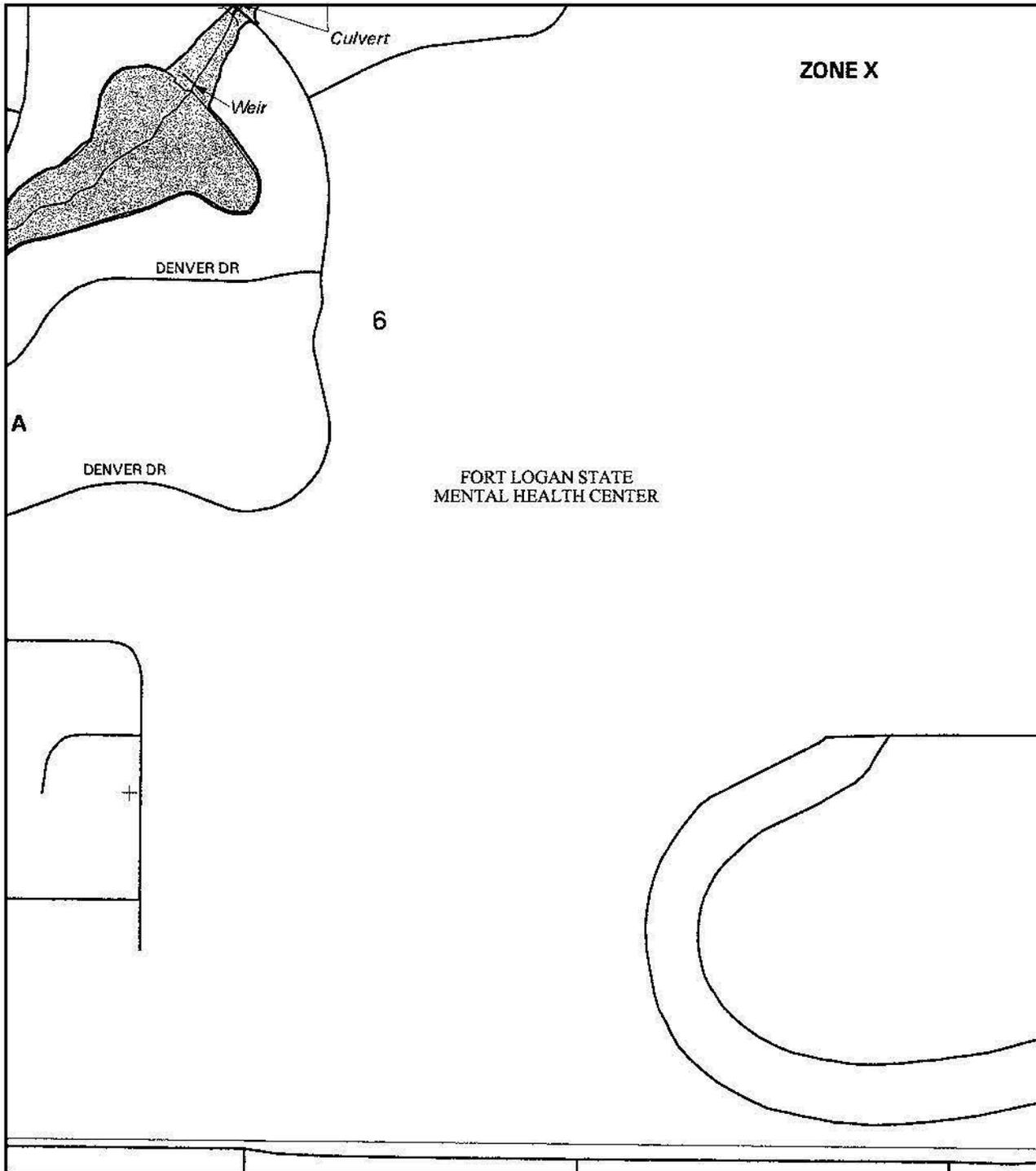
**Photo #6** Transect 3, Plot 1



**Photo #7** Transect 3, Plot 2



**Photo #8** Transect 3, Plot 3



**PANEL 0193G**

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
 CITY AND COUNTY OF  
 DENVER,  
 COLORADO

**PANEL 193 OF 300**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DENVER CITY AND COUNTY OF	08046	0193	G

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

**MAP NUMBER**  
**0800460193G**

**MAP REVISED:**  
**NOVEMBER 17, 2005**

  
 Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

**Department of Veterans Affairs  
Washington, DC**

**Phase II Environmental Site Assessment  
Proposed Fort Logan  
National Cemetery Expansion  
Denver, Colorado**

**October 2017**



**PHASE II ENVIRONMENTAL SITE ASSESSMENT  
PROPOSED FORT LOGAN NATIONAL CEMETERY EXPANSION  
DENVER, COLORADO**

**FOR**

**DEPARTMENT OF VETERANS AFFAIRS  
CFM, OFFICE OF REAL PROPERTY  
425 I STREET  
WASHINGTON, DC**

**OCTOBER 20, 2017  
TTL PROJECT NO. 1495503**

**TTL ASSOCIATES, INC.  
44265 PLYMOUTH OAKS BOULEVARD  
PLYMOUTH, MICHIGAN 48170  
(734) 455-8600  
FAX: (734) 455-8608**



# TABLE OF CONTENTS

	<u>Page No.</u>
<b>1.0 Introduction.....</b>	<b>1</b>
1.1 Site Description.....	1
1.2 Site Background.....	1
1.3 Purpose.....	4
<b>2.0 Field Activities.....</b>	<b>5</b>
2.1 Geophysical Survey .....	5
2.2 Soil Boring and Associated Soil Sampling.....	6
2.3 Groundwater Sampling.....	9
<b>3.0 Analytical Results .....</b>	<b>10</b>
3.1 Soil Sample Results .....	11
3.2 Soil Boring and Associated Soil Sampling.....	12
<b>4.0 Findings, Conclusions and Recommendations .....</b>	<b>13</b>
4.1 Findings .....	13
4.2 Conclusions.....	14
4.3 Recommendations.....	16

## **TABLES**

Table 1.0	Soil Analytical Data
Table 2.0	Groundwater Analytical Data

## **FIGURES**

Figure 1.0	Site Location Map
Figure 2.0	Site and Vicinity Sketch
Figure 3.0	Soil Boring Location – North Area of Site
Figure 4.0	Soil Boring Location – North-Central Area of Site
Figure 5.0	Soil Boring Location – Central Area of Site
Figure 6.0	Soil Boring Location – South-Central Area of Site
Figure 7.0	Soil Boring Location – Southwest Area of Site

## **APPENDICES**

Appendix A	Geophysical Survey Report
Appendix B	Soil Boring Logs
Appendix C	Laboratory Analytical Reports and Chain-of-Custody Records

## 1.0 INTRODUCTION

This report presents the methodologies and findings of a Phase II Environmental Site Assessment (ESA) conducted for the Department of Veterans Affairs (VA) by TTL Associates, Inc. (TTL) for the proposed acquisition of up to 66 acres of land contiguous to the southeast of the existing Fort Logan National Cemetery (FLNC), located at 4400 West Kenyon Avenue in Denver, Denver County, Colorado (site), for the expansion of the FLNC. Figure 1.0 illustrates the site location. The Scope of Work (SOW) for this Phase II ESA was based on the findings of TTL's Phase I ESA for the site, dated May 1, 2017, the results of other due diligence activities completed for the proposed cemetery expansion, and discussion with VA representatives. The Phase II ESA SOW was reviewed and approved by VA.

### 1.1 Site Description

The site is approximately 66 acres in area and includes one complete parcel and a portion of a second parcel of land currently owned by the State of Colorado. The site is largely vacant (grassy with scattered trees) and is currently used for storage, landscaping equipment storage, and maintenance activities associated with the easterly adjoining Colorado Mental Health Institute at Fort Logan (CMHIFL). The site is currently occupied by four buildings: Building No. 69: Division of Facilities Maintenance (DFM) Storage Building (constructed in 1920), Building No. 64: Automotive Repair Shop (constructed in 1939), Building No. 65: Equipment Storage Garage (constructed in 2005), and Building No. 180: Former Gasoline Station (constructed in 1941). The site also includes several former building foundations and roadways. Figure 2.0 illustrates the site features and surrounding area.

### 1.2 Site Background

The site is a portion of the 940-acre former Fort Logan Military Reservation, which was established in the late 1880s and closed in 1946. During that time, the site was occupied by several railroad tracks, up to 34 buildings, including: barracks; officer's quarters; rail dock buildings; warehouses; maintenance support buildings (including two vehicle repair and two gasoline stations); oil, coal, and ice storage areas; artillery magazines; and a small-arms firing range. The site also included areas of vacant, unimproved land.

In 1946, the site and surrounding lands were used by VA as a temporary health care facility for veterans until the VA hospital in Denver was completed. The site was occupied by several railroad tracks, and up to 34 buildings, including rail dock buildings, warehouses, barracks, officer's quarters, and maintenance support buildings (including two vehicle repair and one gasoline station).

In 1960, approximately 308 acres of Fort Logan (including the site) were transferred to the State of Colorado to construct a new mental health center. The primary mental health center buildings are located off-site to the east. The majority of the on-site buildings were razed over the years. The site is currently mostly vacant with grassy vegetation and scattered trees. Four buildings, several former building foundations, and roads remain at the site. The current site buildings are used for storage, automotive maintenance, and landscaping maintenance.

The May 2017 Phase I ESA identified the following recognized environmental conditions (RECs) in connection with the site:

- A 1978 geologic map published by the United States Geological Survey (USGS) depicts areas of “artificial fill” in the northeastern, north-central, and southeastern portions of the site. Each of these areas was identified on historical topographic maps as a depression or low-lying area that was later filled. These areas were also identified in the Denver County landfill database. Aerial photographs indicate that the largest of these artificial fill areas was actively being filled in 1963. Based on subsequent aerial photographs, this area appears to be approximately 300 feet wide and 1,000 feet long and extends off-site onto the existing FLNC property to the north. Information obtained from State of Colorado representatives indicates that this area received fill from a 1964 flood, including building debris, household materials, and vegetation. During January 2017, Pickering, Cole & Hivner, LLC (PCH) conducted a geotechnical investigation of the site on behalf of VA that included soil borings in each of the artificial fill areas. Three soil borings conducted within the mapped fill area in the northeastern portion of the site encountered fill containing glass, metal, wood and various trash to depths ranging from 7 to 28 feet below grade. Fill soil was encountered in the other geotechnical soil borings, but no non-soil fill materials were found in these borings. Fill material in these other areas was reported to appear similar to native soil at the site. The large area of fill in the northeastern portion of the site that was found to contain up to 28 feet of non-soil material is considered to be a REC in connection with the site. Based on the findings of the geotechnical investigation, the other mapped areas of artificial fill are not considered to be RECs.
- Building 119 (constructed between 1920 and 1940 and demolished sometime after 1960) and Building 180 (constructed in 1941 and remaining at the site) were/are located in the central portion of the site and used as gasoline stations. No additional information pertaining to the former gasoline station at Building 119 was identified. This former gasoline station was considered to be a REC. An Underground Storage Tank (UST) Closure Report was provided by the Colorado Department of Labor and Employment, Division of Oil and Public Safety (OPS) for two 10,000-gallon gasoline USTs removed from the vicinity of Building 180 in 1995. No field evidence of impacts was identified. Low concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in soil samples collected from the UST system excavations, below the Colorado OPS Tier I Risk-Based Screening Levels. Based on the soil sample analytical results, the former gasoline USTs removed from the area of Building 180 during 1995 were not considered to be a REC. However, the area had not been fully investigated and additional USTs and/or related soil and/or groundwater impacts may have been present. The former use of Building 180 as a gasoline station was considered to be a REC.
- Buildings 37 and 190, formerly located in the central and northern portions of the site, were constructed between 1920 and 1940 and demolished between 1946 and 1960, and were used as paint shops. No additional information regarding the former paint shops was identified. Based on the use of hazardous substances in these structures, the former paint shops were considered to be RECs.

- A coal storage shed (Building 58), a coal trestle (Area 111), and a coal yard (CY) were formerly located in the central and southwestern portions of the site. Blackened areas are evident in the vicinity of the coal trestle in the 1937 aerial photograph and in the coal yard in the 1950 and 1954 aerial photographs. Based on the typical presence of elevated concentrations of metals and polynuclear aromatic hydrocarbons (PAHs) in coal, the former outdoor storage of coal in these areas was considered to be a REC.
- Building 64 was constructed in 1939 as an automotive repair shop and remains functional in that use. Building 64 has one car wash bay and three repair bays. Two floor drains were observed in the building, one in the repair area and one in the car wash area, and an historic trench drain was reported. The floor drains discharge via pipes to the ground surface at locations southeast and south of Building 64. Two aboveground hydraulic lifts were observed in the repair area; however, site representatives indicated two in-ground hydraulic lifts were previously located in the repair area and it is unknown if the oil reservoirs were removed when the lifts were removed. The use of Building 64 for vehicle maintenance and repair since 1939 was considered to be a REC.
- Building 69 was originally constructed in 1920 as a hospital vehicle maintenance garage. This building is currently utilized as a storage warehouse for landscaping materials and miscellaneous maintenance equipment. The historic use of Building 69 for vehicle maintenance and repair was considered to be a REC.
- Building 82 (constructed prior to 1919 and demolished between 1940 and 1946) and Area 69B (1940 to sometime after 1960) were located in the central portion of the site and were used for oil storage. No additional information was identified. The former storage of oil in these areas was considered to be a REC.
- Areas 155 and BB were identified as locations of former gasoline tanks. No additional information was identified. It is unknown if the gasoline tanks were aboveground storage tanks (ASTs) or USTs. Based on the potential presence for abandoned gasoline USTs and/or associated impacts, these former gasoline tank locations were considered to be RECs.
- A small arms firing range (Area GR) was located in the south-central portion of the site when it was operated as part of Fort Logan. Based on available information, it appears that it was an outdoor range. Outdoor firing ranges often result in lead-impacted soil. The former firing range was considered to be a REC.
- A salvage lot (SL) was present in the northern portion of the site during its use as part of Fort Logan. It is unknown what materials were stored in the salvage lot; however, salvage lots typically include vehicles and equipment in poor condition that may leak petroleum products and/or hazardous substances, and may include vehicle/equipment dismantling operations. The former salvage lot was considered to be a REC.
- Several former railroad spurs served the Fort Logan Military Reservation from about 1890 to 1950. Some of these rail lines remain in place and were covered with asphalt pavement

instead of being removed. Creosote preserved railroad ties likely remain at the site and were considered to be a REC in connection with the site. Based on the available mapping, the on-site portions of the railroad spurs appear to have primarily been used to deliver coal to the site.

- Site representatives indicated that demolished buildings on the Fort Logan campus (off-site to the east, near the parade grounds) were backfilled into basement or foundations areas and the soil in the vicinity of these demolition debris filled areas had tested positive for asbestos. The asbestos-impacted fill had to be remediated prior to construction or earth moving activities. It is unknown if former on-site structures were demolished into basement areas. The potential presence of asbestos-impacted demolition debris fill on the site was considered to be a REC.

### **1.3 Purpose**

This Phase II ESA was conducted as part of VA's environmental due diligence prior to property acquisition. The Phase II ESA was conducted to evaluate whether the soil and/or groundwater at the site have been impacted by the RECs identified during the May 2017 Phase I ESA and whether abandoned USTs may remain at the site. The primary objective of the Phase II ESA was to assess site conditions that may be encountered during the development of the site as a cemetery.

VA is considering the acquisition of the entire 66-acre site, but will exclude certain areas that may not be appropriate and/or are problematic for development as a cemetery based on the findings of the various due diligence investigations. The landfilled area in the northeastern portion of the site, which is estimated to be approximately 7 acres in area and contains non-soil materials that are up to 28 feet deep, is not appropriate for use as a cemetery. Based on discussions with VA, this area and a buffer area west of the landfill that is roughly defined by PCH geotechnical soil borings 3, 6, 9 and 13 will be excluded from the area of the site purchased by VA. Therefore, the landfilled area was not be assessed during the Phase II ESA.

VA is also considering the acquisition of a small portion of the 66-acre site in the near future (10 or more acres contiguous to the existing FLNC) to facilitate continued cemetery operations with a plan to acquire additional acreage at a later date, once additional investigation and any necessary remediation is conducted. Therefore, the Phase II ESA included limited assessment of areas of the site that may be targeted for early acquisition, but do not contain RECs, to screen for potential impacts.

## 2.0 FIELD ACTIVITIES

Field activities performed during the Phase II ESA included a geophysical survey, soil borings, collecting and field screening soil samples from the soil borings, the installation of temporary groundwater monitoring wells, and collecting soil and groundwater samples from the soil borings and temporary monitoring wells for laboratory analysis.

### 2.1 Geophysical Survey

A geophysical survey of the site was conducted on August 24 and 25, 2017 by Grumman Exploration, Inc. (Grumman). The primary objective of the geophysical survey was to assess the site for the possible presence of abandoned USTs. The geophysical survey also included an assessment of targeted areas of the site where backfilled basements may be present.

Grumman performed a combination of ground penetrating radar (GPR) and electromagnetic induction (EM) surveys. The EM survey instrumentation consisted of a GSSI EMP-400 multi-frequency electromagnetic induction profiling system with integrated GPS. The GPR instrumentation used was a GSSI SIR-3000 system in conjunction with a 400 MHz antenna.

Geophysical surveys were conducted at targeted areas to assess for abandoned USTs. EM surveys were conducted in the vicinity of the former on-site gasoline stations (Buildings 119 and 180), former gasoline tank areas (Areas 155 and BB), and Buildings 64 and 69, which are/were used for vehicle maintenance operations and may have utilized used motor oil USTs. GPR surveys were conducted at targeted locations within these EM survey areas based on the results of the EM surveys and where the presence of documented/undocumented USTs was considered more likely. No geophysical anomalies (EM or GPR) indicative of abandoned USTs were identified in these surveyed areas.

Numerous buildings were formerly located at the site. Little or no information was available regarding their construction or demolition. Based on the presence of concrete slabs in many of the former building locations, it appears that many were built slab-on-grade. Former buildings that were reported or suspected to have contained basements were located in the north-central portion of the site (west and east of Building 69) and in the southeastern portion of the site (near Stuart Street). GPR scans were conducted in these areas to assess for basements that may have been filled with demolition debris. One GPR anomaly interpreted to be a likely backfilled basement was identified in the southeastern portion of the site, east of Stuart Street. Grumman also noted the presence of exposed concrete and building debris at the ground surface in this area. No other GPR anomalies indicative of demolition debris backfilled basements were identified within the surveyed areas.

A geophysical survey provides a cost-effective, non-intrusive technique to assess for the possible presence of USTs, but is subject to limitations including: the detection of deeply buried or small targets; the obstruction of dense or multi-layering reinforcing steel or conductive pavement; the presence of moist clay; and/or the absence of a dielectric contrast between the subsurface feature and the surrounding material. Geophysical surveys can be effective in identifying USTs and backfilled excavations, but cannot be considered conclusive regarding the absence of USTs or backfilled excavation.

Refer to Appendix A for the complete Geophysical Survey Report.

## **2.2 Soil Boring and Associated Soil Sampling**

From September 18 to 22, 2017, Elite Drilling Services, Inc. advanced 55 soil borings (GP-1 through GP-55) at the site with a Geoprobe® hydraulic-push sampling apparatus under the supervision of a TTL environmental geologist. The Geoprobe® soil borings were advanced to depths ranging from 4 to 25 feet below ground surface (bgs). The borings were advanced at the following locations:

- Two soil borings (GP-1 and GP-2) in the north-central portion of the site, near Building 69, to assess former automotive repair operations.
- Two soil borings (GP-3 and GP-4) in the north-central portion of the site, near Area 69B, to assess former oil storage.
- Three soil borings (GP-5, GP-6 and GP-7) in the north-central portion of the site, near Former Building 119, to assess former gasoline station operations.
- Four soil borings (GP-8, GP-9, GP-10 and GP-11) in the central portion of the site, near Building 180, to assess former gasoline station operations.
- Four soil borings (GP-12, GP-13, GP-14 and GP-15) in the central portion of the site, in the vicinity of Building 64 to assess current/former automotive repair operations and the floor drain discharge. GP-13 was advanced near the sediment trap/possible oil-water separator immediately south of the building. GP-14 and GP-15 were advanced at the floor drainage system discharge points located southeast and south of Building 64.
- Two soil borings (GP-16 and GP-17) in the central portion of the site, in the general vicinity of Area BB, to assess the former gasoline tank.
- Two soil borings (GP-18 and GP-19) in the central portion of the site, in the general vicinity of Area 58 (former coal storage shed).
- Two soil borings (GP-20 and GP-21) in the central portion of the site, in the general vicinity of Area 155, to assess the former gasoline tank.
- Two soil borings (GP-22 and GP-23) in the north-central portion of the site, in the general vicinity of Former Building 37, to assess former paint shop operations.
- Two soil borings (GP-24 and GP-25) in the north-central portion of the site, in the general vicinity of Former Building 82, to assess former oil storage.
- Two soil borings (GP-26 and GP-27) in the central portion of the site, in the general vicinity of Area 111 (former coal trestle).
- Six soil borings (GP-28 through GP-33) in the southwestern portion of the site, in the former coal yard area.

- Six soil borings (GP-34 through GP-39) in the south-central portion of the site, in the general vicinity of the former small arms firing range.
- Three soil borings (GP-40, GP-41 and GP-42) in the northern portion of the site, in the area of the former salvage lot. A soil sample (Berm) was also collected from the southerly adjoining soil berm.
- Two soil borings (GP-43 and GP-44) in the northern portion of the site, near Former Building 190, to assess former paint shop operations.
- Five soil borings (GP-48 through GP-52) in the north-central portion of the site, a possible early acquisition area immediately adjoining the FLNC.
- Five soil borings (GP-45 through GP-47 and GP-53 through GP-55) in the northern portion of the site, a possible early acquisition area immediately adjoining the FLNC.

The Geoprobe® soil boring locations are depicted on Figures 3.0 through 7.0.

The Geoprobe® soil borings generally encountered sandy claystone bedrock at depths ranging between approximately 4 and 19 feet bgs, which prevented further advancement of the Geoprobe® hydraulic-push sampling apparatus. Groundwater was not encountered in the Geoprobe® soil borings.

On September 25 and 26, 2017, Elite Drilling Services, Inc. advanced six deeper borings (MW-1 through MW-6) into the bedrock at the site using a rotary drill rig equipped with hollow-stem augers under the supervision of a TTL environmental geologist. These borings were advanced to obtain groundwater samples. The deep soil borings were advanced to depths ranging from approximately 30 feet to 35 feet bgs. The deep borings were advanced in the following locations:

- MW-1, in the area of the former auto repair building and former oil storage area (Building 69 and Area 69B) in the north-central portion of the site.
- MW-2, in the area of the current auto repair building (Building 64) and former gasoline station (Building 180) in the central portion of the site.
- MW-3, in the area of the former gas station (Former Building 119), former oil house (Former Building 82), and former paint shop (Former Building 37) in the north-central portion of the site.
- MW-4, in the area of the former paint shop (Former Building 190) and former salvage lot in the northern portion of the site.
- MW-5, in the north-central portion of the site between the former gasoline stations (Building 180 and Building 119), to further assess the extent of possible petroleum impact observed in groundwater at MW-3.

- MW-6, north the former gas station (Former Building 119) in the north-central portion of the site to further assess the extent of possible petroleum impact observed in groundwater at MW-3.

Figures 3.0 through 5.0 illustrate the approximate deep soil boring/monitoring well locations.

At each of the shallow Geoprobe<sup>®</sup> soil borings (GP-1 through GP-55), soil samples were collected within disposable acetate sleeves in continuous five-foot increments so that the materials encountered could be observed, described, and sampled in a relatively undisturbed state.

Continuous soil profiling was not conducted at the deeper hollow stem auger soil borings (MW-1 through MW-6). The depth to bedrock and any potentially saturated zones within the bedrock was estimated by the resistance encountered with the hollow-stem augers during the drilling. Once bedrock was encountered, measurements were collected at five-foot increments within the hollow-stem augers to evaluate the presence and depth of groundwater. At each of the deeper soil borings, a two-foot increment soil sample was collected (using a steel split-spoon sampler through the hollow-stem auger) from a looser, sandy zone within rock, which was generally encountered at depths from approximately 22 and 26 feet bgs. Sampling equipment was decontaminated prior to each sampling run, utilizing Alconox<sup>®</sup> soap and de-ionized water rinses to minimize the potential for sample cross-contamination.

The site stratigraphy encountered generally consisted of silty sand from the ground surface to depths ranging from approximately 1.0 to 8 feet bgs. At many soil boring locations, the upper portion of the silty sand layer (generally less than 3 feet bgs but deeper in some areas) contained gravel, coal fragments, and/or coal ash, and appeared to be previously graded/disturbed soil. The silty sand is generally underlain by silty clay that extends to the top of bedrock (sandy claystone), which is present at depths ranging from 4 to more than 25 feet bgs. In some borings, silt and/or gravelly sand intervals were encountered within the clay layer, beneath the silty sand, and/or between the clay and bedrock. The soils above the bedrock contained varying amounts of weathered sandy claystone. Groundwater was encountered at deep soil borings MW-1 through MW-6 at depths ranging from approximately 25.5 to 29 feet bgs. The Phase II ESA soil boring logs are provided in Appendix B.

Soil samples collected from the Geoprobe<sup>®</sup> soil borings were split into two portions: one for potential laboratory analysis and one for field screening. Samples for potential laboratory analysis were placed in laboratory-cleaned, glass sample containers fitted with Teflon<sup>®</sup>-lined lids. U.S. EPA-approved sampling procedures were followed to ensure sample integrity.

Soil samples collected for field screening were placed in dedicated, resealable plastic bags and screened on-site using a field photoionization detector (PID) to preliminarily assess the samples for the presence of total organic vapors. PID screening was conducted for each sample following the accumulation of headspace vapor from the sample in the sealed plastic bag. No significantly elevated PID readings were detected in any of the soil borings. PID readings were generally less than 5 ppm. A slightly elevated PID reading of 22.4 per million (ppm), greenish-gray stained soils, and petroleum odors were noted at soil boring MW-5 from 24 to 26 feet bgs. Petroleum odors were also observed in the groundwater at MW-3, MW-5, and MW-6 (approximately 28 to 29 feet bgs).

Faint sweet or petroleum odors were also noted in soil borings GP-1 and GP-13 from approximately 0 to 2 feet bgs; however, no contaminant staining or elevated PID readings were noted in these borings. Additionally, coal and/or coal ash was observed in borings GP-5 through GP-9, GP-11, GP-16, GP-22, GP-24, GP-26, GP-27 through GP-32, GP-41, GP-43 and GP-47. The PID readings and field observations are included on the soil boring logs in Appendix B.

Soil samples were selected for laboratory analysis from select soil borings from the depth intervals that appeared most likely to be impacted based on the field screening results, the site's geologic characteristics and the potential source of impact. Generally, one soil sample from each soil boring was submitted for laboratory analysis. Based on proximity to other representative soil borings within the targeted areas of concern and/or the absence of field observations of possible impacts, soil samples were not collected for laboratory analysis from some soil borings. Forty soil samples were selected for laboratory analysis. At least one soil sample was analyzed from each REC area.

Selected soil samples were delivered under chain-of-custody protocol to the laboratory in ice-cooled containers.

### **2.3 Groundwater Sampling**

Groundwater was encountered in the six deep Phase II ESA borings (MW-1 through MW-6) at depths between approximately 25.5 and 29 feet bgs. A two-inch diameter temporary monitoring well, constructed with a five-foot long screen, was placed in each of these soil borings upon completion and allowed to fill with water. A clear, dedicated disposable bailer was used to collect the groundwater samples from each the temporary wells. Prior to collection of the groundwater samples, each temporary monitoring well was purged of approximately three well volumes of groundwater. Due to the unnatural turbidity of groundwater samples collected from temporary monitoring wells, even after purging the well, the portion of each groundwater sample that was collected for metals analysis was filtered prior to acid preservation.

The groundwater samples were delivered under chain-of-custody protocol to the laboratory in ice-cooled containers.

Following the completion of the soil and groundwater sampling, the temporary wells were removed and the soil borings filled with a combination of soil cuttings and bentonite clay chips, with the surface patched with materials to match the surrounding surface material.

### 3.0 ANALYTICAL RESULTS

Summit Scientific, a National Environmental Laboratory Accreditation Conference (NELAC) certified laboratory, performed the laboratory analyses. The analytical parameters and methods were selected by TTL based on the potential contaminants associated with the RECs.

A total of 40 soil samples and 6 groundwater samples were analyzed as follows:

- Soil samples collected to assess former gasoline stations and gasoline storage areas (GP-5, GP-6, GP-8, GP-9, GP-10, GP-11, GP-16, GP-21 and MW-5) were analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons gasoline range organics (TPH GRO) and lead. The soil sample collected from GP-5 was also analyzed for polynuclear aromatic hydrocarbons (PAHs) Resource Conservation and Recovery Act (RCRA) metals to assess possible impacts associated with coal ash found in this boring.
- Soil samples collected to assess former paint shop areas (GP-22, GP-43 and GP-44) were analyzed for VOCs and RCRA metals.
- Soil samples collected to assess former coal storage areas (GP-18, GP-26, GP-27, GP-28, GP-29, GP-30, GP-31, GP-32 and GP-33) were analyzed for PAHs and RCRA metals.
- Soil samples collected to assess the current/former automobile repair operations and the former salvage lot (GP-1, GP-2, GP-13, GP-14, GP-15, GP-40 and GP-41) were analyzed for VOCs, TPH GRO, TPH diesel range organics (TPH DRO), TPH oil range organics (TPH ORO), PAHs, and RCRA metals.
- Soil samples collected to assess former oil storage areas (GP-4 and GP-24), were analyzed for VOCs and PAHs.
- Soil samples collected to assess the former small arms firing range (GP-34, GP-35, GP-36, GP-37, GP-38 and GP-39) were analyzed for lead.
- Soil samples collected to assess for potential impacts in the possible early acquisition areas (GP-50, GP-51, GP-53 and GP-55, and the soil berm) were analyzed for VOCs, PAHs and RCRA metals.
- The groundwater samples were all analyzed for VOCs, TPH GRO, PAHs and RCRA metals. The groundwater sample collected from MW-3 was also analyzed for TPH DRO and TPH ORO.

Copies of the laboratory analytical reports and the chain-of-custody records are included as Appendix C. Analytical methods are specified in the laboratory reports.

#### 3.1 Soil Sample Results

Table 1.0 summarizes the laboratory analytical results for the soil samples. The table also includes the Colorado Department of Public Health and Environment (CDPHE) Hazardous Materials and Waste Management Division Soil Screening Values and the Colorado OPS Screening Levels for

TPH. The following is a summary of the soil laboratory analytical results:

- Petroleum VOCs (ethylbenzene and/or xylenes) were detected in the soil samples collected from soil borings GP-1 and GP-16, at very low concentrations (all less than 0.1 ppm), well below the CDPHE Soil Screening Values. VOCs were not detected in any of the other soil samples.
- PAHs were detected at very low concentrations (all less than 0.05 ppm) in soil samples collected from soil borings GP-1, GP-2, GP-13, GP-14, GP-15, GP-18, GP-26, GP-27, GP-29, GP-30, GP-31, GP-32, GP-33, GP-40, GP-41, GP-50, GP-51, GP-53, and the soil sample collected from the berm. All identified PAH concentrations were well below the CDPHE Soil Screening Values.
- TPH GRO was detected at a low concentration (less than 1.0 ppm) in the soil sample collected from soil boring GP-1, below the Colorado OPS Screening Level.
- TPH DRO and TPH ORO were detected at in the soil samples collected from soil borings GP-1, GP-2, GP-13, GP-14 and GP-15. TPH DRO and TPH ORO were detected in soil sample GP-14 (0'-2') at concentrations above the Colorado OPS Soil Screening Level (500 ppm) that triggers the requirement for PAH analysis. However, the PAH analysis of this sample did not identify any PAHs above the CDPHE Soil Screening Values.
- Arsenic, barium, cadmium, chromium, mercury, selenium, silver and/or lead, all naturally occurring in soil, were generally detected at low concentrations in the Phase II ESA soil samples. With the exception of arsenic, all of these metals were detected at concentrations below the CDPHE Soil Screening Levels. Arsenic was identified in several of the soil samples at low concentrations (all less than 1.5 ppm), but slightly above the CDPHE Residential Soil Screening Value (0.68 ppm). All of the detected arsenic concentrations are below the CDPHE Industrial Soil Screening Value (3.0 ppm).

According to the CDPHE Risk Management Guidance for Evaluating Arsenic Concentrations in Soil (July 2014), a study conducted on behalf of the U.S. EPA Region 8 evaluated background concentrations of arsenic in Colorado soils. The study included the collection of 2,700 soil samples from various locations (included native grasslands, agricultural, urban mixed land use, and mining areas) in 44 counties throughout Colorado to access naturally occurring arsenic conditions in soil. Although published as reference values, the results of the study provide an indication of typical naturally occurring arsenic levels that can be found in Colorado soils. The average 95% upper confidence limit arsenic concentration in Colorado soil was found to be 11 ppm.

The July 2014 CDPHE Risk Management Guidance indicates CDPHE generally considers arsenic concentrations at or below 11 ppm to be acceptable. The arsenic concentrations identified in the Phase II ESA soil samples (maximum detected concentration was 1.48 ppm) are all well below 11 ppm.

### 3.2 Groundwater Sample Results

Table 2.0 summarizes the laboratory analytical results for the groundwater samples. The table also includes the Colorado Water Quality Commission Groundwater Quality Standards (GWQS). The following is a summary of the groundwater laboratory analytical results:

- VOCs were detected at low concentrations in the groundwater sample collected from temporary monitoring well MW-3. Methylene chloride, a common laboratory contaminant, was detected in this sample in excess of the GWQS. Although not detected in the laboratory quality control samples, it is suspected that the methylene chloride detected in this sample may be due to the laboratory contamination. All of the other VOCs detected in the groundwater sample MW-3 are petroleum VOCs and were found below the GWQS. No VOCs were detected in the remaining groundwater samples.
- PAHs were detected at low concentrations in the groundwater sample collected from temporary monitoring well MW-3, but below the GWQS. No PAHs were detected in the remaining groundwater samples.
- TPH GRO and TPH DRO were detected in the groundwater sample collected from temporary monitoring well MW-3. There are no GWQS for TPH GRO or TPH DRO. TPH GRO was not detected in the remaining groundwater samples.
- Metals including arsenic, barium, cadmium, chromium, lead and/or selenium were detected at low concentrations in each of the groundwater samples. All of these metals can occur naturally in groundwater. None of these metals were detected in excess of the GWQS.

## 4.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

TTL conducted a subsurface investigation in August and September 2017 to assess the site for potential impacts from the RECs identified in the May 2017 Phase I ESA. This section provides a summary of the findings and conclusions based on the data obtained during the Phase II ESA.

### 4.1 Findings

The findings of this Phase II ESA are summarized as follows:

- No geophysical anomalies indicative of abandoned USTs were identified in the vicinity of the former on-site gasoline stations (Buildings 119 and 180), the former gasoline tank areas (Areas 155 and BB), the current vehicle maintenance building (Building 64), or the former vehicle maintenance building (Building 69).
- A GPR anomaly interpreted to be a likely backfilled basement was identified in the southeastern portion of the site, east of Stuart Street. Exposed concrete and building debris at the ground surface was also noted in this area. No geophysical anomalies indicative of demolition debris backfilled basement or foundation areas were identified in the north-central portion of the site (west and east of Building 69), where former buildings were reported or suspected to have contained basements, had been located.
- The site stratigraphy encountered generally consisted of silty sand from the ground surface to depths ranging from approximately 1.0 to 8 feet bgs. At many soil boring locations, the upper portion of the silty sand layer (generally less than 3 feet bgs but deeper in some areas) contained gravel, coal fragments, and/or coal ash, and appeared to be previously graded/disturbed soil. The silty sand is generally underlain by silty clay that extends to the top of bedrock (sandy claystone), which is present at depths ranging from 4 to more than 25 feet bgs. In some borings, silt and/or gravelly sand intervals were encountered within the clay layer, beneath the silty sand, and/or between the clay and bedrock. The soils above the bedrock contained varying amounts of weathered sandy claystone. Groundwater was encountered at deep soil borings MW-1 through MW-6 at depths ranging from approximately 25.5 to 29 feet bgs.
- A slightly elevated PID reading of 22.4 ppm, greenish-gray stained soils, and petroleum odors were noted at soil boring MW-5 from 24 to 26 feet bgs. Petroleum odors were also observed in the groundwater at MW-3, MW-5, and MW-6. Faint sweet or petroleum odors were also noted in soil borings GP-1 and GP-13 from approximately 0 to 2 feet bgs; however, no contaminant staining or elevated PID readings were noted in these borings. No unusual odors, obvious contaminant staining, or elevated PID readings were identified in the remaining soil borings.
- Petroleum VOCs were detected in only the soil samples collected from soil borings GP-1 and GP-16, at very low concentrations (all less than 0.1 ppm). PAHs were also detected at very low concentrations (all less than 0.05 ppm) in soil samples collected from soil borings GP-1, GP-2, GP-13, GP-14, GP-15, GP-18, GP-26, GP-27, GP-29, GP-30, GP-31, GP-32,

GP-33, GP-40, GP-41, GP-50, GP-51, GP-53, and the soil sample collected from the berm. All identified VOC and PAH concentrations were below the CDPHE Soil Screening Values.

- TPH GRO, TPH DRO and/or TPH ORO were detected in the soil samples collected from soil borings GP-1, GP-2, GP-13, GP-14 and GP-15. TPH DRO was detected in soil at GP-14 at concentrations above the Colorado OPS Soil Screening Level that triggers the requirement for PAH analysis. However, the PAH analysis of this sample did not identify PAHs above the CDPHE Soil Screening Values. All remaining TPH concentrations were below the Colorado OPS Soil Screening Levels.
- Barium, cadmium, chromium, mercury, selenium, silver and/or lead, all naturally occurring in soil, were detected in the Phase II ESA soil samples at concentrations below the CDPHE Soil Screening Values. Arsenic was identified in several of the soil samples at consistently low concentrations, slightly above the CDPHE Residential Soil Screening Value (0.68 ppm), but below the CDPHE Industrial Soil Screening Value (3.0 ppm). Based on the data provided in the CDPHE Risk Management Guidance for Evaluating Arsenic Concentrations in Soil (July 2014), the arsenic concentrations identified in soil samples are typical of naturally occurring levels in Colorado soils (up to 11 ppm).
- VOCs, PAHs, TPH GRO, TPH DRO were detected in the groundwater sample collected from temporary monitoring well MW-3. Methylene chloride, the only non-petroleum compound detected and a very common laboratory contaminant, was the only compound detected in excess of the GWQS. Although not detected in the laboratory quality control samples, it is suspected that the methylene chloride detected in this sample may be due to laboratory contamination. VOCs, PAHs and TPH GRO were not detected in any of the other groundwater samples.
- Metals including arsenic, barium, cadmium, chromium, lead and/or selenium were detected at low concentrations in each of the groundwater samples, all below the GWQS.

## 4.2 Conclusions

Based on the results of the geophysical survey, it does not appear that abandoned USTs remain in the vicinity of the former on-site gasoline station buildings (Buildings 119 and 180), former gasoline tank areas (Areas 155 and BB), and the current vehicle maintenance building (Building 64), or the former vehicle maintenance building (Building 69). No abandoned USTs are suspected to remain at the site. Site representatives indicated that demolished buildings on the Fort Logan campus (off-site to the east) were backfilled into basement areas and the demolition debris fill had tested positive for asbestos. Numerous buildings were formerly located on the site. Little or no information was available regarding their construction (whether they had basements) or their demolition. Based on the presence of concrete building slabs in many of the former building locations, it appears that many of the buildings were built slab-on-grade. The locations of former buildings that were reported or suspected to have contained basements (east and west of Building 69 and in the southeastern portion of the site) were assessed during the geophysical survey. Evidence of a basement filled with demolition debris was identified in the southeastern portion of the site. No evidence of demolition debris filled basements was identified in the area near Building 69.

Although a comprehensive evaluation of the former buildings was not conducted, it appears that most former on-site buildings either did not have basements or did not have demolition debris filled basements. However, some demolition debris filled basements, such as the building in the southeastern portion of the site, may be present. The nature of the demolition debris in this basement is unknown, however, concrete and other building debris was observed at the ground surface in this area.

Based on the Phase II ESA field observations and analytical results, it appears that current and the historical site operations have had only minor impact on site soil. TPH DRO and TPH ORO were identified in shallow soil near the discharge pipe located southeast of Building 64 (GP-14), in excess of the Colorado OPS Screening Levels (500 ppm) that triggers PAH analysis, but no PAHs were detected in this sample in excess of the CDPHE Soil Screening Values. None of the 40 soil samples collected from the site were found to contain contaminants in excess of the CDPHE Soil Screening Values.

At many soil boring locations, the upper soils (generally less than 3 feet bgs, but deeper in some area) contained gravel, coal fragments and/or coal ash and appeared to be previously disturbed/graded soil. Based on the widespread use of coal for heating the former buildings, residual coal and/or coal ash is likely present in other areas of the site. Construction debris (concrete, asphalt, etc.) was also observed at the ground surface in many areas. PAHs and slightly elevated metals concentrations were noted in soil samples that contained coal/coal ash, but were not detected in excess of the CDPHE Soil Screening Values.

Field observations of petroleum impacted groundwater were observed in MW-3 and MW-6 (located near former gasoline station Building 119) and MW-5 (located southwest of former Building 119, between Building 119 and former gasoline station Building 180). Groundwater was found at a depth of approximately 26 to 29 feet at these locations, within the weathered sandy claystone bedrock. Based on these field observations, it appears that one or both of these former gasoline stations has impacted site groundwater. However, only minor petroleum impacts were identified in the groundwater samples collected from these locations, only in the sample collected from MW-3 and all below the GWQS. Based on the depth of the groundwater, the analytical results for the groundwater samples, and the planned use of the municipal water supply, the minor impacts identified in the groundwater does not appear to pose a significant risk.

### **4.3 Recommendations**

TTL recommends no further site investigation at this time.

Shallow soil at the site contains coal, coal ash and some construction debris. Although no soil impacts in excess of the CDPHE Soil Screening Values were identified, localized area of impacted soil may be present. Soil excavated from the site during cemetery development should be properly managed. Excess soil that cannot be reused on-site, if any, should be characterized prior to off-site disposal.

A former building basement that appears to have been filled with demolition debris was identified in the southeastern portion of the site. Although none are known at this time, other former buildings

with basements filled with demolition debris may also be present at the site. Any non-soil materials excavated from the site during site redevelopment should be properly managed and disposed of.

## **TABLES**

**TABLE 1.0**  
**SOIL ANALYTICAL DATA (mg/kg)**  
**TTL Project Number 14955.03**  
**Fort Logan National Cemetery Expansion**  
**Denver, Colorado**

Sample Location	GP-1	GP-2	GP-4	GP-5	GP-6	GP-8	GP-10	GP-11	GP-13	GP-14	CDPHE Hazardous Materials and Waste Management Division Soil Screening Values		
	Bldg 69	Bldg 69	Area 69B	Bldg 119	Bldg 119	Bldg 180	Bldg 180	Bldg 180	Bldg 64	Bldg 64	Residential Soil	Industrial Soil	Groundwater Protection
Sample Depth	0'-2.5'	0'-2.5'	2.5'-5'	4'-6'	6'-8'	1'-3'	6'-7.5'	17'-19'	0.5'-2.5'	0'-2'			
Date Sampled	09/18/17	09/18/17	09/18/17	09/18/17	09/18/17	09/19/17	09/19/17	09/19/17	09/19/17	09/19/17			
	Conc.	Conc.											
<b>Volatiles Organic Compounds (VOCs)</b>													
Ethylbenzene	0.010	ND	ND	5.8	25	100							
Naphthalene	ND	ND	3.8	17	23								
Xylenes	0.025	ND	ND	580	2,500	75							
Other VOCs	ND	ND	Various	Various	Various								
<b>Polynuclear Aromatic Hydrocarbons (PAHs)</b>													
Acenaphthene	ND	0.00222	ND	ND	NT	NT	NT	NT	ND	ND	3,600	45,000	1,000
Acenaphthylene	ND	ND	ND	ND	NT	NT	NT	NT	ND	ND	No SV	No SV	No SV
Anthracene	ND	0.00346	ND	ND	NT	NT	NT	NT	ND	0.00587	18,000	230,000	1,000
Benzo(a)anthracene	0.00807	0.0151	ND	ND	NT	NT	NT	NT	0.0108	0.0081	1.1	21	1,000
Benzo(b)fluoranthene	0.0223	0.0238	ND	ND	NT	NT	NT	NT	0.0215	0.0127	1.1	21	1,000
Benzo(k)fluoranthene	0.00846	0.00976	ND	ND	NT	NT	NT	NT	0.00754	0.00473	11	210	1,000
Benzo(g,h,i) perylene	0.0446	0.00501	ND	ND	NT	NT	NT	NT	0.0264	0.0632	No SV	No SV	No SV
Benzo(a)pyrene	0.0115	0.0153	ND	ND	NT	NT	NT	NT	0.0133	0.0099	0.11	2.1	1,000
Chrysene	0.0179	0.0163	ND	ND	NT	NT	NT	NT	0.0195	0.0099	110	2,100	1,000
Dibenzo(a,h)anthracene	ND	ND	ND	ND	NT	NT	NT	NT	ND	ND	0.11	2.1	1,000
Fluoranthene	0.00942	0.0224	ND	ND	NT	NT	NT	NT	0.0124	0.00558	2,400	30,000	1,000
Fluorene	ND	ND	ND	ND	NT	NT	NT	NT	ND	ND	2,400	30,000	1,000
Indeno (1,2,3-cd)pyrene	0.018	0.00502	ND	ND	NT	NT	NT	NT	0.0133	0.0208	1.1	21	1,000
Naphthalene	NT	NT	3.8	17	23								
Phenanthrene	0.00621	0.0138	ND	ND	NT	NT	NT	NT	0.00777	0.0078	No SV	No SV	No SV
Pyrene	0.0446	0.223	ND	ND	NT	NT	NT	NT	0.0484	0.0346	1,800	23,000	1,000
<b>Total Petroleum Hydrocarbons (TPHs)</b>													
Gasoline Range Organics (GRO) (C1-C10)	0.93	ND	NT	ND	ND	ND	ND	ND	ND	ND	500**	500**	500**
Diesel Range Organics (DRO) (C10-C28)	160	100	NT	NT	NT	NT	NT	NT	81	1,300	500**	500**	500**
Oil Range Organics (ORO) (C28-C36)	310	74	NT	NT	NT	NT	NT	NT	130	720	500**	500**	500**
<b>Metals</b>													
Arsenic	0.466	0.742	NT	0.926	NT	NT	NT	NT	1.18	0.634	0.68	3	No SV
Barium	99.3	124	NT	155	NT	NT	NT	NT	256	113	15,000	220,000	No SV
Cadmium	1.12	0.398	NT	0.218	NT	NT	NT	NT	0.48	2.57	71	980	No SV
Chromium (total)*	10.9	9.46	NT	14.1	NT	NT	NT	NT	13.4	18.8	120,000	1,800,000	No SV
Lead	60.7	18.1	NT	10.7	12.6	318	12.8	6.26	92	142	400	800	No SV
Selenium	ND	ND	NT	ND	NT	NT	NT	NT	ND	ND	390	5,800	No SV
Silver	ND	0.15	NT	ND	NT	NT	NT	NT	0.316	0.137	390	5,800	No SV
Mercury	ND	ND	NT	ND	NT	NT	NT	NT	ND	ND	11	46	No SV

All concentrations are reported in milligrams per kilogram (mg/kg), parts per million (ppm)

No SV = No CDPHE Screening Value.

ND = Not detected.

NT = Sample not tested for this parameter.

\*Analytical results reported for total chromium, SVs based on trivalent chromium (most common form) where no total chromium SVs are available.

\*\*Colorado Division of Oil & Public Safety Screening Level requiring PAH analysis.

**TABLE 1.0 (Continued)**  
**SOIL ANALYTICAL DATA (mg/kg)**  
**TTL Project Number 14955.03**  
**Fort Logan National Cemetery Expansion**  
**Denver, Colorado**

Sample Location	GP-15	GP-16	GP-18	GP-21	GP-22	GP-24	GP-26	GP-27	GP-28	GP-29	CDPHE Hazardious Materials and Waste Management Division Soil Screening Values		
	Bldg 64	Area BB	Area 58	Area 155	Bldg 37	Bldg 82	Area 111	Area 111	Coal Yard	Coal Yard	Residential Soil	Industrial Soil	Groundwater Protection
Sample Depth	1'-2'	1'-3'	0'-2'	0'-2'	0'-2'	0'-2'	2'-4'	2'-4'	0'-2'	0'-2'			
Date Sampled	09/19/17	09/20/17	09/20/17	09/20/17	09/20/17	09/20/17	09/20/17	09/20/17	09/21/17	09/21/17			
	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.			
<b>Volatile Organic Compounds (VOCs)</b>													
Ethylbenzene	ND	ND	NT	ND	ND	ND	NT	NT	NT	NT	5.8	25	100
Naphthalene	ND	ND	NT	ND	ND	ND	NT	NT	NT	NT	3.8	17	23
Xylenes	ND	<b>0.037</b>	NT	ND	ND	ND	NT	NT	NT	NT	580	2,500	75
Other VOCs	ND	ND	NT	ND	ND	ND	NT	NT	NT	NT	Various	Various	Various
<b>Polynuclear Aromatic Hydrocarbons (PAHs)</b>													
Acenaphthene	ND	NT	ND	NT	NT	ND	ND	ND	ND	ND	3,600	45,000	1,000
Acenaphthylene	ND	NT	ND	NT	NT	ND	<b>0.0217</b>	<b>0.012</b>	ND	ND	No SV	No SV	No SV
Anthracene	<b>0.00182</b>	NT	<b>0.00246</b>	NT	NT	ND	<b>0.0145</b>	<b>0.0096</b>	ND	ND	18,000	230,000	1,000
Benzo(a)anthracene	<b>0.0191</b>	NT	<b>0.0131</b>	NT	NT	ND	<b>0.0285</b>	<b>0.0221</b>	ND	<b>0.00358</b>	1.1	21	1,000
Benzo(b)fluoranthene	<b>0.333</b>	NT	<b>0.0325</b>	NT	NT	ND	<b>0.0823</b>	<b>0.0947</b>	ND	<b>0.00994</b>	1.1	21	1,000
Benzo(k)fluoranthene	<b>0.0126</b>	NT	<b>0.0112</b>	NT	NT	ND	<b>0.0238</b>	<b>0.0294</b>	ND	<b>0.00326</b>	11	210	1,000
Benzo(g,h,i) perylene	<b>0.00603</b>	NT	<b>0.0158</b>	NT	NT	ND	<b>0.0239</b>	<b>0.0247</b>	ND	ND	No SV	No SV	No SV
Benzo(a)pyrene	<b>0.0207</b>	NT	<b>0.0137</b>	NT	NT	ND	<b>0.0409</b>	<b>0.0499</b>	ND	<b>0.00354</b>	0.11	2.1	1,000
Chrysene	<b>0.0236</b>	NT	<b>0.0185</b>	NT	NT	ND	<b>0.0498</b>	<b>0.0363</b>	ND	<b>0.00651</b>	110	2,100	1,000
Dibenzo(a,h)anthracene	ND	NT	ND	NT	NT	ND	ND	<b>0.00634</b>	ND	ND	0.11	2.1	1,000
Fluoranthene	<b>0.0267</b>	NT	<b>0.0179</b>	NT	NT	ND	<b>0.0279</b>	<b>0.0165</b>	ND	<b>0.00768</b>	2,400	30,000	1,000
Fluorene	ND	NT	ND	NT	NT	ND	<b>0.00273</b>	ND	ND	ND	2,400	30,000	1,000
Indeno (1,2,3-cd)pyrene	<b>0.00541</b>	NT	<b>0.00786</b>	NT	NT	ND	<b>0.016</b>	<b>0.0166</b>	ND	ND	1.1	21	1,000
Naphthalene	NT	NT	<b>0.00517</b>	NT	NT	NT	<b>0.0344</b>	<b>0.0209</b>	ND	<b>0.00969</b>	3.8	17	23
Phenanthrene	<b>0.0098</b>	NT	<b>0.016</b>	NT	NT	ND	<b>0.058</b>	<b>0.0324</b>	ND	<b>0.011</b>	No SV	No SV	No SV
Pyrene	<b>0.0317</b>	NT	<b>0.0404</b>	NT	NT	ND	<b>0.0444</b>	<b>0.0273</b>	ND	<b>0.0121</b>	1,800	23,000	1,000
<b>Total Petroleum Hydrocarbons (TPHs)</b>													
Gasoline Range Organics (GRO) (C1-C10)	ND	ND	NT	ND	NT	NT	NT	NT	NT	NT	500**	500**	500**
Diesel Range Organics (DRO) (C10-C28)	<b>68</b>	NT	NT	NT	NT	NT	NT	NT	NT	NT	500**	500**	500**
Oil Range Organics (ORO) (C28-C36)	<b>64</b>	NT	NT	NT	NT	NT	NT	NT	NT	NT	500**	500**	500**
<b>Metals</b>													
Arsenic	<b>0.669</b>	NT	<b>1.48</b>	NT	<b>0.885</b>	NT	<b>0.977</b>	<b>0.788</b>	<b>1.22</b>	<b>1.18</b>	0.68	3	No SV
Barium	<b>109</b>	NT	<b>186</b>	NT	<b>147</b>	NT	<b>267</b>	<b>386</b>	<b>196</b>	<b>183</b>	15,000	220,000	No SV
Cadmium	<b>0.38</b>	NT	<b>2.01</b>	NT	<b>0.375</b>	NT	<b>0.199</b>	<b>0.227</b>	<b>0.25</b>	<b>0.274</b>	71	980	No SV
Chromium (total)*	<b>10.8</b>	NT	<b>14.7</b>	NT	<b>7.55</b>	NT	<b>5.94</b>	<b>5.01</b>	<b>11.5</b>	<b>9.93</b>	120,000	1,800,000	No SV
Lead	<b>29.8</b>	<b>18.4</b>	<b>116</b>	<b>35.2</b>	<b>71.3</b>	NT	<b>23.1</b>	<b>41</b>	<b>10.4</b>	<b>13.8</b>	400	800	No SV
Selenium	ND	NT	ND	NT	ND	NT	ND	<b>0.43</b>	ND	ND	390	5,800	No SV
Silver	<b>0.165</b>	NT	<b>0.108</b>	NT	<b>0.243</b>	NT	ND	ND	ND	ND	390	5,800	No SV
Mercury	ND	NT	<b>0.056</b>	NT	<b>0.204</b>	NT	ND	ND	ND	ND	11	46	No SV

All concentrations are reported in milligrams per kilogram (mg/kg), parts per million (ppm)

No SV = No CDPHE Screening Value.

ND = Not detected.

NT = Sample not tested for this parameter.

\*Analytical results reported for total chromium, SVs based on trivalent chromium (most common form) where no total chromium SVs are available.

\*\*Colorado Division of Oil & Public Safety Screening Level requiring PAH analysis.

**TABLE 1.0 (Continued)**  
**SOIL ANALYTICAL DATA (mg/kg)**  
**TTL Project Number 14955.03**  
**Fort Logan National Cemetery Expansion**  
**Denver, Colorado**

Sample Location	GP-30	GP-31	GP-32	GP-33	GP-34	GP-35	GP-36	GP-37	GP-38	GP-39	CDPHE Hazardious Materials and Waste Management Division Soil Screening Values		
	Coal Yard	Coal Yard	Coal Yard	Coal Yard	Gun Range	Residential Soil	Industrial Soil	Groundwater Protection					
Sample Depth	0'-2'	0'-2'	0'-2'	0'-2'	0'-2'	0'-2'	0'-2'	0'-2'	0'-2'	0'-2'			
Date Sampled	09/21/17	09/21/17	09/21/17	09/21/17	09/21/17	09/21/17	09/21/17	09/21/17	09/21/17	09/21/17			
	Conc.												
<b>Volatile Organic Compounds (VOCs)</b>													
Ethylbenzene	NT	5.8	25	100									
Naphthalene	NT	3.8	17	23									
Xylenes	NT	580	2,500	75									
Other VOCs	NT	Various	Various	Various									
<b>Polynuclear Aromatic Hydrocarbons (PAHs)</b>													
Acenaphthene	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	3,600	45,000	1,000
Acenaphthylene	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	No SV	No SV	No SV
Anthracene	ND	ND	0.00224	ND	NT	NT	NT	NT	NT	NT	18,000	230,000	1,000
Benzo(a)anthracene	0.00367	0.0113	0.00904	0.00698	NT	NT	NT	NT	NT	NT	1.1	21	1,000
Benzo(b)fluoranthene	0.0102	0.0357	0.0176	0.0366	NT	NT	NT	NT	NT	NT	1.1	21	1,000
Benzo(k)fluoranthene	0.00271	0.0116	0.00633	0.012	NT	NT	NT	NT	NT	NT	11	210	1,000
Benzo(g,h,i) perylene	ND	0.00503	0.00309	0.00535	NT	NT	NT	NT	NT	NT	No SV	No SV	No SV
Benzo(a)pyrene	ND	0.0119	0.00916	0.0145	NT	NT	NT	NT	NT	NT	0.11	2.1	1,000
Chrysene	0.00735	0.0213	0.00886	0.0168	NT	NT	NT	NT	NT	NT	110	2,100	1,000
Dibenzo(a,h)anthracene	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	0.11	2.1	1,000
Fluoranthene	0.00848	0.0269	0.0177	0.0222	NT	NT	NT	NT	NT	NT	2,400	30,000	1,000
Fluorene	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	2,400	30,000	1,000
Indeno (1,2,3-cd)pyrene	ND	0.00519	0.00273	0.00503	NT	NT	NT	NT	NT	NT	1.1	21	1,000
Naphthalene	0.0188	0.0146	0.0026	ND	NT	NT	NT	NT	NT	NT	3.8	17	23
Phenanthrene	0.0125	0.0167	0.00866	0.00767	NT	NT	NT	NT	NT	NT	No SV	No SV	No SV
Pyrene	0.0120	0.0414	0.0271	0.0284	NT	NT	NT	NT	NT	NT	1,800	23,000	1,000
<b>Total Petroleum Hydrocarbons (TPHs)</b>													
Gasoline Range Organics (GRO) (C1-C10)	NT	500**	500**	500**									
Diesel Range Organics (DRO) (C10-C28)	NT	500**	500**	500**									
Oil Range Organics (ORO) (C28-C36)	NT	500**	500**	500**									
<b>Metals</b>													
Arsenic	0.643	1.05	1.34	1.37	NT	NT	NT	NT	NT	NT	0.68	3	N/A
Barium	117	167	175	199	NT	NT	NT	NT	NT	NT	15,000	220,000	N/A
Cadmium	0.147	0.201	0.242	0.403	NT	NT	NT	NT	NT	NT	71	980	N/A
Chromium (total)*	6.11	3.92	13.5	10.4	NT	NT	NT	NT	NT	NT	120,000	1,800,000	N/A
Lead	9.93	8.95	14.2	23.4	10.1	54.3	24	7.67	9.43	11.9	400	800	N/A
Selenium	ND	0.595	ND	ND	NT	NT	NT	NT	NT	NT	390	5,800	N/A
Silver	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	390	5,800	N/A
Mercury	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	11	46	N/A

All concentrations are reported in milligrams per kilogram (mg/kg), parts per million (ppm)

No SV = No CDPHE Screening Value.

ND = Not detected.

NT = Sample not tested for this parameter.

\*Analytical results reported for total chromium, SVs based on trivalent chromium (most common form) where no total chromium SVs are available.

\*\*Colorado Division of Oil & Public Safety Screening Level requiring PAH analysis.

**TABLE 1.0 (Continued)**  
**SOIL ANALYTICAL DATA (mg/kg)**  
**TTL Project Number 14955.03**  
**Fort Logan National Cemetery Expansion**  
**Denver, Colorado**

Sample Location	GP-40	GP-41	GP-43	GP-44	GP-50	GP-51	GP-53	GP-55	Berm	MW-5	CDPHE Hazardous Materials and Waste Management Division Soil Screening Values		
	Salvage Lot	Salvage Lot	Bldg 190	Bldg 190	North Central	North Central	North	North	North	North Central	Residential Soil	Industrial Soil	Groundwater Protection
Sample Depth	0'-2'	0'-2'	0'-2'	0'-2'	2'-4'	1'-3'	0'-2'	0'-2'	-	24'-26'			
Date Sampled	09/22/17	09/22/17	09/22/17	09/22/17	09/22/17	09/22/17	09/22/17	09/22/17	09/25/17	09/26/17			
	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.			
<b>Volatile Organic Compounds (VOCs)</b>													
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.8	25	100
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.8	17	23
Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	580	2,500	75
Other VOCs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	Various	Various	Various
<b>Polynuclear Aromatic Hydrocarbons (PAHs)</b>													
Acenaphthene	ND	ND	NT	NT	ND	ND	ND	ND	ND	NT	3,600	45,000	1,000
Acenaphthylene	<b>0.00177</b>	ND	NT	NT	ND	ND	ND	ND	ND	NT	No SV	No SV	No SV
Anthracene	<b>0.00342</b>	<b>0.00687</b>	NT	NT	ND	ND	ND	ND	ND	NT	18,000	230,000	1,000
Benzo(a)anthracene	ND	ND	NT	NT	ND	ND	ND	ND	ND	NT	1.1	21	1,000
Benzo(b)fluoranthene	ND	ND	NT	NT	ND	ND	ND	ND	ND	NT	1.1	21	1,000
Benzo(k)fluoranthene	ND	ND	NT	NT	ND	ND	ND	ND	ND	NT	11	210	1,000
Benzo(g,h,i) perylene	<b>0.0132</b>	<b>0.0596</b>	NT	NT	ND	<b>0.00293</b>	ND	ND	<b>0.00214</b>	NT	No SV	No SV	No SV
Benzo(a)pyrene	ND	ND	NT	NT	ND	ND	ND	ND	ND	NT	0.11	2.1	1,000
Chrysene	<b>0.0396</b>	<b>0.0867</b>	NT	NT	ND	<b>0.00929</b>	<b>0.00187</b>	ND	<b>0.00416</b>	NT	110	2,100	1,000
Dibenzo(a,h)anthracene	<b>0.00356</b>	<b>0.0145</b>	NT	NT	ND	ND	ND	ND	ND	NT	0.11	2.1	1,000
Fluoranthene	<b>0.0311</b>	<b>0.045</b>	NT	NT	ND	<b>0.0182</b>	<b>0.00274</b>	ND	<b>0.00548</b>	NT	2,400	30,000	1,000
Fluorene	ND	<b>0.00218</b>	NT	NT	ND	ND	ND	ND	ND	NT	2,400	30,000	1,000
Indeno (1,2,3-cd)pyrene	ND	ND	NT	NT	ND	ND	ND	ND	ND	NT	1.1	21	1,000
Naphthalene	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	3.8	17	23
Phenanthrene	<b>0.0199</b>	<b>0.0253</b>	NT	NT	ND	<b>0.0132</b>	<b>0.00179</b>	ND	<b>0.00233</b>	NT	No SV	No SV	No SV
Pyrene	<b>0.0565</b>	<b>0.101</b>	NT	NT	<b>0.00224</b>	<b>0.0261</b>	<b>0.00386</b>	ND	<b>0.00909</b>	NT	1,800	23,000	1,000
<b>Total Petroleum Hydrocarbons (TPHs)</b>													
Gasoline Range Organics (GRO) (C1-C10)	ND	ND	NT	NT	NT	NT	NT	NT	NT	ND	500**	500**	500**
Diesel Range Organics (DRO) (C10-C28)	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	500**	500**	500**
Oil Range Organics (ORO) (C28-C36)	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	500**	500**	500**
<b>Metals</b>													
Arsenic	<b>1.02</b>	<b>1.24</b>	<b>0.939</b>	<b>0.835</b>	<b>0.808</b>	<b>0.912</b>	<b>0.983</b>	<b>0.889</b>	<b>1.25</b>	NT	0.68	3	N/A
Barium	<b>174</b>	<b>546</b>	<b>141</b>	<b>140</b>	<b>155</b>	<b>158</b>	<b>166</b>	<b>220</b>	<b>155</b>	NT	15,000	220,000	N/A
Cadmium	<b>0.512</b>	<b>0.385</b>	<b>0.181</b>	<b>0.233</b>	<b>0.21</b>	<b>0.333</b>	<b>0.301</b>	<b>0.19</b>	<b>0.425</b>	NT	71	980	N/A
Chromium (total)*	<b>7.2</b>	<b>6.1</b>	<b>8.75</b>	<b>14</b>	<b>11.7</b>	<b>11.5</b>	<b>12</b>	<b>13.6</b>	<b>13.4</b>	NT	120,000	1,800,000	N/A
Lead	<b>65.3</b>	<b>58.9</b>	<b>8.92</b>	<b>16</b>	<b>9.98</b>	<b>51.0</b>	<b>16.5</b>	<b>9.84</b>	<b>19.1</b>	NT	400	800	N/A
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	390	5,800	N/A
Silver	<b>1.27</b>	<b>0.632</b>	ND	ND	ND	ND	ND	ND	ND	NT	390	5,800	N/A
Mercury	<b>0.195</b>	<b>0.123</b>	ND	ND	ND	ND	ND	ND	ND	NT	11	46	N/A

All concentrations are reported in milligrams per kilogram (mg/kg), parts per million (ppm)

No SV = No CDPHE Screening Value.

ND = Not detected.

NT = Sample not tested for this parameter.

\*Analytical results reported for total chromium, SVs based on trivalent chromium (most common form) where no total chromium SVs are available.

\*\*Colorado Division of Oil & Public Safety Screening Level requiring PAH analysis.

**TABLE 2.0**  
**GROUNDWATER ANALYTICAL DATA (mg/L)**  
**TTL Project Number 14955.03**  
**Fort Logan National Cemetery Expansion**  
**Denver, Colorado**

Sample Location	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	Colorado Water Quality Control Commission Groundwater Quality Standards
Date Sampled	09/25/17	09/25/17	09/25/17	09/25/17	09/26/17	09/26/17	
	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	
<b>Volatile Organic Compounds (VOCs)</b>							
sec-Butylbenzene	ND	ND	<b>0.0547</b>	ND	ND	ND	No GWQS
tert-Butylbenzene	ND	ND	<b>0.00122</b>	ND	ND	ND	No GWQS
Isopropylbenzene (Cumene)	ND	ND	<b>0.0121</b>	ND	ND	ND	No GWQS
p-Isopropyltoluene	ND	ND	<b>0.0332</b>	ND	ND	ND	No GWQS
Methylene chloride	ND	ND	<b>0.0144</b>	ND	ND	ND	0.005
Naphthalene	ND	ND	<b>0.00264</b>	ND	ND	ND	0.140
n-Propylbenzene	ND	ND	<b>0.120</b>	ND	ND	ND	No GWQS
1,2,4-Trimethylbenzene	ND	ND	<b>0.0127</b>	ND	ND	ND	No GWQS
Other VOCs	ND	ND	ND	ND	ND	ND	Various
<b>Polynuclear Aromatic Hydrocarbons (PAHs)</b>							
Acenaphthene	ND	ND	<b>0.00146</b>	ND	ND	ND	0.42
Anthracene	ND	ND	<b>0.000909</b>	ND	ND	ND	2.1
Fluorene	ND	ND	<b>0.000966</b>	ND	ND	ND	0.28
Phenanthrene	ND	ND	<b>0.000915</b>	ND	ND	ND	No GWQS
Other PAHs	ND	ND	ND	ND	ND	ND	Various
<b>Total Petroleum Hydrocarbons (TPHs)</b>							
Gasoline Range Organics (GRO) (C1-C10)	ND	ND	<b>228</b>	ND	ND	ND	No GWQS
Diesel Range Organics (DRO) (C10-C28)	NT	NT	<b>5.2</b>	NT	NT	NT	No GWQS
Oil Range Organics (ORO) (C28-C36)	NT	NT	ND	NT	NT	NT	No GWQS
<b>Metals</b>							
Arsenic	<b>0.000728</b>	ND	<b>0.000861</b>	<b>0.00069</b>	ND	ND	0.01
Barium	<b>0.0183</b>	<b>0.0209</b>	<b>0.0203</b>	<b>0.0162</b>	<b>0.0122</b>	<b>0.0187</b>	2
Cadmium	ND	ND	<b>0.0000716</b>	ND	ND	<b>0.0000996</b>	0.005
Chromium (total)*	ND	<b>0.0013</b>	ND	ND	ND	ND	0.1
Lead	ND	ND	<b>0.00314</b>	ND	ND	ND	0.05
Selenium	<b>0.0139</b>	<b>0.0106</b>	<b>0.0112</b>	<b>0.0117</b>	<b>0.0119</b>	ND	0.02
Silver	ND	ND	ND	ND	ND	ND	0.05
Mercury	ND	ND	ND	ND	ND	ND	0.002

All concentrations are reported in milligrams per liter (mg/L), parts per million (ppm)

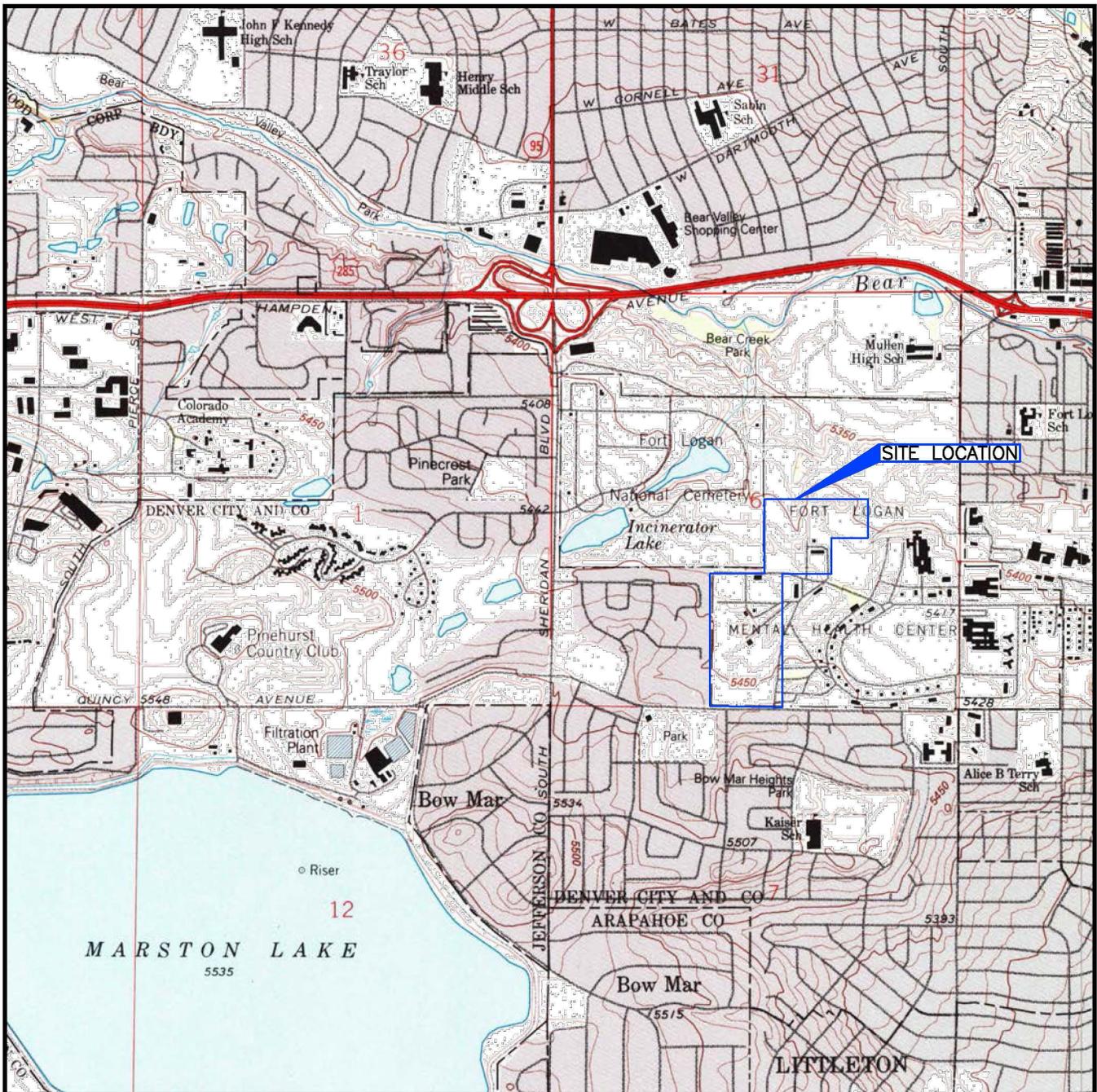
No GWQS = No Colorado Water Quality Control Commission Groundwater Quality Standard

ND = Not detected.

NT = Sample not tested for this parameter.

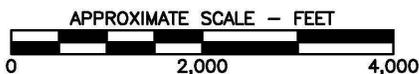
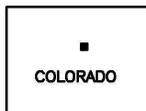
\*Analytical results reported for total chromium, GWQS based on trivalent chromium (most common form).

## FIGURES



**REFERENCE**

USGS 7.5 MIN TOPOGRAPHIC QUADRANGLE  
 DENVER, COLORADO  
 DATED 1965 PHOTOREVISED 1994  
 SCALE 1 : 24000



**FIGURE 1.0**  
**SITE LOCATION MAP**  
 PHASE II ENVIRONMENTAL SITE ASSESSMENT  
 PROPOSED FORT LOGAN NATIONAL CEMETERY EXPANSION  
 DENVER, COLORADO

PREPARED FOR  
**DEPARTMENT OF VETERANS AFFAIRS**  
**WASHINGTON, DC**

DRAWN TRR/10-17-17

CHECKED

REVISED

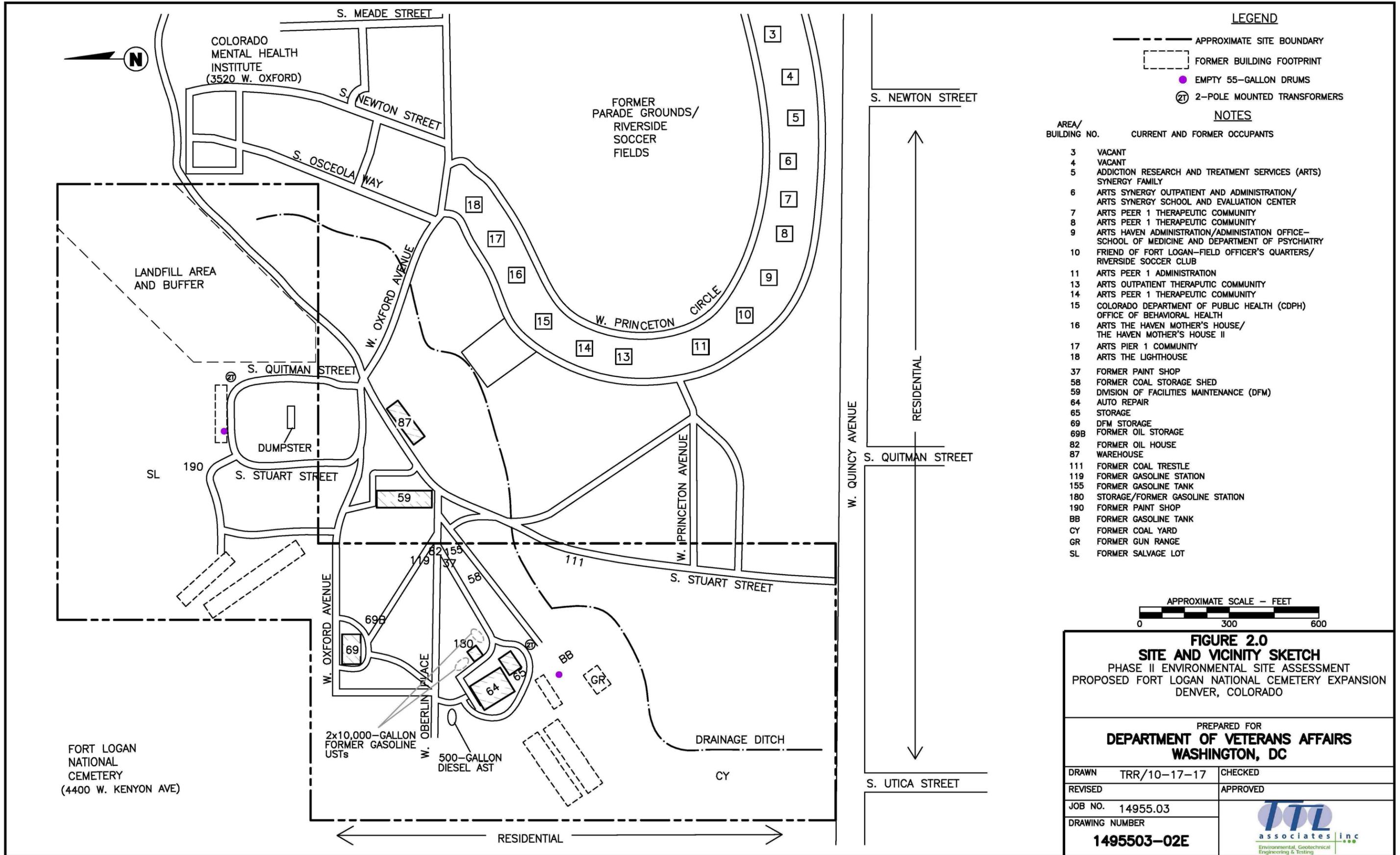
APPROVED

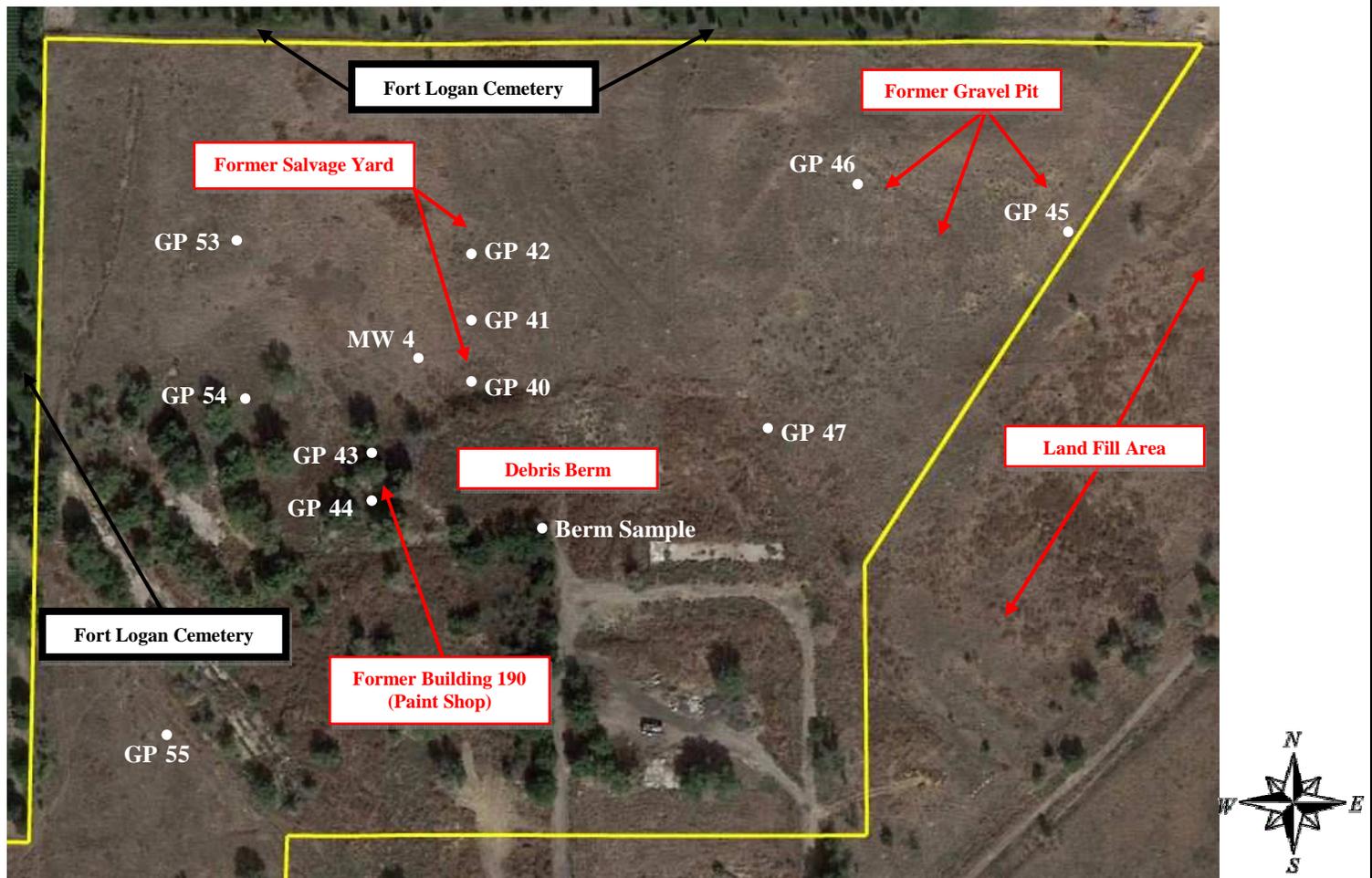
JOB NO. 14955.03

DRAWING NUMBER

**1495503-01E**







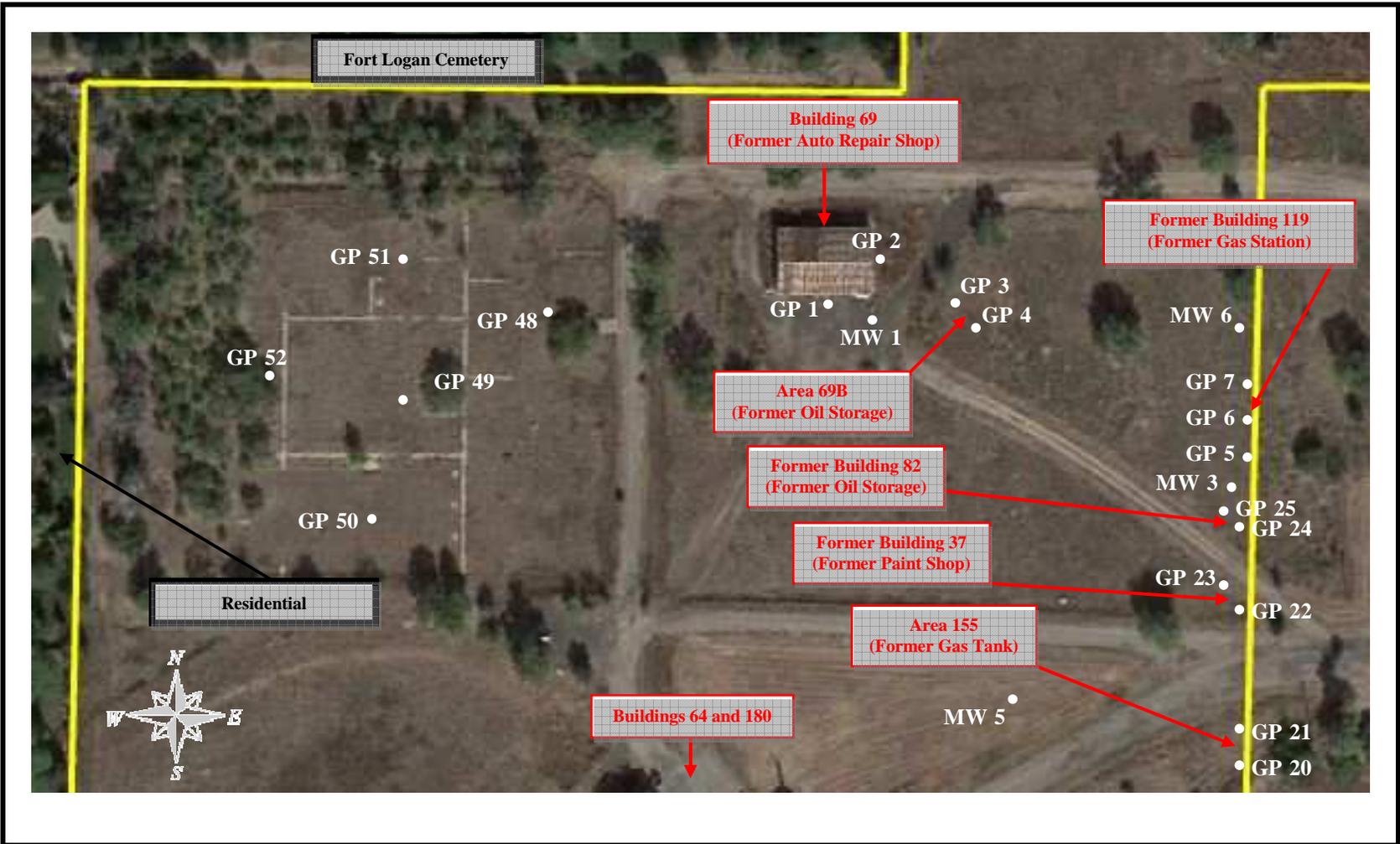
**FIGURE 3.0  
SOIL BORING LOCATIONS  
(NORTH AREA OF SITE)**

PHASE II ENVIRONMENTAL SITE ASSESSMENT  
PROPOSED FORT LOGAN NATIONAL CEMETERY EXPANSION  
DENVER, COLORADO

PREPARED FOR  
**DEPARTMENT OF VETERANS AFFAIRS  
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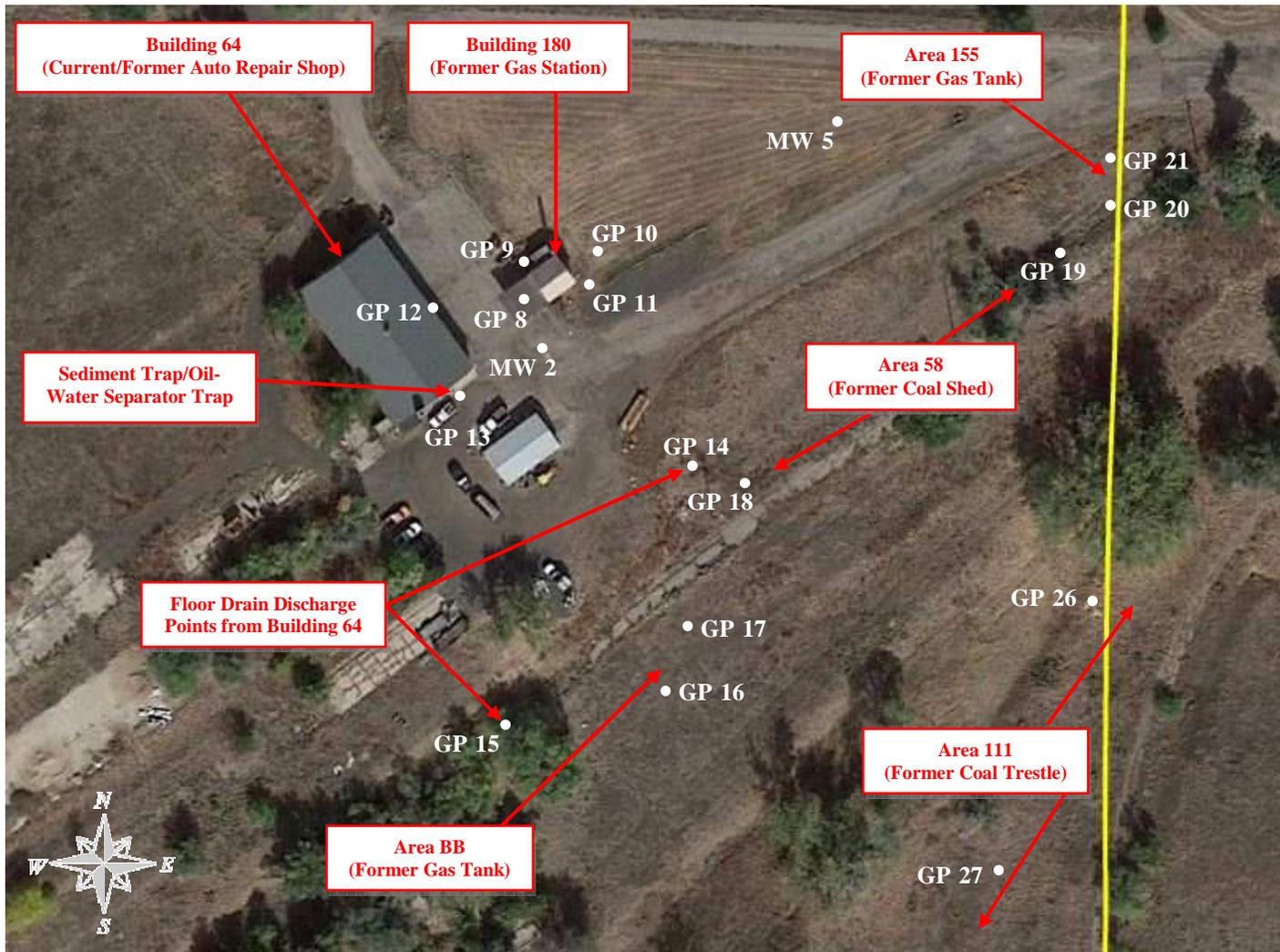
**FIGURE 4.0**  
**SOIL BORING LOCATIONS**  
**(NORTH-CENTRAL AREA OF SITE)**

PHASE II ENVIRONMENTAL SITE ASSESSMENT  
 PROPOSED FORT LOGAN NATIONAL CEMETERY EXPANSION  
 DENVER, COLORADO

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**FIGURE 5.0  
SOIL BORING LOCATIONS  
(CENTRAL AREA OF SITE)**

PHASE II ENVIRONMENTAL SITE ASSESSMENT  
PROPOSED FORT LOGAN NATIONAL CEMETERY EXPANSION  
DENVER, COLORADO

PREPARED FOR  
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**FIGURE 6.0**  
**SOIL BORING LOCATIONS**  
**(SOUTH-CENTRAL AREA OF SITE)**

PHASE II ENVIRONMENTAL SITE ASSESSMENT  
 PROPOSED FORT LOGAN NATIONAL CEMETERY EXPANSION  
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**FIGURE 7.0**  
**SOIL BORING LOCATIONS**  
**(SOUTHWEST AREA OF SITE)**

PHASE II ENVIRONMENTAL SITE ASSESSMENT  
 PROPOSED FORT LOGAN NATIONAL CEMETERY EXPANSION  
 DENVER, COLORADO

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**QuickFacts****Denver city, Colorado; Denver County, Colorado; Colorado**QuickFacts provides statistics for all states and counties, and for cities and towns with a *population of 5,000 or more*.**Table**

<b>ALL TOPICS</b>	<b>Denver city, Colorado</b>	<b>Denver County, Colorado</b>	<b>Colorado</b>
<b>Population estimates, July 1, 2017, (V2017)</b>	<b>704,621</b>	<b>704,621</b>	<b>5,607,154</b>
<b>PEOPLE</b>			
<b>Population</b>			
<b>Population estimates, July 1, 2017, (V2017)</b>	<b>704,621</b>	<b>704,621</b>	<b>5,607,154</b>
Population estimates base, April 1, 2010, (V2017)	599,813	599,813	5,029,325
Population, percent change - April 1, 2010 (estimates base) to July 1, 2017, (V2017)	17.5%	17.5%	11.5%
Population, Census, April 1, 2010	600,158	600,158	5,029,196
<b>Age and Sex</b>			
Persons under 5 years, percent	▲ 6.7%	▲ 6.1%	▲ 6.0%
Persons under 18 years, percent	▲ 20.7%	▲ 19.9%	▲ 22.5%
Persons 65 years and over, percent	▲ 10.9%	▲ 11.6%	▲ 13.8%
Female persons, percent	▲ 50.0%	▲ 49.9%	▲ 49.7%
<b>Race and Hispanic Origin</b>			
White alone, percent (a)	▲ 77.0%	▲ 80.9%	▲ 87.3%
Black or African American alone, percent (a)	▲ 9.8%	▲ 9.9%	▲ 4.5%
American Indian and Alaska Native alone, percent (a)	▲ 0.9%	▲ 1.8%	▲ 1.6%
Asian alone, percent (a)	▲ 3.5%	▲ 4.0%	▲ 3.4%
Native Hawaiian and Other Pacific Islander alone, percent (a)	▲ 0.1%	▲ 0.2%	▲ 0.2%
Two or More Races, percent	▲ 3.4%	▲ 3.2%	▲ 3.0%
Hispanic or Latino, percent (b)	▲ 30.8%	▲ 29.9%	▲ 21.5%
White alone, not Hispanic or Latino, percent	▲ 53.4%	▲ 54.4%	▲ 68.3%
<b>Population Characteristics</b>			
Veterans, 2012-2016	30,957	30,957	383,699
Foreign born persons, percent, 2012-2016	15.9%	15.9%	9.8%
<b>Housing</b>			
Housing units, July 1, 2017, (V2017)	X	320,545	2,385,359
Owner-occupied housing unit rate, 2012-2016	49.4%	49.4%	64.4%
Median value of owner-occupied housing units, 2012-2016	\$292,700	\$292,700	\$264,600
Median selected monthly owner costs -with a mortgage, 2012-2016	\$1,583	\$1,583	\$1,585
Median selected monthly owner costs -without a mortgage, 2012-2016	\$432	\$432	\$427
Median gross rent, 2012-2016	\$1,035	\$1,035	\$1,057
Building permits, 2017	X	10,525	40,673
<b>Families &amp; Living Arrangements</b>			
Households, 2012-2016	281,072	281,072	2,051,616
Persons per household, 2012-2016	2.31	2.31	2.56
Living in same house 1 year ago, percent of persons age 1 year+, 2012-2016	78.5%	78.5%	81.1%
Language other than English spoken at home, percent of persons age 5 years+, 2012-2016	27.1%	27.1%	17.0%
<b>Education</b>			
High school graduate or higher, percent of persons age 25 years+, 2012-2016	86.4%	86.4%	91.0%
Bachelor's degree or higher, percent of persons age 25 years+, 2012-2016	45.7%	45.7%	38.7%
<b>Health</b>			
With a disability, under age 65 years, percent, 2012-2016	6.4%	6.4%	7.2%
Persons without health insurance, under age 65 years, percent	▲ 14.4%	▲ 10.3%	▲ 8.6%

**Economy**

In civilian labor force, total, percent of population age 16 years+, 2012-2016	70.8%	70.8%	67.5%
In civilian labor force, female, percent of population age 16 years+, 2012-2016	65.5%	65.5%	62.5%
Total accommodation and food services sales, 2012 (\$1,000) (c)	2,884,852	2,884,852	13,617,654
Total health care and social assistance receipts/revenue, 2012 (\$1,000) (c)	7,316,892	7,316,892	29,488,161
Total manufacturers shipments, 2012 (\$1,000) (c)	5,343,892	5,343,892	50,447,098
Total merchant wholesaler sales, 2012 (\$1,000) (c)	14,625,818	14,625,818	77,034,971
Total retail sales, 2012 (\$1,000) (c)	7,111,416	7,111,416	67,815,200
Total retail sales per capita, 2012 (c)	\$11,212	\$11,212	\$13,073

**Transportation**

Mean travel time to work (minutes), workers age 16 years+, 2012-2016	25.1	25.1	24.9
--	------	------	------

**Income & Poverty**

Median household income (in 2016 dollars), 2012-2016	\$56,258	\$56,258	\$62,520
Per capita income in past 12 months (in 2016 dollars), 2012-2016	\$36,616	\$36,616	\$33,230
Persons in poverty, percent	▲ 16.4%	▲ 14.0%	▲ 11.0%

**BUSINESSES****Businesses**

Total employer establishments, 2016	X	24,986	165,264 <sup>1</sup>
Total employment, 2016	X	439,602	2,318,190 <sup>1</sup>
Total annual payroll, 2016 (\$1,000)	X	26,347,601	120,398,734 <sup>1</sup>
Total employment, percent change, 2015-2016	X	2.1%	2.9% <sup>1</sup>
Total nonemployer establishments, 2016	X	68,929	497,109
All firms, 2012	79,097	79,097	547,352
Men-owned firms, 2012	41,776	41,776	284,554
Women-owned firms, 2012	28,725	28,725	194,508
Minority-owned firms, 2012	18,049	18,049	85,849
Nonminority-owned firms, 2012	57,077	57,077	442,365
Veteran-owned firms, 2012	6,329	6,329	51,722
Nonveteran-owned firms, 2012	67,981	67,981	469,524

**GEOGRAPHY****Geography**

Population per square mile, 2010	3,922.6	3,922.6	48.5
Land area in square miles, 2010	153.00	153.00	103,641.89
FIPS Code	0820000	08031	08

**Value Notes**

- 1. Includes data not distributed by county.

Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info icon to the TABLE view to learn about sampling error.

The vintage year (e.g., V2017) refers to the final year of the series (2010 thru 2017). *Different vintage years of estimates are not comparable.*

**Fact Notes**

- (a) Includes persons reporting only one race
- (b) Hispanics may be of any race, so also are included in applicable race categories
- (c) Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

**Value Flags**

- D** Suppressed to avoid disclosure of confidential information
- F** Fewer than 25 firms
- FN** Footnote on this item in place of data
- NA** Not available
- S** Suppressed; does not meet publication standards
- X** Not applicable
- Z** Value greater than zero but less than half unit of measure shown
- Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper in distribution.

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

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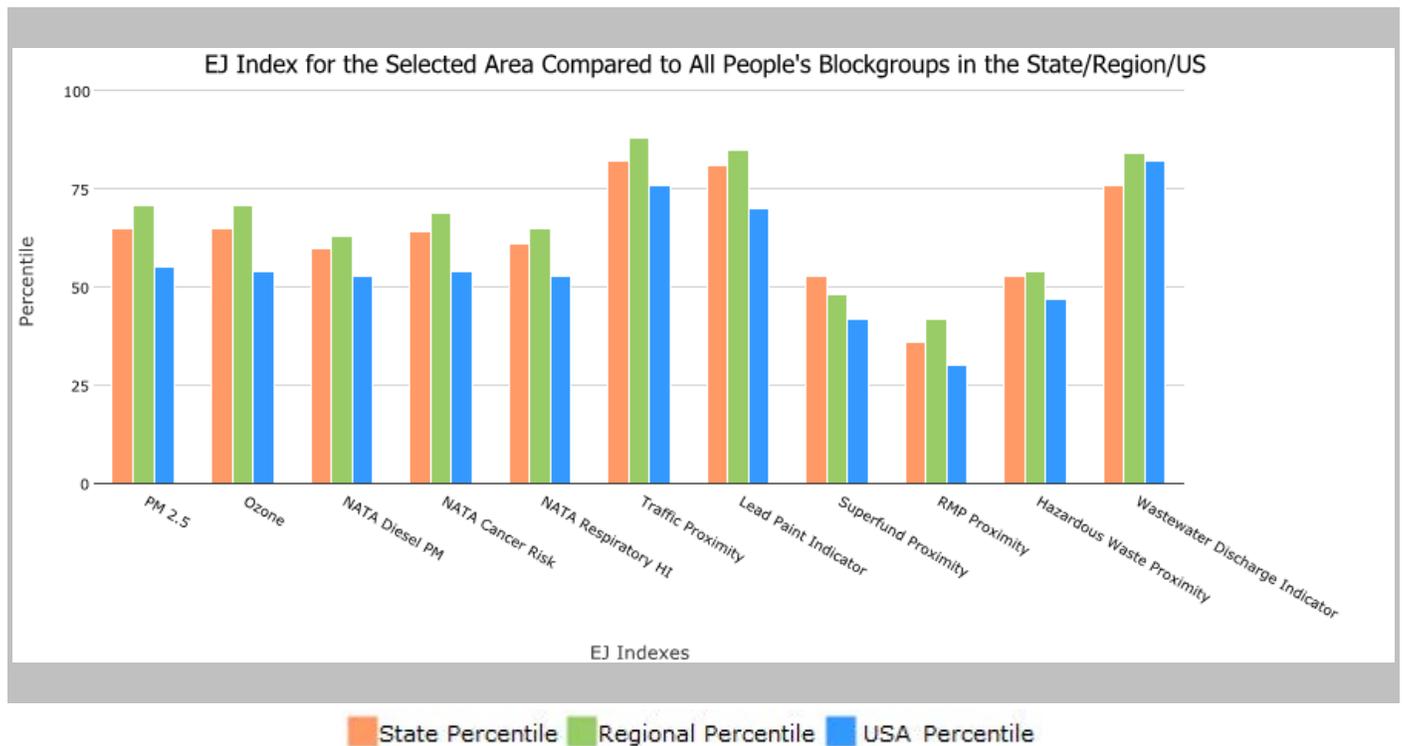
Yes  No

the User Specified Area, COLORADO, EPA Region 8

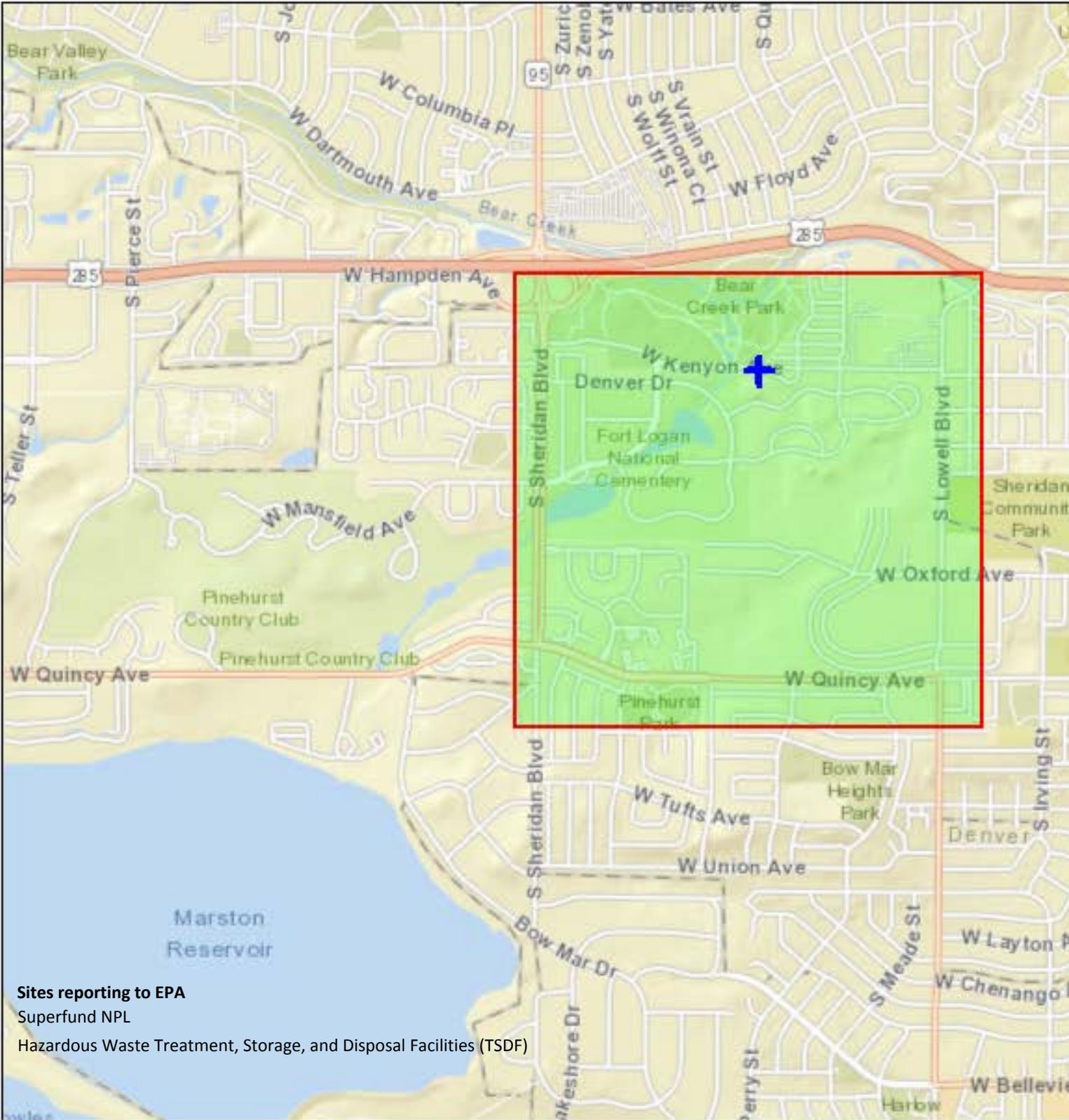
Approximate Population: 3,377

Input Area (sq. miles): 1.28

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
<b>EJ Indexes</b>			
EJ Index for PM2.5	65	71	55
EJ Index for Ozone	65	71	54
EJ Index for NATA* Diesel PM	60	63	53
EJ Index for NATA* Air Toxics Cancer Risk	64	69	54
EJ Index for NATA* Respiratory Hazard Index	61	65	53
EJ Index for Traffic Proximity and Volume	82	88	76
EJ Index for Lead Paint Indicator	81	85	70
EJ Index for Superfund Proximity	53	48	42
EJ Index for RMP Proximity	36	42	30
EJ Index for Hazardous Waste Proximity	53	54	47
EJ Index for Wastewater Discharge Indicator	76	84	82



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.



Sites reporting to EPA  
 Superfund NPL  
 Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)

September 7, 2018

Digitized Polygon

## EJSCREEN Report (Version )

the User Specified Area, COLORADO, EPA Region 8

Approximate Population: 3,377

Input Area (sq. miles): 1.28



Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
<b>Environmental Indicators</b>							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$ )							
Ozone (ppb)							
NATA* Diesel PM ( $\mu\text{g}/\text{m}^3$ )							
NATA* Cancer Risk (lifetime risk per million)							
NATA* Respiratory Hazard Index							
Traffic Proximity and Volume (daily traffic count/distance to road)							
Lead Paint Indicator (% Pre-1960 Housing)							
Superfund Proximity (site count/km distance)							
RMP Proximity (facility count/km distance)							
Hazardous Waste Proximity (facility count/km distance)							
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)							
<b>Demographic Indicators</b>							
Demographic Index							
Minority Population							
Low Income Population							
Linguistically Isolated Population							
Population With Less Than High School Education							
Population Under 5 years of age							
Population over 64 years of age							

\* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: [www.epa.gov/environmentaljustice](http://www.epa.gov/environmentaljustice)

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

**APPENDIX E**  
**Public Notices and Comments**

**The Denver Post, LLC**

**PUBLISHER'S AFFIDAVIT**

**City and County of Denver )  
State of Colorado )  
)**

The undersigned **Nicole Maestas** being first duly sworn under oath, states and affirms as follows:

1. He/she is the legal Advertising Reviewer of The Denver Post, LLC, publisher of *The Denver Post* and *Your Hub*.
2. *The Denver Post* and *Your Hub* are newspapers of general circulation that have been published continuously and without interruption for at least fifty-two weeks in Denver County and meet the legal requisites for a legal newspaper under Colo. Rev. Stat. 24-70-103.
3. The notice that is attached hereto is a true copy, published in *The Denver Post* on the following date(s):

*May 5, 6, 7, 2019*

*Nicole Maestas*  
Signature

Subscribed and sworn to before me this 7 day of May, 2019.

*Rosann Wunsch*  
Notary Public

ROSANN R WUNSCH  
NOTARY PUBLIC  
STATE OF COLORADO  
NOTARY ID 20024002315  
MY COMMISSION EXPIRES FEBRUARY 28, 2022

(SEAL)

**NOTICE OF AVAILABILITY  
DRAFT ENVIRONMENTAL ASSESSMENT  
U.S. DEPARTMENT OF VETERANS AFFAIRS**

Proposed Land Acquisition for the Expansion of Fort Logan National Cemetery Denver, Colorado

The Department of Veterans Affairs (VA) announces the preparation and availability of a Draft Environmental Assessment (DEA) for the proposed acquisition of approximately 49.4 acres of land for the future expansion of Fort Logan National Cemetery in Denver, Colorado. The DEA has been prepared in accordance with the regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA), (Public Law 91-190, 42 USC 4321-4347 January 1, 1970), amendments, and the VA's implementing Regulations (38 CFR Part 26). The DEA is available for a 30-day public review and comment period, which will end on June 7, 2019.

A copy of the DEA will be available for review at the Bear Valley Branch Library, located at 5171 W. Dartmouth Ave., Denver, CO. A copy of the DEA will also be available for review on the following website: [www.cem.va.gov/ce/EA.asp](http://www.cem.va.gov/ce/EA.asp). Please submit comments to the following:

Department of Veterans Affairs  
CFM Office of Real Property  
Attn: Marianne Marinucci  
425 I Street, NW, Room 6W2148  
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