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March 30, 2017

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Seattle, Washington 98164

Attention: Evan Bourquard, AIA, LEED BD+C

Subject: South Base Site Jurisdictional Addendum Letter Report
Pierce Transit Headquarters Campus Stormwater Optimization Study
Northwest of the South Tacoma Way and 100th Street SW Intersection
Lakewood, Washington
File No. 8361-002-08

INTRODUCTION

The primary objective of this letter report is to present information that was collected for a determination of the jurisdictional status of the wetland feature located on the undeveloped portion of the South Base Site (site). The site is located northwest of the South Tacoma Way and 100th Street SW intersection in Lakewood, Washington (Figure 1). This letter serves to describe GeoEngineers, Inc.'s (GeoEngineers') revisions to the 2005 South Base Site Jurisdictional Determination (JD) Report (GeoEngineers 2005). The goal of the current study is to supplement/update our prior reports with respect to stormwater infiltration potential and wetland/permitting. This letter documents current site conditions and summarizes changes that may have occurred since the completion of the original 2005 study. The original 2005 South Base Site JD Report should be referenced for more detailed information regarding the project (GeoEngineers 2005). The 2005 report is included in Appendix A.

PROJECT DESCRIPTION AND SITE HISTORY

Pierce Transit is planning to expand its facilities at its headquarters located in Lakewood, Washington. The South Base site is 11.5 acres, with 5 acres of employee/fleet parking and an administration/training building on the northern portion of the site. The southern 6.5 acres of the site is undeveloped and a historical remnant from a gravel mining operation operated by the City of Tacoma where the lower excavations of the abandoned gravel mine remain and have formed wetland like features. For the purposes of this project the site investigation area focused on the southern 6.5 acres that is undeveloped. The site overview (Figure 2) depicts the site investigated with an aerial background.

According to the 2005 JD Report, the City of Tacoma acquired the site in 1939 for the purpose of active gravel mining and the site was actively mined until 1968 (GeoEngineers 2005). The 2005 JD report is

located in Appendix A. Evaluation of historical aerials found in the 2005 JD report, indicate the site was most likely a stormwater settling pond that was receiving a combination of facility stormwater and wash-water from mining operation. According to the 2005 JD report, the City of Tacoma managed the site as an active landfill/dumpsite by issuing a solid waste permit to the Lakes Drywall Company. Much of this dumped material is still present and visible throughout the area as shown in site photographs taken during a November 2016 site visit and presented in Figure 2.

SITE DESCRIPTION

Site conditions appear to be the same as described in the 2005 JD report (Appendix A). Observations made during the November 2016 site visit, on hydrology and habitat conditions, are described below. The topography of the site is generally flat with slight to steep slopes into the closed basin. The natural topography and habitat of the site was altered substantially by gravel mining activities. The closed undeveloped basin of the site is significantly lower in elevation than land to the east and south, and slightly lower in elevation than land to the west and north. Steep slopes located east and south of the site are remnant cut slopes left over from the former gravel mine. Based on the height of the slopes, it appears ground surface elevations were lowered by up to about 19 feet.

Environmental maps of the project area were collected and reviewed as part of a paper inventory. The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) online mapper (USFWS 2016) maps a palustrine forested scrub shrub seasonally flooded (PFOSSC) wetland system within the site investigation area. The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey indicates one soil type on the property: spanaway gravelly sandy loam (USDA-NRCS 2016). Spanaway gravelly sandy loam soils are not hydric soils and do not contain hydric inclusions (USDA-NRCS 2015). NWI and soil survey information are included in Appendix B (Published Mapped Data).

Additional information was obtained from the Washington State Department of Natural Resources (DNR) Forest Practices Application Review System (FPARS), and Washington State Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) Interactive map viewer (DNR 2015; WDFW 2016). Neither mapping system identifies a stream within the vicinity of the project site (DNR 2015; WDFW 2016). The PHS map viewer also maps wetland habitat on the project site (WDFW 2016). Screenshots of the FPARS and PHS map viewer are found in Appendix B.

Mapped data was also reviewed from the Pierce County Public GIS database (http://matterhorn3.co.pierce.wa.us/publicgis/). Pierce County maps a wetland on the property but does not map streams or other waterbodies in the site vicinity. A printout of the Pierce County data is found in Appendix B.

Hydrology

Existing hydrological features are similar to those described in the 2005 JD report. Features include a stormwater ditch, two stormwater swales and two stormwater outfall pipes. These currently contribute runoff from existing Pierce Transit operations into the undeveloped portion of the site. The one difference from the 2005 report is that a stormwater outfall pipe extending from a catch basin on South 100th Street, was capped by the City of Lakewood and water runoff from South 100th Street has been redirected to the City's existing stormwater system.

Hydrologic and topographic conditions observed at the project site indicate that the area is currently isolated from any other surface water system. The closed basin does not have an outlet to a creek or other surface water body nor does it support any species of fish. Historical aerial photographs show the project site was created by human actions from upland areas. However, in 1999, the site was documented as containing a Category III palustrine forested, scrub shrub and emergent wetland (PFOSSEM) system based on a delineation conducted by Herrera.

Habitat Characterization

The 2016 site visit documented a significant amount of landfill debris along the edges and within the bottom of the depression of the site including concrete and broken pavement, asphalt, empty cans, rubber tires, and other miscellaneous metal, plastic and clothing debris. Bird use was documented during the site visit and included multiple species of song birds. No mammals or amphibians were observed during the site visit. Given the urban nature of the surrounding area it could be expected that mammals such as mice, rats and raccoons could utilize the habitat for use and cover. Figure 2 contains site photographs taken during the 2016 site visit.

Vegetation at the site consisted of a mix of native and non-native plant species. Native species identified included: red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), Douglas fir (*Pseudotsuga menziesii*), pacific madrone (*Arbutus menziesii*), Pacific willow (*Salix lasiandra*), sitka willow (*Salix sitchensis*), sword fern (*Polystichum munitum*), slough sedge (*Carex obnupta*), soft rush (*Juncus effusus*), creeping buttercup (*Ranunculus repens*) and common cattail (*Typha latifolia*). Invasive species identified during the site visit included: English ivy (*Hedera helix*), Himalayan blackberry (*Rubus armeniacus*), Japanese knotweed (*Polygonum cuspidatum*) and common tansey (*Tanacetum vulgare*).

The location of the site, in a highly urbanized area, limits the amount of habitat functions the site provides as there is no buffer areas or large undisturbed vegetated corridors for wildlife use. In addition, due to homeless activity, garbage and stormwater, water quality of the site is likely impacted. Additional factors contributing to low habitat function and value of the site include the highly disturbed nature of the majority of the habitat, the urban nature of the surrounding land use and the lack of fish or significant wildlife populations in the project site. However, there are portions of the site that contain mature native trees and are more representative of native forest.

JURISDICTIONAL STATUS

The 2005 JD report provided information on the definition of a wetland according to Washington State Department of Ecology (Ecology) and the City of Lakewood (Lakewood). In addition, the 2005 report provided information regarding the U.S. Army Corps of Engineers (USACE) and background in the Jurisdictional Determination of Isolation process through the USACE. This information was verified in 2016 and the information provided in the 2005 report has not changed.

Ecology and Lakewood

Both Ecology and Lakewood define wetlands as follows:

"Wetland or wetlands means areas that are inundated or saturated by surface water or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally

include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas, created to mitigate conversion of wetlands."

Based on our understanding of the above definition and our experience with wetland delineations, wetlands that have been artificially created from non-wetland sites for the purpose of the stormwater detention facilities, such as with the South Base site, are exempt from state and City regulations and are therefore non-jurisdictional.

U.S. Army Corps of Engineers

The USACE has the authority to permit discharge of fill material in waters of the U.S. under Section 404 of the Clean Water Act and permit work and the placement of obstructions in navigable waters of the U.S. under Sections 10 of the Rivers and Harbors Act of 1899 (USACE 2007). Waters of the U.S. are waterbodies (including wetlands) that are part of the U.S. territorial seas, or a traditional navigable water, or any tributary to a traditional navigable water or a wetland adjacent to any one of the above (USACE 2007).

The South Base site is non-jurisdictional under the Clean Water Act because, it is completely isolated from other surface waterbodies. This position was upheld by the Seattle District USACE in a finding of non-jurisdictional status issue to Pierce Transit by the USACE in a letter data February 2005 (Reference No. 200401389).

CONCLUSIONS

Our findings from the 2005 JD report originally prepared for the project have not changed. Based on the observed site conditions and our understanding of federal, state and local regulations associated with wetland exemptions, the South Base site is exempt from wetland regulations. The South Base site should be exempt because it was artificially created from an upland area, is fully isolated from other surface water and downstream connections and is regularly maintained (including vegetation management) for use as a stormwater detention/infiltration facility.

LIMITATIONS

GeoEngineers has prepared this addendum letter in general accordance with the scope and limitations of our proposal. No warranty or other conditions, express or implied, should be understood. This report has been prepared for the exclusive use of the Schacht|Aslani Architects, Pierce Transit, authorized agents, and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state and federal) prior to design or construction of any development to obtain necessary permits and approvals.

REFERENCES

City of Lakewood. Chapter 14A.165, Definitions. Available at: http://municode.cityoflakewood.us/

GeoEngineers, Inc. 2005. Headquarters Campus Stormwater Optimization Study – PT-03-04 South Base Site Jurisdictional Determination, Lakewood, Washington. Prepared for Pierce Transit. February 10, 2005.

U.S. Army Corps of Engineers, 2007. Jurisdictional Determination Form Instructional Guidebook. Available at: http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/jd_guidebook_051207final.pdf

United States Department of Agriculture – National Resource Conservation Service, 2016. Web Soil Survey. Available at: http://websoilsurvey.nrcs.usda.gov/app/.

United States Department of Agriculture – National Resource Conservation Service, 2015. National Hydric Soils List by State.

United States Fish and Wildlife Service, 2016. Wetlands Mapper. Available at: http://www.fws.gov/wetlands/Data/mapper.html. Washington State Legislature. Chapter 36.70a, Section RCW 36.70a.030 Definitions. Available at: http://app.leg.wa.gov/rcw/default.aspx?cite=36.70a.030.

Washington State Department of Fish and Wildlife, 2016. Priority Habitats and Species (PHS) on the Web. Available at: http://wdfw.wa.gov/mapping/phs/

Washington State Department of Natural Resources, 2015. Forest Practices Application Review System (FPARS) Mapping Application. Available at: https://fortress.wa.gov/dnr/protectiongis/fpamt/index.html?maptheme=Water Type&extent=-14385498.437950825,5552851.051296187,-12532664.872318646,6457865.466192433

Thank you for your review of this addendum letter. If you have any questions, please do not hesitate to contact us at 253.383.4940.

Sincerely,
GeoEngineers, Inc.

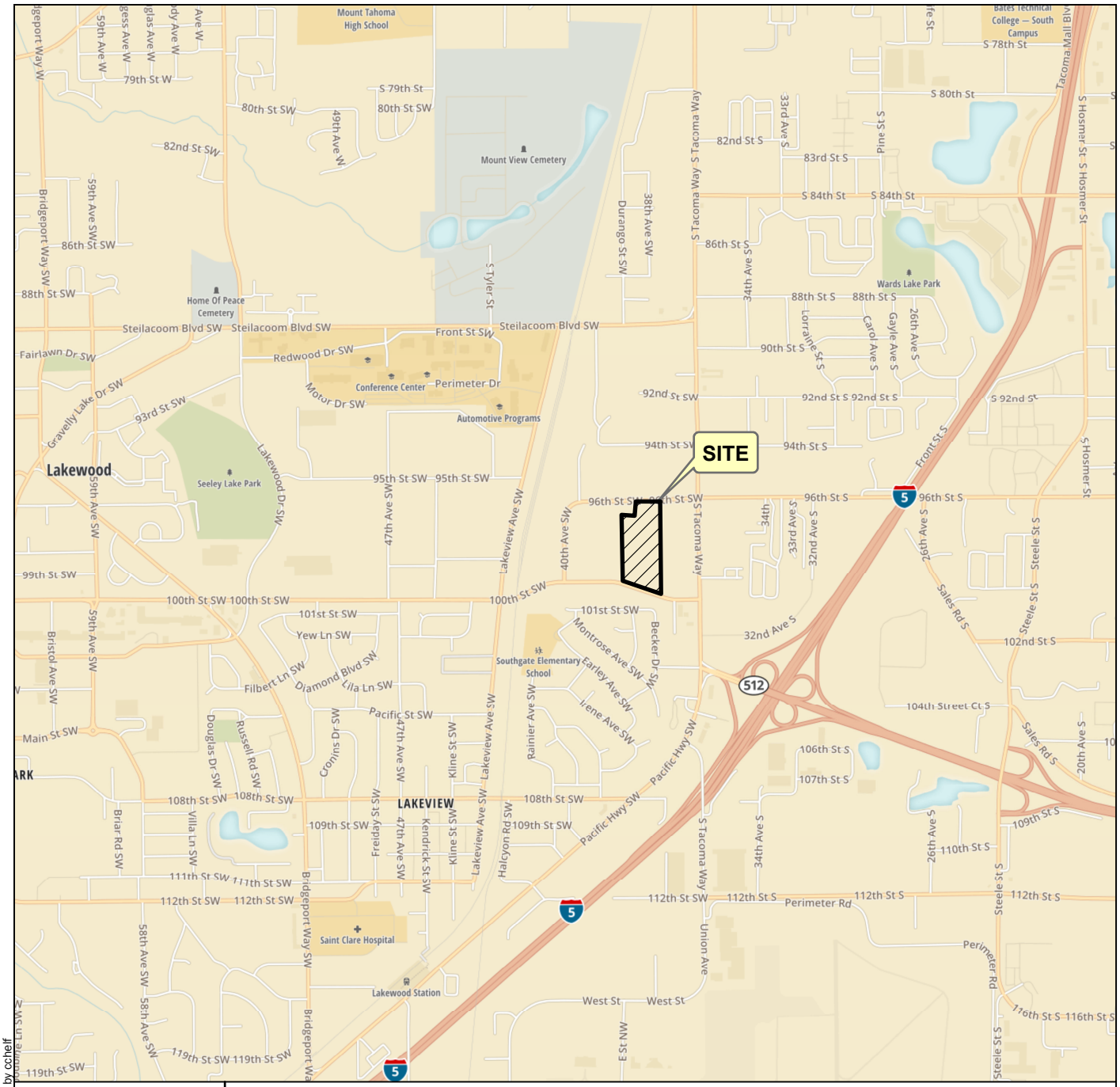
Jennifer Dadisman, PWS
Wetland Biologist

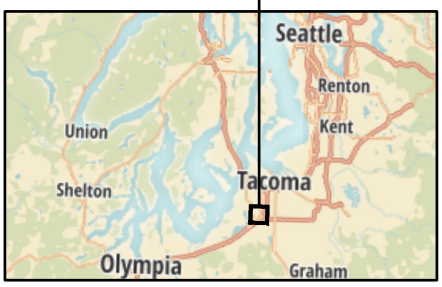
Joseph O. Gallaghan, PWS
Associate

FMM:JLD:JOC:cam

Attachments:
Figure 1. Vicinity Map
Figure 2. Site Overview
Appendix A. 2005 Jurisdictional Determination Report
Appendix B. Published Mapped Data

cc: Janine Robinson, AICP, Senior Planner (1 copy)
Pierce Transit





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Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 10N

Vicinity Map

Pierce Transit South Base
Lakewood, Washington

GeoEngineers

Figure 1

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Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Parcels and Roads from Pierce County. Aerial from ESRI
The wetland boundary is approximate and was digitized by Environmental Assessment completed by Herrera Environmental Consultants October 2000.

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

- Photo Location
- Wetland Boundary (Herrera, 2000)
- Site Investigation Area
- Tax Parcel

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Site Overview

Pierce Transit South Base
Lakewood, Washington

GeoEngineers

Figure 2

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APPENDIX A
2005 Jurisdictional Determination Report

REPORT
HEADQUARTERS CAMPUS STORMWATER OPTIMIZATION STUDY – PT-03-04
SOUTH BASE SITE JURISDICTIONAL DETERMINATION
LAKEWOOD, WASHINGTON

FEBRUARY 10, 2005

FOR
PIERCE TRANSIT

File No. 8361-002-00

South Base Site Jurisdictional Determination
File No. 8361-002-00

February 10, 2005

Prepared for:

Pierce Transit
3701 96th Street SW
Lakewood, Washington 98499-0070

Attention: Janine Robinson, Senior Planner

Prepared by:

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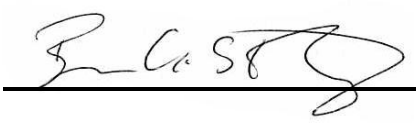

Bruce A. Stirling
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TABLE OF CONTENTS

REPORT
HEADQUARTERS CAMPUS STORMWATER OPTIMIZATION STUDY – PT-03-04
SOUTH BASE SITE JURISDICTIONAL DETERMINATION
LAKEWOOD, WASHINGTON
FOR
PIERCE TRANSIT

1.0 INTRODUCTION

This report represents the wetland jurisdictional status determination of the South Base site for the Pierce Transit Headquarters Campus Stormwater Optimization Study, Lakewood, Washington. GeoEngineers, Inc. (GeoEngineers) has completed this report as part of Work Authorization 01 and 06 for PT-03-04 under the KPFF/GeoEngineers Mutual Services Agreement dated June 11, 2004. The primary objective of this report is to present information that was collected for a determination of the jurisdictional status of the wetland feature located on the undeveloped portion of the South Base site. The scope of services for completion of this report included field research and meetings with various agencies and organizations to obtain aerial and site-specific photographic and written documentation on the South Base site.

1.1 PURPOSE

Pierce Transit is planning to expand its maintenance, operations, and administrative facilities to accommodate future fleet and subsequent maintenance and operations requirements at its headquarters located in Lakewood, Pierce County, Washington. Pierce Transit owns three properties which form the headquarters campus. The Main Base is located at the northwest corner of 96th and South Tacoma Way. The East Base site is currently undeveloped and is located on approximately 16 acres at the northeast corner of 96th and South Tacoma Way. The South Base site is 11.5 acres, with 5 acres of employee/fleet parking and a future administration/training building on the northern portion of the site. The southern 6.5 acres of the South Base site (the site) are an undeveloped historical remnant from a gravel mining operation operated by the City of Tacoma where the lower excavations of the abandoned gravel mine remain and have formed wetland like features. As part of the planned facility expansion, Pierce Transit is conducting a stormwater optimization study for its entire campus, including an opinion of the jurisdictional status of the undeveloped portion of the South Base site.

1.2 HISTORY

The City of Tacoma acquired the South Base site in 1939 for the purpose of active gravel mining. The upland site on and in the vicinity of the current Pierce Transit base was actively mined until 1968. Several aerial photographs from the late 40's through 2003 show the mining operations and subsequent development on and around the area over a 50 plus year period as presented in Appendix A. Evaluation of historical records and these aerials indicate that the site was most likely a stormwater settling pond that was receiving a combination of facility stormwater and wash-water from the mining operation. After the cessation of mining activities and through the 1970s and 1980s contractors actively dumped 90,000 cubic yards of concrete, rock, soil, drywall/sheetrock, broken pavement stockpiles, empty paint and motor oil cans, rubber tires, and other debris into the abandoned sedimentation pond. Much of this material is still present and visible throughout the area as shown in site photos taken during a December 2004 field survey and presented in Appendix B. Written documentation also indicates that the City of Tacoma managed the site as an active landfill/dumpsite by issuing a solid waste permit to the Lakes Drywall Company (Permit #27-007). Some illegal dumping of materials may have also been occurring at the site subsequent to the "official" closure of the landfill. Evidence also indicates that deposition of the waste

rock and other materials at the site was allowed without testing or other controls. Currently the undeveloped portion of the site provides stormwater storage and infiltration for Pierce Transit's South Base parking area.

1.3 HYDROLOGY

Existing hydrological features include a stormwater ditch, two stormwater swales, and three stormwater outfall pipes. These currently contribute runoff from existing Pierce Transit operations into the undeveloped portion of the site. A stormwater outfall pipe extending from a catch basin on South 100th Street is also located along the southern boundary of the site adjacent to South 100th Street. Field surveys conducted in November and December 2004 documented significant amounts of stormwater entering the site from this outfall. The City of Lakewood has indicated that the South 100th Street outfall will be capped and redirected into the City's existing stormwater system.

The topography on the undeveloped part of the South Base site is generally flat with slight to steep downward slopes to a closed basin. The natural topography of the site was altered by gravel mining activities previously described. The closed undeveloped basin within the site is significantly lower in elevation than land to the east and south, and slightly lower in elevation than land to the west and north. The topography on this part of the South Base site is the result of gravel mining and subsequent grading and fill placement. Steep slopes located east and south of the South Base site are remnant cut slopes left over from the former gravel mine. Based on the height of the slopes, it appears ground surface elevations on the South Base site, including the area within the closed basin, were lowered by up to about 19 feet. The area around the closed basin on the South Base site specifically ranges from about Elevation 274 to about Elevation 280 feet. The bottom of the closed depression is at about Elevation 266 feet. Survey results indicate an absence of a surface overflow/outflow channel from the basin. On this basis, stormwater discharged to the basin infiltrates directly to groundwater. Pierce Transit personnel also indicated there was no evidence that water levels at the site were ever high enough to overtop the surrounding upland areas.

Surface water was not observed in the basin during field work conducted as part of site visits in June, July, or December 2004. Ponded surface water was however observed during field work conducted in November 2004 and most recently in January 2005. Based on water elevation data results from the site visits, groundwater levels were estimated to be up to 3 feet lower than the bottom of the closed basin when standing water was not observed. Based on the field explorations and hydrogeologic evaluation, surface water levels within the basin appear to be connected to the shallow groundwater in the area immediately surrounding the basin.

The bottom of the closed basin where surface water likely occurs is presently covered with fine-grained (silt) material. The thickness of the fine-grained material is presently unknown. Vertical infiltration rate through this fine-grained material is expected to be relatively slow and therefore likely to contain surface water during periods of heavy rainfall. The relationship between surface water levels in the basin and groundwater levels in the wells is still being defined as more data is collected over time.

1.4 HABITAT CHARACTERIZATION

The wetland-like features that formed in the excavation left from mining of the upland areas surrounding the South Base site were originally documented by Herrera in November 1999. Hydrologic features as discussed above indicate that the area is currently isolated from any other surface water system. The closed basin does not have an outlet to a creek or other surface water body nor does it support any species of fish. Historical photographic and field evidence shows this isolated basin was created by human

actions from upland areas associated with the South Base site. The basin was classified in November 1999 as containing a combination of palustrine forested (PFO), palustrine scrub/shrub (PSS), and palustrine emergent (PEM) wetlands using the Cowardin et al. (1979) system. The wetland features are listed by Washington Department of Fish and Wildlife (WDFW) as a priority habitat (WDFW 2003). The City of Lakewood has rated the area as a Category III wetland based on the November 1999 delineation by Herrera. The jurisdictional status of this basin was questioned and posed to the U.S. Army Corps of Engineers (Corps) as discussed in more detail below.

A early December 2004 site visit documented a significant amount of landfill debris along the edges and within the bottom of the closed basin including concrete and broken pavement, asphalt, empty cans, rubber tires, and other miscellaneous metal and plastic debris. The historical fill material defines the western and northern edges of the basin. The area also contained the remains of several former homeless encampments and miscellaneous garbage and discarded clothing adjacent to these structures. Bird use was documented to include several species of passerines including winter wren (*Troglodytes troglodytes*), pine siskin (*Spinus pinus*), Oregon junco (*Junco oreganus*), white-crowned sparrow (*Zonotrichia leucophrys*), chestnut-backed chickadee (*Parus rufescens*), common bushtit (*Psaltriparus minimus*), and stellar jay (*Cyanocitta stelleri*). No mammals or amphibians were observed during the site visit. Given the urban nature of the surrounding area it could be expected that common urban wildlife including mice, rat, rabbit, opossum, and raccoon could utilize the existing habitat for foraging use and cover. Photographic documentation of the basin is presented in Appendix B.

Invasive plant species appear to be dominant throughout the basin including English ivy (*Hedera helix*), evergreen (*Rubus laciniatus*) and Himalayan (*Rubus discolor*) blackberry, Scots broom (*Cytisus scoparius*), Japanese knotweed (*Polygonum cuspidatum*), common tansy (*Tanacetum vulgare*), and unidentified species of grasses (*family* Poaceae) and thistle (*Cirsium* sp.). Some native (non-invasive) species noted during the site visit included Red alder (*Alnus rubra*), common hawthorn (*Crataegus douglasii*), paper birch (*Betula papyrifera*), black cottonwood (*Populus balsamifera*), Douglas fir (*Pseudotsuga menziesii*), Pacific madrone (*Arbutus menziesii*), Pacific willow (*Salix lasiandra*), Sitka willow (*Salix sitchensis*), hardhack (*Spirea douglasii*), sword fern (*Polystichum munitum*), slough sedge (*Carex obnupta*), soft rush (*Juncus effusus*), creeping buttercup (*Ranunculus repens*), and common cattail (*Typha latifolia*). In general, habitat within the northern third of the site and along the entire western property boundary was mostly ruderal and highly disturbed. More mature forested habitat was noted generally within the southern half of the site and along the eastern property boundary.

The undeveloped portion of the South Base site is located in a highly urbanized area. Ecology's development of at state hydrogeomorphic methodology (HGM) indicates that wetlands located in urban areas typically vary from rural wetlands in their overall level of protection for individual wetland functions. For example, wetlands in urban areas commonly do not provide the same degree of habitat for wildlife as do wetlands in rural areas. However, urban wetlands do provide highly important water quality, aquifer recharge, and flood retention functions (Ousley et al. 2003). In many cases, isolated wetlands are also especially important for providing groundwater recharge (Tiner et al. 2002).

The presence of artificial fill including concrete and broken pavement, asphalt, empty cans, rubber tires, and other miscellaneous metal and plastic debris surrounding and underlying the basin are indicative of low habitat functionality and compromised stormwater function as well. The undeveloped basin also appears to have been an attractive nuisance for the homeless as documented by evidence of man-made disturbances such as illegal camps, pit toilets and garbage piles that accompany such land use. Additional factors contributing to low habitat function and low socioeconomic value of the basin include the highly disturbed nature of the majority of the habitat, the urban nature of the surrounding land use, and the lack

of fish or significant wildlife populations within the basin. However, there are portions of the basin that do contain mature native trees (as noted above) and are more representative of native forest. The basin is currently being used as a functional stormwater retention and water quality control facility for the South Base parking area. However, continued or expanded use of the basin for stormwater retention and groundwater recharge should include removal of the garbage and other materials that may negatively impact water quality.

1.5 JURISDICTIONAL STATUS

The Corps isolated wetland determination under SWANCC takes precedence for federal regulations. State definition of wetlands (36.70A.030 of the RCW and Chapter 173-22-080 of the WAC) define artificially created wetlands, for use as detention facilities, as exempt. The City of Lakewood also defines artificially created wetlands as exempt using the same definition.

Federal, state, and local laws and regulations associated with the jurisdictional status of the undeveloped basin center around the Clean Water Act (CWA) which, through Section 404 of the CWA, regulates the discharge of dredged or fill material in navigable waters of the United States, and through Section 401 of the CWA, assures that the proposed activity will not have any impacts on state surface water-quality standards. Discussion of the regulations that surround how the Corps, Ecology, and the City of Lakewood manage wetlands is provided below while Appendix C contains a listing of several primary federal, state, and local laws that pertain to wetlands.

1.5.1 Army Corps of Engineers

A formal request for a jurisdictional determination was made to the Corps in June 2004. In November of the same year Pierce Transit received a verbal commitment from the Corps that the undeveloped basin was found to be non-jurisdictional. Written correspondence from the Corps is still pending.

United States v. Riverside Bayview Homes, Inc., 474 U.S. 121 extended the reach of the CWA in 1985 to include the impacts associated with filling "adjacent" wetlands which are said to effect the quality of water of the United States. The Corps defines "adjacent" as meaning bordering, contiguous, or neighboring. Wetlands adjacent to navigable waterways, regardless of whether the water in the wetland came from the "adjacent" waterbodies or groundwater or whether the wetland is physically separated from the water body by natural or man-made barriers such as dikes, berms or dunes, are regulated under Section 404 of the CWA.

The issue of isolated wetlands was left open by the courts after the Riverside decision until the 2001 case of *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers*, 531 U.S. 159 (2001) (''SWANCC''). Prior to the SWANCC decision, the Seattle District Corps under 33 CFR Part 328, Definition of Waters of the United States, indicated that "waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA are not waters of the United States." This also applied to "water filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation was abandoned and the resulting body of water met the definitions of water of the United States."

However, in the SWANCC decision, the Supreme Court held that the Corps had exceeded its authority in asserting CWA jurisdiction pursuant to section 404(a) over isolated, intrastate, non-navigable waters under 33 C.F.R. 328.3(a)(3), based on their use as habitat for the migratory birds pursuant to preamble language commonly referred to as the "Migratory Bird Rule," 51 FR 41217 (1986). The court ruled that

the Corps did not have authority to require a wetlands fill permit for a solid waste disposal site, which a consortium of Illinois municipalities wanted to locate at an abandoned gravel pit, regardless of the abandonment status of the gravel operation. In essence, the court's decision invalidated the "Migratory Bird Rule," under which the Corps had exerted federal jurisdiction over isolated waters used as habitat by migratory birds.

"Navigable waters" are defined in section 502 of the CWA to mean "waters of the United States", including the territorial seas. In SWANCC, the court determined that the term "navigable" had significance in indicating the authority Congress intended to exercise in asserting the CWA jurisdiction. After reviewing the jurisdictional scope of the statutory definition of "navigable waters" in section 502, the Court concluded that neither the text of the statute nor its legislative history supported the Corps assertion of jurisdiction over the waters involved in SWANCC.

Based on our understanding of the federal regulations, the SWANCC decision gives precedence for the South Base undeveloped basin to be non-jurisdictional under the CWA because, even though it was artificially created from a ceased gravel mining operation, it is completely isolated from any other surface water body. This position was upheld by the Seattle District Corps in a verbal finding of non-jurisdictional status issued to Pierce Transit in November 2004.

1.5.2 Washington State Department of Ecology

Chapter 36.70A.030 of the Revised Code of Washington (RCW) and Chapter 173-22-080 of the Washington Administrative Code (WAC) defines wetlands as follows:

> *"Wetland or wetlands means areas that are inundated or saturated by surface water or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas, created to mitigate conversion of wetlands."*

Based on our understanding of the above definition and our experience with wetland delineations for over 20 years, wetlands that have been artificially created from non-wetland sites for the purpose of stormwater detention facilities, such as with the South Base undeveloped basin, are exempt from state regulations and are therefore non-jurisdictional.

1.5.3 City of Lakewood

Chapter 14.162.020 of the City of Lakewood Interim Critical Areas and Natural Resource Lands (February 28, 1996) defines wetlands as follows:

> *"Wetland or wetlands means areas that are inundated or saturated by surface water or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to,*

irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities. However, wetlands may include those artificial wetlands intentionally created from non-wetland areas, created to mitigate conversion of wetlands, if permitted by the City."

Similar to the Ecology wetland definition and jurisdictional policy, wetlands that have been artificially created from non-wetland sites, including detention facilities such as the South Base undeveloped basin, are exempt from local regulations and are therefore non-jurisdictional. This was confirmed through discussions with the City of Lakewood.

2.0 CONCLUSIONS

Based on evaluation of historical records and aerial photography, current hydrology and habitat, and federal, state, and local regulations associated with wetland exemptions, the South Base site is exempt from wetland regulation because it was artificially created from an upland area, is fully isolated from any other surface water and downstream connections, and is maintained for use as a stormwater detention facility.

3.0 LIMITATIONS

GeoEngineers has performed this Stormwater Optimization Study of the South Base Site Jurisdictional Determination in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for Stormwater Optimization Studies in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for the exclusive use of Pierce Transit and their authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

4.0 REFERENCES

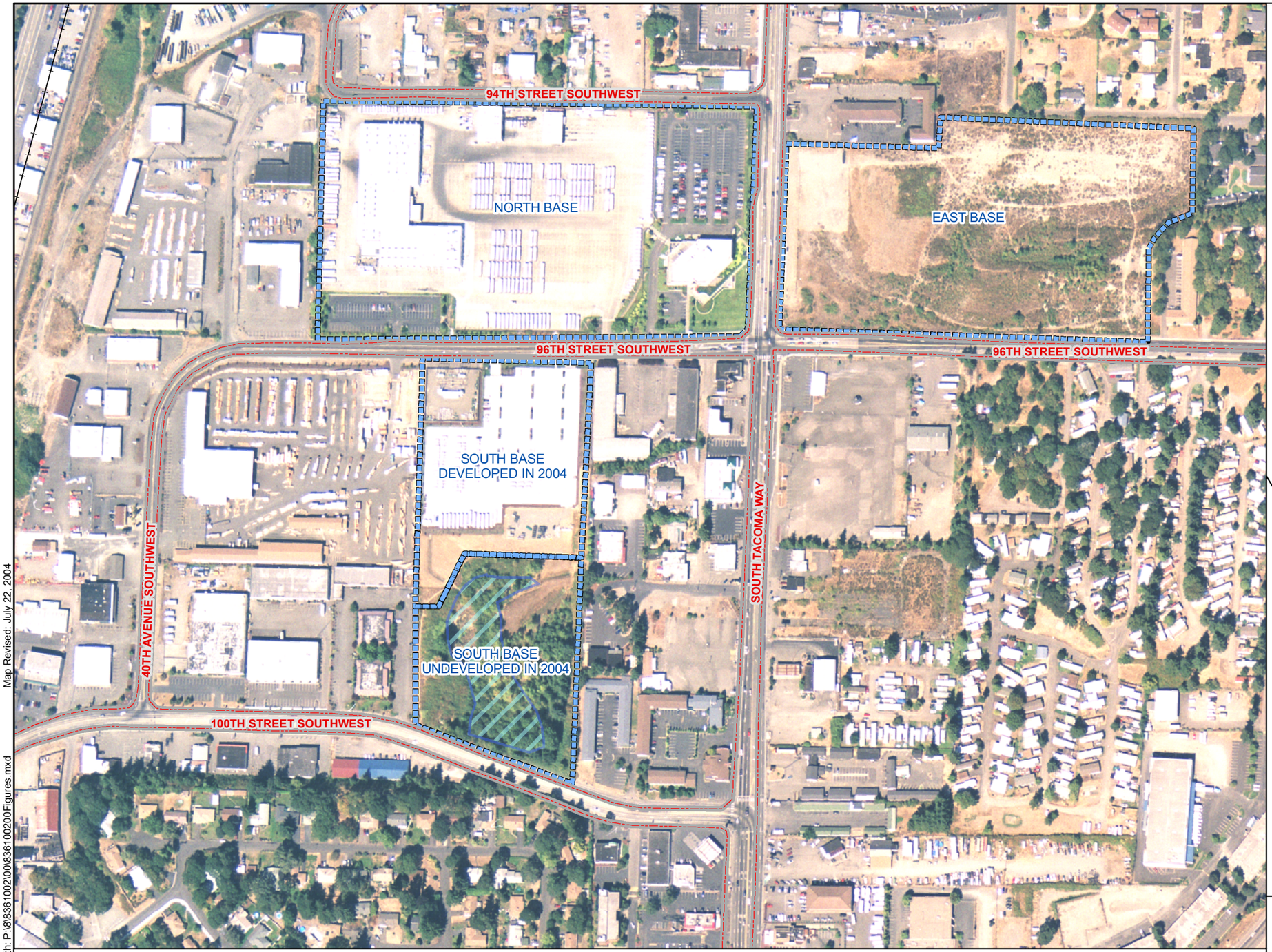
Cowardin, L.M., Carter, V., Golet, F.C. and LaRoe, E.T. 1979. Classification of wetlands and deepwater habitats of the United States, US Fish and Wildlife Service, Office of Biological Services, FWS/OBS-79/31

Ousley, N.K., Bauer, L., Parsons, C., Robinson, R.R. and Unwin, J. 2003. Washington State Department of Community, Trade and Economic Development (CTED).

Tiner, R.W., Bergquist, H.C., DeAlessio, G.P., Star, M.J. 2002. *Geographically Isolated Wetlands: A Preliminary Assessment of Their Characteristics and Status in Selected Areas of the United States*. Hadley, MA: U.S. Department of the Interior, Fish and Wildlife Service, Northeast Region.

Washington Department of Fish and Wildlife (WDFW). 2004. Priority habitat and species data and wildlife heritage data.

APPENDIX A
HISTORICAL AERIAL PHOTOGRAPHS



EDGE OF PAVEMENT (2004)

WETLAND BOUNDARY

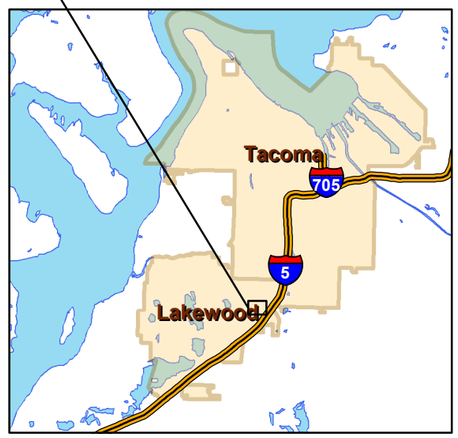
PROPERTY BOUNDARIES (2004)

N

0 75 150 300 450 600

Feet

1 INCH = 300 FEET



GeoEngineers

2003 HISTORICAL PHOTO

FIGURE 1

Data Sources: Aerial photographs were obtained from Washington State Department of Transportation, Aerial Photography Branch, Tumwater, Washington. The 1949, 1961 and 1978 aerial photographs are at a scale of 1:1,000 and the 1966, 1970, 1982, 1987, 1992 and 2003 aerial photographs are at a scale of 1:2,000.

This map is for information purposes. Data were compiled from multiple sources as listed on this map. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this map. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication. The locations of all features (edge of pavement and property boundaries) shown are approxmate and were digitzed from the 1992 aerial photographs at a scale of 1:1,200. The wetland boundary is approximate and was digitized from Figure 6 in Appendix B from the Environmental Assessment completed by Herrera Environmental Consultants dated October 2000.

Map Revised: July 22, 2004

Path: P:\8\8361002\00\8361002000Figures.mxd

Office: ORCH

EDGE OF PAVEMENT (2004)

WETLAND BOUNDARY

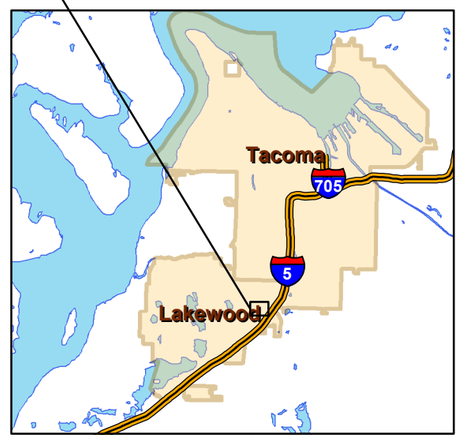
PROPERTY BOUNDARIES (2004)

N

0 75 150 300 450 600

Feet

1 INCH = 300 FEET



Data Sources: Aerial photographs were obtained from Washington State Department of Transportation, Aerial Photography Branch, Tumwater, Washington. The 1949, 1961 and 1978 aerial photographs are at a scale of 1:1,000 and the 1966, 1970, 1982, 1987, 1992 and 2003 aerial photographs are at a scale of 1:2,000.

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GeoEngineers

1992 HISTORICAL PHOTO

FIGURE 2

Map Revised: July 22, 2004

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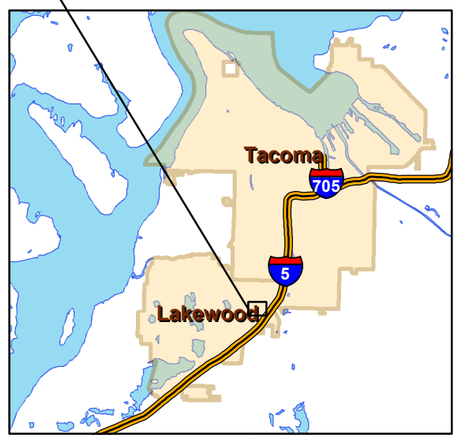
Office: ORCH

EDGE OF PAVEMENT (2004)
WETLAND BOUNDARY
PROPERTY BOUNDARIES (2004)

N

0 75 150 300 450 600
Feet

1 INCH = 300 FEET



Data Sources: Aerial photographs were obtained from Washington State Department of Transportation, Aerial Photography Branch, Tumwater, Washington.
The 1949, 1961 and 1978 aerial photographs are at a scale of 1:1,000 and the 1966, 1970, 1982, 1987, 1992 and 2003 aerial photographs are at a scale of 1:2,000.

This map is for information purposes. Data were compiled from multiple sources as listed on this map. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this map. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication. The locations of all features (edge of pavement and property boundaries) shown are approximate and were digitzed from the 1992 aerial photographs at a scale of 1:1,200. The wetland boundary is approximate and was digitized from Figure 6 in Appendix B from the Environmental Assessment completed by Herrera Environmental Consultants dated October 2000.

GeoEngineers

1987 HISTORICAL PHOTO

FIGURE 3

Map Revised: July 22, 2004
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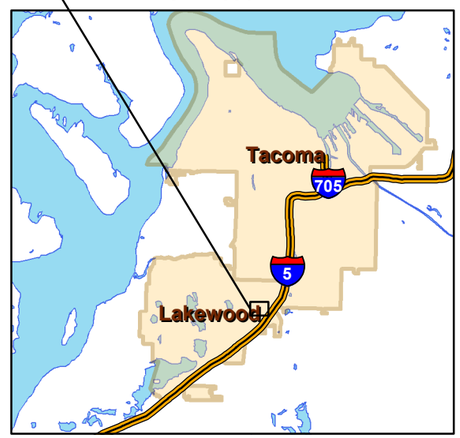
Office: ORCH

EDGE OF PAVEMENT (2004)
WETLAND BOUNDARY
PROPERTY BOUNDARIES (2004)

N

0 75 150 300 450 600
Feet

1 INCH = 300 FEET



Data Sources: Aerial photographs were obtained from Washington State Department of Transportation, Aerial Photography Branch, Tumwater, Washington.
The 1949, 1961 and 1978 aerial photographs are at a scale of 1:1,000 and the 1966, 1970, 1982, 1987, 1992 and 2003 aerial photographs are at a scale of 1:2,000.

This map is for information purposes. Data were compiled from multiple sources as listed on this map. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this map. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication. The locations of all features (edge of pavement and property boundaries) shown are approxmate and were digitzed from the 1992 aerial photographs at a scale of 1:1,200. The wetland boundary is approximate and was digitized from Figure 6 in Appendix B from the Environmental Assessment completed by Herrera Environmental Consultants dated October 2000.

GeoEngineers

1982 HISTORICAL PHOTO

FIGURE 4

Map Revised: July 22, 2004
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Office: ORCH

EDGE OF PAVEMENT (2004)

WETLAND BOUNDARY

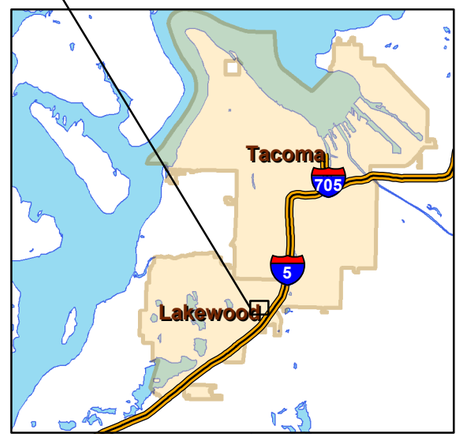
PROPERTY BOUNDARIES (2004)

N

0 75 150 300 450 600

Feet

1 INCH = 300 FEET



Data Sources: Aerial photographs were obtained from Washington State Department of Transportation, Aerial Photography Branch, Tumwater, Washington. The 1949, 1961 and 1978 aerial photographs are at a scale of 1:1,000 and the 1966, 1970, 1982, 1987, 1992 and 2003 aerial photographs are at a scale of 1:2,000.

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GeoEngineers

1978 HISTORICAL PHOTO

FIGURE 5

Map Revised: July 22, 2004

Path: P:\8\8361002\00\8361002000Figures.mxd

Office: ORCH

EDGE OF PAVEMENT (2004)

WETLAND BOUNDARY

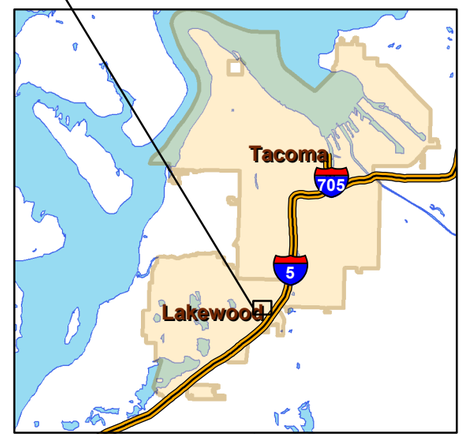
PROPERTY BOUNDARIES (2004)

N

0 75 150 300 450 600

Feet

1 INCH = 300 FEET



Map Revised: July 22, 2004

Path: P:\836100200\836100200Figures.mxd

Office: ORCH

Data Sources: Aerial photographs were obtained from Washington State Department of Transportation, Aerial Photography Branch, Tumwater, Washington.
The 1949, 1961 and 1978 aerial photographs are at a scale of 1:1,000 and the 1966, 1970, 1982, 1987, 1992 and 2003 aerial photographs are at a scale of 1:2,000.

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GeoEngineers

1970 HISTORICAL PHOTO

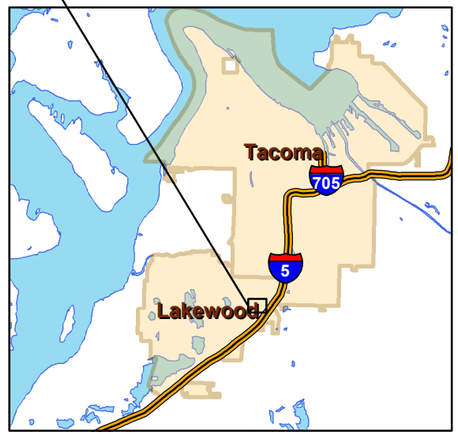
FIGURE 6

EDGE OF PAVEMENT (2004)
WETLAND BOUNDARY
PROPERTY BOUNDARIES (2004)

N

0 75 150 300 450 600
Feet

1 INCH = 300 FEET



Data Sources: Aerial photographs were obtained from Washington State Department of Transportation, Aerial Photography Branch, Tumwater, Washington.
The 1949, 1961 and 1978 aerial photographs are at a scale of 1:1,000 and the 1966, 1970, 1982, 1987, 1992 and 2003 aerial photographs are at a scale of 1:2,000.

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GeoEngineers

1966 HISTORICAL PHOTO

FIGURE 7

Office: ORCH Path: P:\8\8361002\00\8361002OOFigures.mxd Map Revised: July 22, 2004

EDGE OF PAVEMENT (2004)

WETLAND BOUNDARY

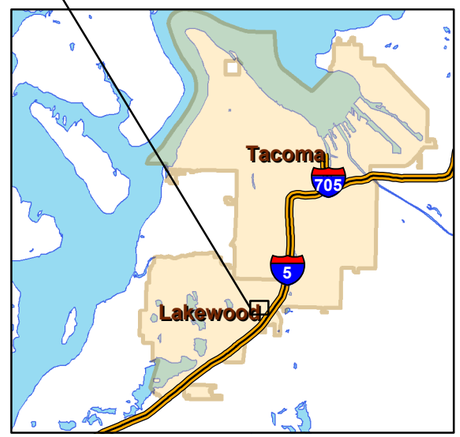
PROPERTY BOUNDARIES (2004)

N

0 75 150 300 450 600

Feet

1 INCH = 300 FEET



Data Sources: Aerial photographs were obtained from Washington State Department of Transportation, Aerial Photography Branch, Tumwater, Washington.
The 1949, 1961 and 1978 aerial photographs are at a scale of 1:1,000 and the 1966, 1970, 1982, 1987, 1992 and 2003 aerial photographs are at a scale of 1:2,000.

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GeoEngineers

1961 HISTORICAL PHOTO

FIGURE 8

Map Revised: July 22, 2004
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Office: ORCH

EDGE OF PAVEMENT (2004)

WETLAND BOUNDARY

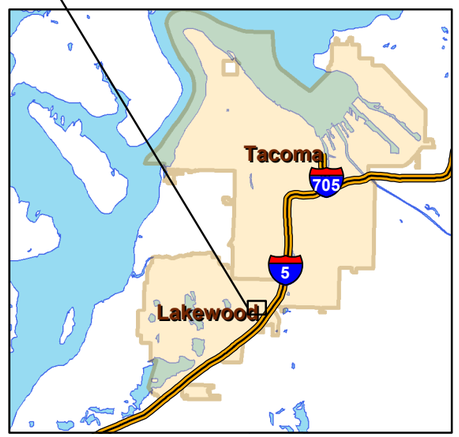
PROPERTY BOUNDARIES (2004)

N

0 75 150 300 450 600

Feet

1 INCH = 300 FEET



Data Sources: Aerial photographs were obtained from Washington State Department of Transportation, Aerial Photography Branch, Tumwater, Washington. The 1949, 1961 and 1978 aerial photographs are at a scale of 1:1,000 and the 1966, 1970, 1982, 1987, 1992 and 2003 aerial photographs are at a scale of 1:2,000.

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GeoEngineers

1949 HISTORICAL PHOTO

FIGURE 9

Map Revised: July 22, 2004

Path: P:\8\8361002\00\83610020Figures.mxd

Office: ORCH

APPENDIX B
SITE PHOTOGRAPHS

APPENDIX B
SITE PHOTOGRAPHS

Photo 1
Access Road at West Edge of Site Showing Himalayan Blackberry, Facing North

Photo 2
Access Road at West Edge of Site Showing Himalayan Blackberry, Facing Southwest

Photo 3
Area of Recently Removed Himalayan Blackberry at the Northwest Corner of the Site

Photo 4
Photo Showing Scotch Broom and Himalayan Blackberry

Photo 5
Access Road at Northern Edge of Site

Photo 6
Photo Showing Miscellaneous Grasses and Scotch Broom at the Site

Photo 7
Photo Showing Invasive Species Including Teasel and Himalayan Blackberry

Photo 8
Photo Showing Former Signs of Use By Transients

Photo 9
Photo Showing an Abandoned Tire at the Site

Photo 10
Site Photo Showing Limited Quantity and Diversity of Vegetation

Photo 11
West Portion of Site Showing Remnants of Former Transient Shack

Photo 12
Debris Found Within the Wetland-like Features of the Site

Photo 13
Photo Showing Both Native and Invasive Vegetation

Photo 14
Photo Showing Concrete Riprap

Photo 15
Close-Up Photo of Former Transient Shack

Photo 16
Debris Found at the Site

Photo 17
Additional Debris Found at the Site

Photo 18
Photo Showing a Mature Pacific Madrone Looking Toward the Southwest

Photo 19
Vegetated Area Located Centrally at the Site

Photo 20
Plastic Yard Chair Located at the Site

Photo 21
Photo of Native Trees with Invasive English Ivy in Southern Half of the Site

Photo 22
Additional Debris Found at the Site

Photo 23
Photo of a Discarded Bicycle at the Site

APPENDIX C
PRIMARY LAWS PERTAINING TO THE REGULATION OF WETLANDS

APPENDIX C
PRIMARY LAWS PERTAINING TO THE REGULATION OF WETLANDS

FEDERAL

RIVER AND HARBORS ACT OF 1899

Gives the Army Corps of Engineers authority to regulate construction activities involving dredging, filling, or obstructing navigable waters. This law is still in effect today under Section 10.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Enacted in 1969 requires all federal agencies to consider potential adverse environmental impacts in evaluating all major federal actions, which include permit approvals. As a direct result of NEPA, the Corps could refuse to grant a permit to fill in a tidal basin not because doing so would impede navigations but because of anticipated adverse effects on marine life (Ferrey 1997).

FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972

Commonly referred to as the Clean Water Act. Section 404 under the act regulates the discharge of dredged or fill material in navigable waters of the United States. Prior to discharging dredged or fill material into navigable waters, a permit from the Corps is required. Section 401 of the act assures that the proposed activity will not have any impacts on state surface water-quality standards. The Section 401 certification may be issued with specific requirements for the project to ensure adequate environmental protection.

STATE OF WASHINGTON

STATE WATER POLLUTION CONTROL ACT (CHAPTER 90.48 RCW)

Gives Ecology the authority to protect state water quality by controlling and preventing the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and underground waters of the state of Washington. Directs Ecology to establish water quality standards that will uphold the state's water quality. A certification issued under Section 401 of the Clean Water Act reflects the state's determination that a project approved by the Corps complies with state water quality standards and other applicable requirements of state law.

GROWTH MANAGEMENT ACT (CHAPTER 36.70A RCW)

The GMA requires local governments to designate and protect critical areas, which include wetlands. Local jurisdictions must use best available science when reviewing and revising policies and regulations for critical areas (Chapter 36.70A 172RCW). Requirements for wetland protection standards, buffers, and wetland mitigation vary from jurisdiction to jurisdiction.

ANTIDEGRADATION POLICY (WAC 173.201A.300)

The implementing rules for the state Water Pollution Control Act (Chapter 90.48 RCW) contain an antidegradation policy (WAC 173-201A.300) that applies to human activities which may impact state water quality. The purpose of the antidegradation policy is to restore and maintain the quality of the surface waters of Washington and ensure that all human activities which may degrade the water quality "at a minimum, apply all know, available, and reasonable methods of prevention, control, and treatment." The policy calls for three levels of protection of surface waters (Tier 1, 2, 3).

CITY OF LAKEWOOD

CRITICAL AREAS ORDINANCE (CHAPTER 14.162)

Under the Growth Management Act (GMA), local jurisdictions (cities, towns, and counties) are required to identify critical areas, including wetlands and adopt ordinances protecting those areas. A Critical Areas Ordinance (CAO) was adopted by The City of Lakewood in 1996, which specifies the permit requirements and standards for wetland protection that will be employed within the City's jurisdiction. Wetlands regulations and the associated definitions and exemptions are summarized in Chapter 14.162 of the CAO.

SHORELINE MASTER PROGRAM

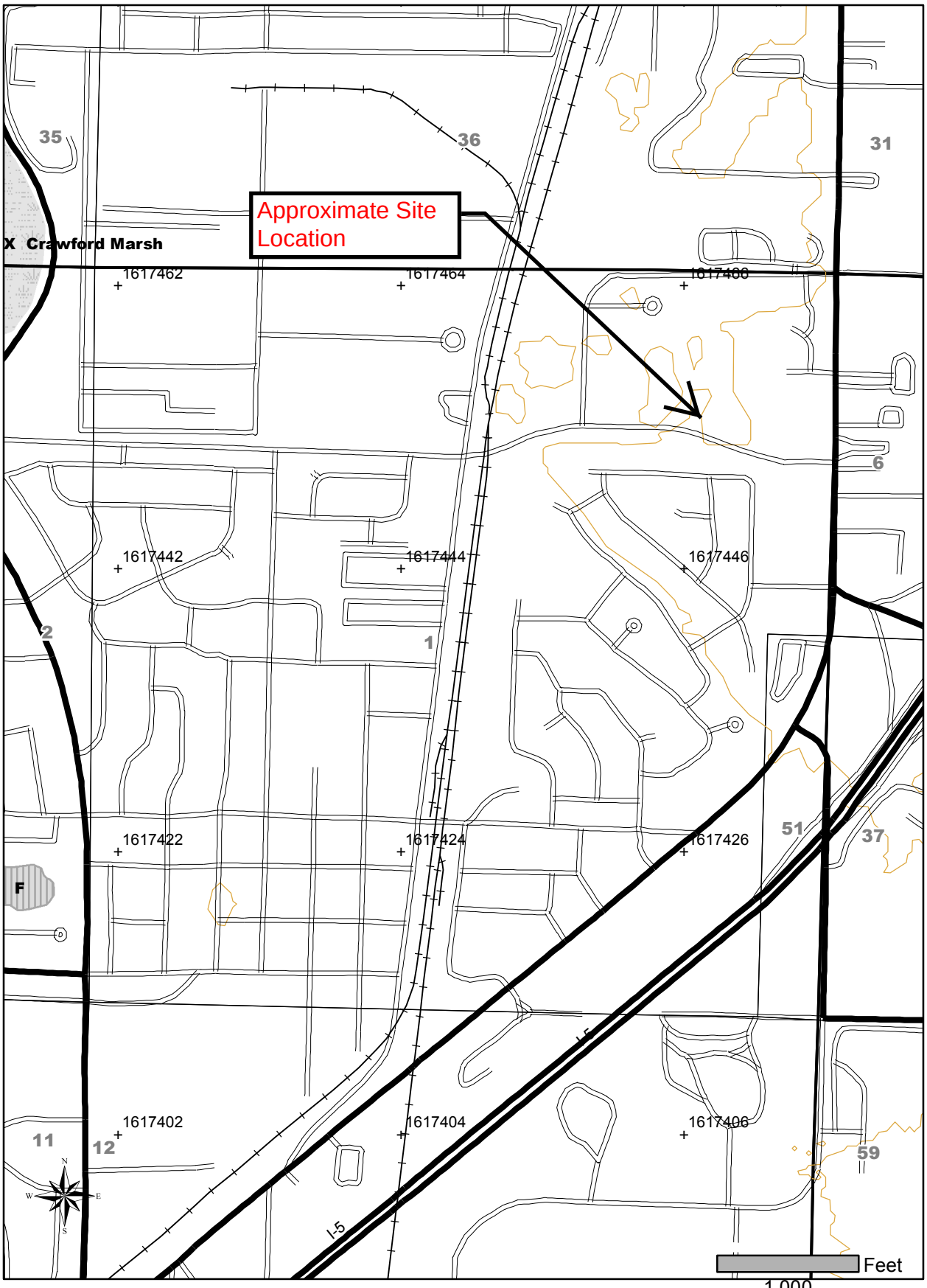
The Shoreline Management Act (SMA, Chapter 90.58 RCW) directs local jurisdictions to develop shoreline master programs in order to protect the state's shorelines. Shoreline jurisdiction extends a minimum of 200 feet from the ordinary high water mark (OHWM) of a state shoreline. Under the SMA, wetlands that are associated with a shoreline area are regulated, even when they extend beyond 200 feet from the OHWM. Most shoreline master programs require the protection of a buffer in addition to protecting the wetland itself. Projects proposed in the shoreline zone must be consistent with the approved master plan or the applicant must apply for a variance.

APPENDIX B
Published Mapped Data

FOREST PRACTICE ACTIVITY MAP

TOWNSHIP 19 NORTH HALF 0, RANGE 02 EAST (W.M.) HALF 0, SECTION 1

Application #: _____

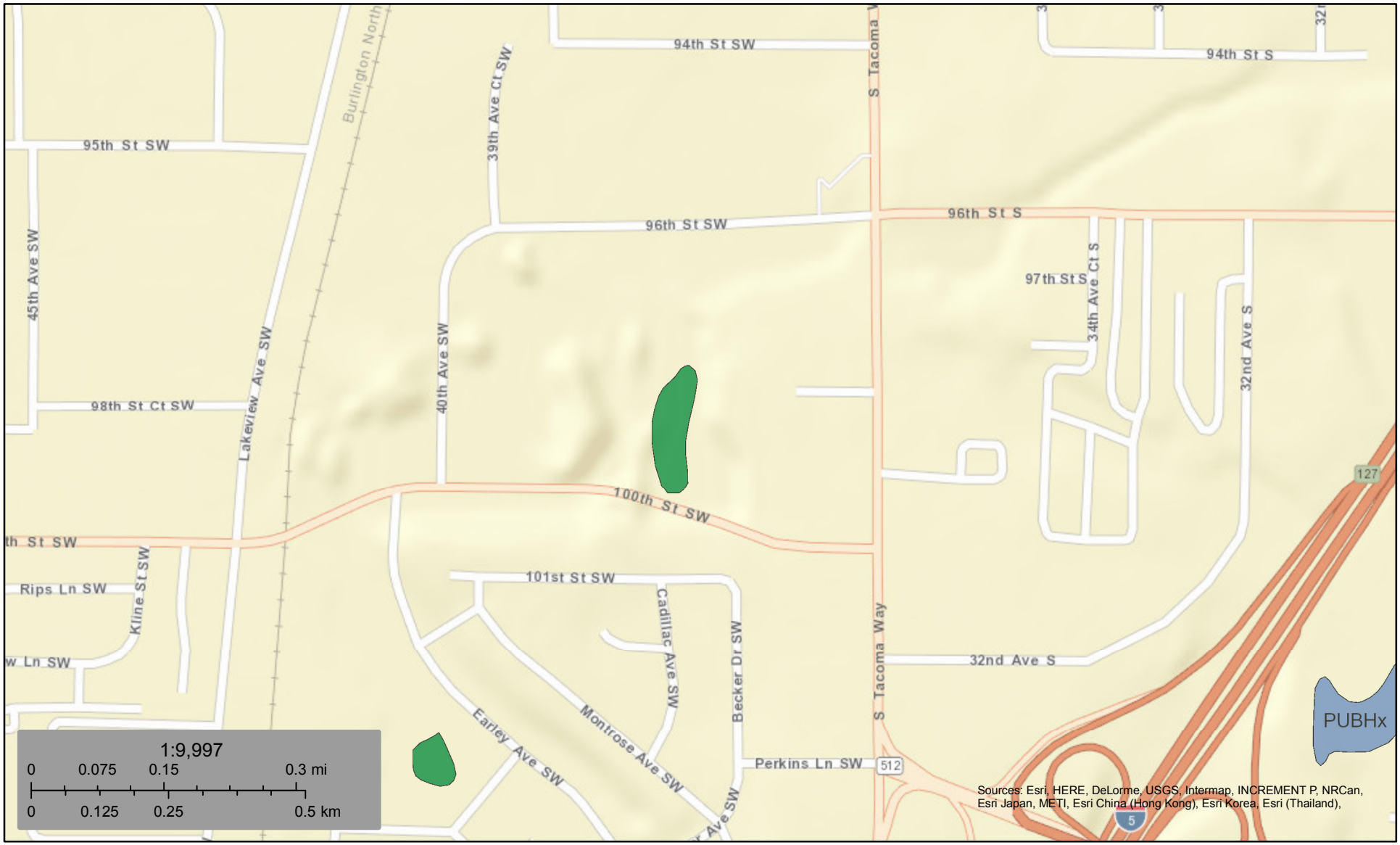


Please use the legend from the FPA Instruction or provide a list of symbols used.

Date: 11/21/2016 Time: 11:42:04 AM
NAD 83
Contour Interval: 40 Feet

U.S. Fish and Wildlife Service
National Wetlands Inventory

NWI Map for South Base Facility



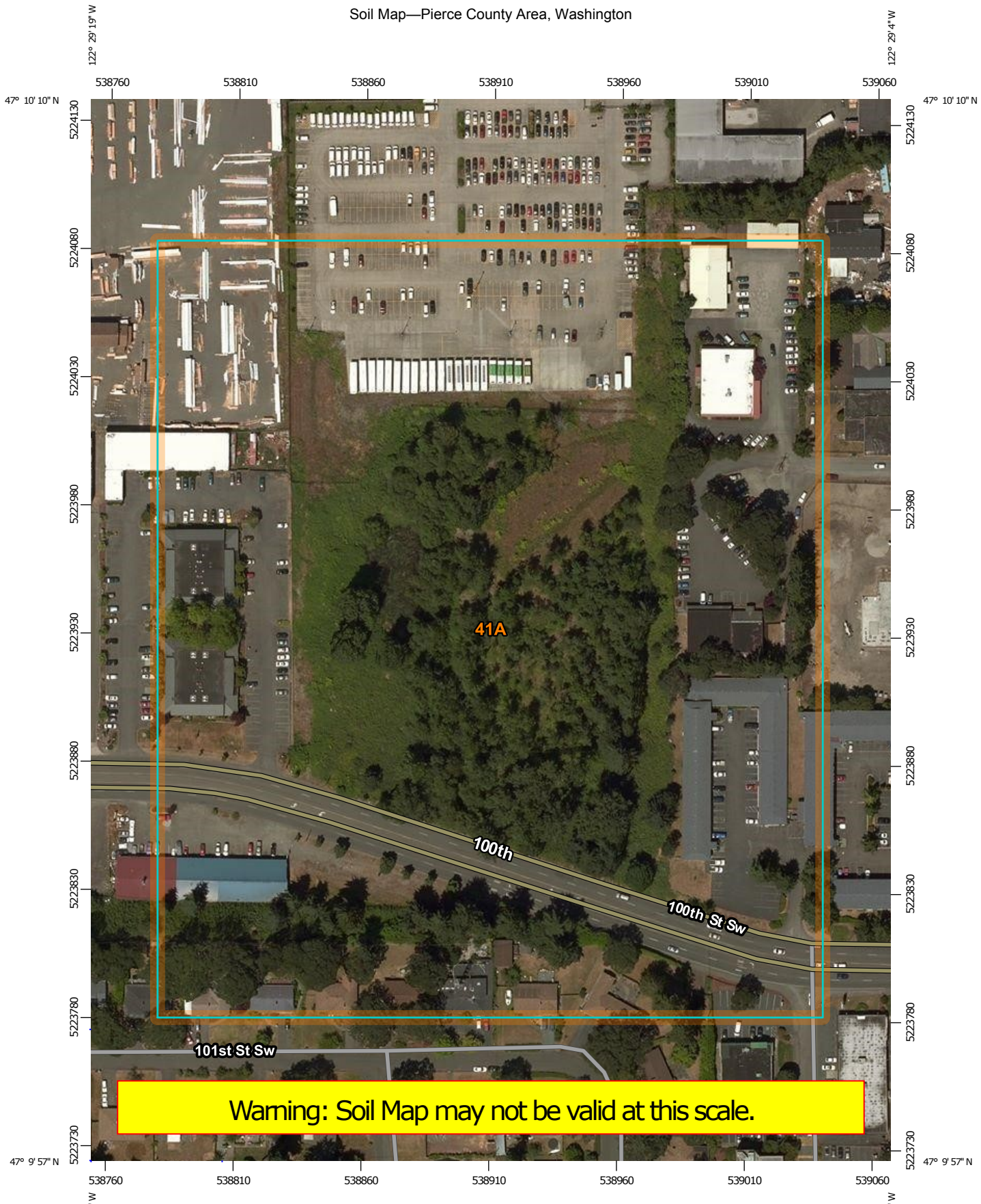
November 21, 2016

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine


WASHINGTON DEPARTMENT OF FISH & WILDLIFE
HELP | FAQs | LEGEND | ORDER PHS MAP
PHS on the Web
Layers
Tools
Base Maps
Aerial
Hybrid
Boundaries
Parcel
Street
Topography
Toggle PHS
Turn PHS Data Off
PHS View Source
PHS Plus Public View (
Wetlands and Freshwater Forested/Shrub Wetland
Wetlands
Freshwater Forested/ Shrub Wetland
95th St SW
96th St SW
97th St S
98th St Ct SW
100th St SW
101st St SW
32nd Ave S
Perkins Ln SW
45th Ave SW
40th Ave SW
Lakeview Ave SW
Cadillac Ave SW
Becker Dr SW
S Tacoma Way
Earley Ave SW
Montrose Ave SW
0 300 600ft
Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRC...
esri

Pierce County
WASHINGTON

Disclaimer: The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. The County assumes no liability for variations ascertained by actual survey. **ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'.** The County makes no warranty of fitness for a particular purpose. 2016/11/21



Map Scale: 1:2,020 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Pierce County Area, Washington
Survey Area Data: Version 11, Sep 9, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 8, 2014—Jul 15, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Pierce County Area, Washington (WA653)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
41A	Spanaway gravelly sandy loam	19.6	100.0%
Totals for Area of Interest		**19.6**	**100.0%**