Wetland and Stream Survey for the White Pass Expansion FEIS

September, 2004

SE GROUP

1.0 INTRODUCTION

This report presents the results of SE Group's delineation of wetlands and other waters of the U.S., subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) under Section 404 of the Clean Water Act of 1975, as amended in 1977 (hereafter referred to as "wetlands and streams"), within the Special Use Permit (SUP) area and proposed expansion area of the White Pass Ski Area (White Pass). White Pass is located on the Okanogan-Wenatchee and Gifford Pinchot National Forests, approximately 20 miles east of the town of Packwood, Washington and 55 miles west of the town of Yakima, Washington (Figure 1). The White Pass SUP area is approximately 710 acres in size and the proposed expansion area is approximately 770 acres in size. White Pass Co., Inc. is the operator of the White Pass Ski Area and is the holder of a SUP on both the Naches Ranger District of the Wenatchee-Okanogan National Forest (WONF) and the Cowlitz Valley Ranger District of the Gifford Pinchot National Forest (GPNF). It is important to note that the WONF administers the SUP for the White Pass Ski Area.

The areas of proposed development within the current SUP area and the proposed SUP expansion area that were surveyed by SE Group at White Pass are depicted in Sheet 1 in Appendix F and hereafter will be referred to as the White Pass Study Area. SE Group delineated the jurisdictional wetlands and streams within the White Pass Study Area identified on Sheet 1 in Appendix F in August and September of 2002 and June of 2004. The wetlands and streams were delineated consistently with protocols identified in the *Corps of Engineers Wetlands Delineation Manual* (hereafter referred to as the "*1987 Manual*") (Environmental Library, 1987).

1.1 Project Background

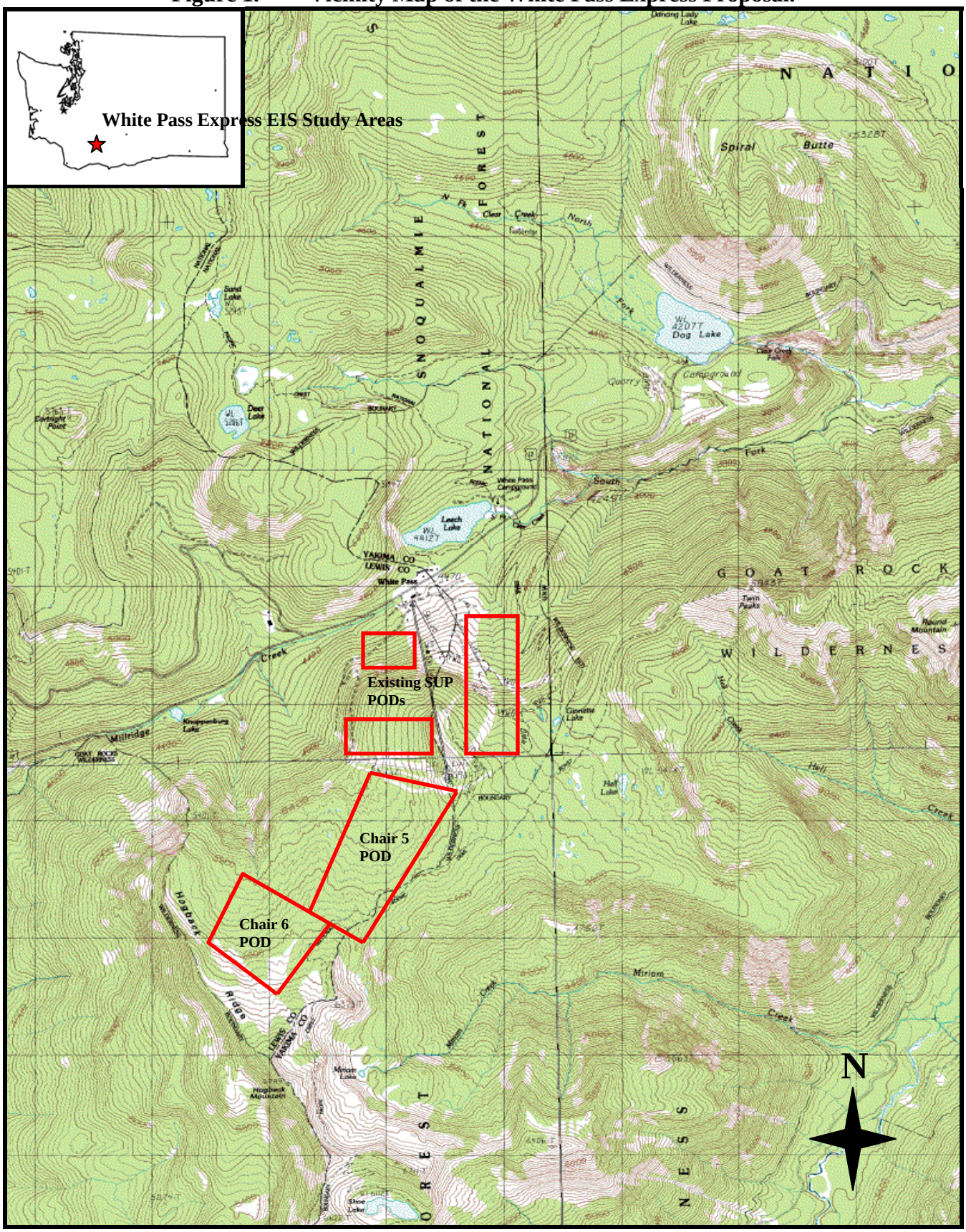
White Pass is currently operating under their existing Master Development Plan, which was approved by the United States Forest Service (USFS) in 1977. White Pass is currently proposing a permit amendment to install two new chairlifts, clearing for gladed skiing/trails and off-highway parking, and the development of a small mid-mountain skier support facility. The permit amendment includes an expansion of the existing SUP boundary by approximately 770 acres in Hogback Basin and Pigtail Basin. The wetland and stream delineation was performed in conjunction with the Environmental Impact Statement (EIS) that is being prepared for the proposed White Pass Mountain Facilities Expansion Proposal, as required by the National Environmental Policy Act (NEPA) of 1970.

1.2 Delineation Objectives

The primary objectives of the wetland and stream delineation performed by the SE GROUP at White Pass include the following:

1) Delineate the geographic extent of jurisdictional wetlands and streams within the proposed disturbance areas under the White Pass Mountain Expansion FEIS (henceforth referred to as the White Pass Study Area) consistent with protocols identified in the *Corps of Engineers Wetlands Delineation Manual* (*1987 Manual*) (Environmental Laboratory, 1987) and pertinent regional guidance letters and public notices.

Figure 1. Vicinity Map of the White Pass Express Proposal.



Source: USGS, 1980. Combination of Old Snowy Mountain, Spiral Butte, and White Pass Quadrangles. Scale: Not to Scale

2) Produce an accurate map and associated Geographic Information System (GIS) files that depict the location of the jurisdictional wetlands and streams within the White Pass Study Area in relation to the White Pass Mountain Expansion FEIS, existing roads, existing lifts and facilities, and other map elements.

2.0 METHODS

2.1 Wetland Delineation Protocol

To ensure consistency with U. S. Federal, Washington State, Lewis County and Yakima County regulations, SE GROUP delineated the jurisdictional wetlands (as defined in 33 CFR 328.3 (a)(1-8) and 328.3 (b-c)) in the White Pass Study Area consistent with the methodology outlined in the *1987 Manual*. The methodology found in the *1987 Manual* was implemented with the benefit of current regulations and Regulatory Guidance Letters (RGL) and memoranda ((ACOE), RGL 82-2 and 86-9) (USACE, Memorandum 3-92). According to the *1987 Manual*, a three parameter approach is used when making jurisdictional wetland determinations, wherein positive indicators of wetland hydrology, hydric soils, and hydrophytic vegetation all must be present in order to determine that an area is a jurisdictional wetland (Environmental Laboratory, 1987).

2.1.1 Wetland Hydrology Parameter

The presence of wetland hydrology can be determined using a variety of direct and indirect indicators, consistent with the *1987 Manual*. Direct hydrology indicators, such as stream gauging station data or historical records pertaining to the White Pass Study Area can be used to satisfy the wetland hydrology parameter. The wetland hydrology parameter can also be determined using indirect field indicators, which include, but are not limited to: visual observation of inundation or soil saturation, sediment deposition, drainage patterns in wetlands, water stained leaves, watermarks, oxidized root channels (*i.e.*, rhizospheres), and drift lines (ACOE, 1991 and Environmental Laboratory, 1987).

2.1.2 Hydric Soils Parameter

The USDA, National Technical Committee on Hydric Soils (NTCHS) developed a set of four technical criteria for identifying hydric soils (see Table 1). Meeting the hydric soils parameter for wetland determinations requires fulfillment of at least one of the four technical criteria in Table 1. Fulfillment of the hydric soils parameter can also be satisfied by using published soils information and field indicators. Field indicators for determining whether a soil meets the hydric soils parameter are listed in the document, *Field Indicators of Hydric Soils in the United States* (USDA NRCS, 1998). Field indicators include, but are not limited to the presence of: a histosol or histic epipedon, hydrogen sulfide odor, organic bodies, stratified layers, muck, gleyed matrix colors, and redox dark surface. Field indicators contained in the above-referenced document are intended to supersede guidance provided in the *1987 Manual*. Soil colors were determined in the field using standard NRCS sampling techniques and Munsell Soil Color Charts (Munsell, 1990).

Table 1.
Technical Criteria for Identification of Hydric Soils in the United States

1	All Histosols except Folists, or
2	Soils in Aquic suborders, great groups, or subgroups, Abolls suborder, Aquisalids, Pachic subgroup, or Cumulic subgroups that are: a. somewhat poorly drained with a water table equal to 0.0 feet from the surface during the growing season, or b. poorly drained or very poorly drained and have either: (1) a water table at 0.0 feet during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches, or for other soils (2) a water table at less than or equal 0.5 feet from the surface during the growing season if permeability is equal to or greater than 6.0 inches/hour in all layers within 20 inches, or (3) a water table at less than or equal to 1.0 feet from the surface during the growing season if permeability is less than 6.0 inches/hour in any layer within 20 inches, or
3	Soils that are frequently ponded for long duration or very long duration during the growing season, or
4	Soils that are frequently flooded for long duration or very long duration during the growing season.

Source: USDA, NTCHS, 1994

2.1.3 Hydrophytic Vegetation Parameter

According the *1987 Manual*, an area meets the hydrophytic vegetation parameter when more than 50% of the dominant species from each stratum have an assigned indicator status of obligate wetland (OBL), facultative wetland (FACW), and/or facultative (FAC). The indicator status of each species was assigned using regionally specific plant taxonomy texts and the *National List of Plant Species that Occur in Wetlands: Northwest (Region 9)* (Reed, 1988). An indicator status refers to the relative frequency with which a particular species occurs in jurisdictional wetlands (see Table 2). Dominant species in each of four strata (*i.e.*, tree, sapling/shrub, herb, and woody vine) were identified as the most abundant species that immediately exceed 50% of the total aerial cover for that stratum, plus any additional species that comprise 20% or more the total aerial cover for that stratum.

Table 2.
Plant Indicator Status Categories

Indicator Status[a]	Definition
Obligate Wetland (OBL)	Occur almost always in wetlands under natural conditions (probability >99%).
Facultative Wetland (FACW)	Usually occur in wetlands (probability >67% to 99%), but occasionally found in non-wetlands.
Facultative (FAC)	Equally likely to occur in wetlands or non-wetlands (probability 33% to 67%).
Facultative Upland (FACU)	Usually occur in non-wetlands, but occasionally found in wetlands (probability 1% to <33%).
Obligate Upland (UPL)	Occur rarely in wetlands under natural conditions (probability <1%).
No Indicator Status (NI)	Insufficient information exists to assign an indicator status.

Source: United States Fish and Wildlife Service, 1988

[a]The three facultative categories are sometimes modified by plus (+) and minus (-) signs for the purpose of designating a higher or lower level of the indicator status. A FAC- indicator status is not considered to be an indicator of hydrophytic vegetation.

2.2 Waters of the United States Delineation Protocol

SE GROUP delineated the jurisdictional streams consistent with the definitions provided in 33 CFR 328.3 (a)(1-5) within the White Pass Study Area. The applicable portions of the streams definition are as follows, "all other waters such as intrastate lakes, rivers, streams (including

intermittent streams)...the use, degradation, or destruction of which could affect interstate or foreign commerce..." and "tributaries of waters identified in paragraphs (a)(1)-(4) of this section" (33 CFR 328.3 (a)(3 and 5)). In applying this definition to conditions encountered in the White Pass Study Area, SE GROUP used the following criteria for identifying jurisdictional streams: (1) continuous and distinct bed and bank features must be present, (2) evidence of annual scour must be present, and (3) the landforms near the stream must exhibit morphology that is indicative of stream processes (i.e., an identifiable concave swale or gully, not a planer or convex surface). In the White Pass Study Area, SE GROUP observed swales (concave landforms), small rivulets, and other erosional features that were not identified as waters of the U.S. because these features did not have the fluvial morphology (bed and bank features or scour marks) necessary to meet the criteria introduced above. The erosional features were generally located on high gradient, convex, and sparsely vegetated surfaces, where spring snowmelt was the dominant hydrology source.

2.3 Field Methodology

The fieldwork necessary for the delineation of the jurisdictional wetlands and streams within the White Pass Study Area was performed during August and September of 2002 and June 2004 by SE GROUP. The White Pass Study Area was limited to encompass only the proposed disturbance areas associated with the proposed White Pass Expansion FEIS. The geographic extent of the White Pass Study Area was limited because potential wetland and stream impacts would only occur where development activities have been proposed. The White Pass Study Area extended approximately 75 feet outside of all proposed development areas (e.g., ski trails and lifts) to prevent potential impacts to wetlands and streams that are adjacent to proposed development areas.

The wetlands and streams that were flagged in the White Pass Study Area were mapped using a Trimble Pro XRS GPS unit with a TSCI data-logger. This GPS unit is reported by the manufacturer to have sub-meter accuracy. Ideal conditions for this GPS unit are locations that receive the most satellite coverage, such as a low amount of canopy cover, and use during times when the most satellites are available. Sub-optimal conditions occur when one or more of the "ideal conditions" requirements above are not met. Most of the wetlands and streams delineated by SE GROUP within the White Pass Study Area were mapped under optimal conditions. When sub-optimal conditions occurred for using the GPS unit, wetland and stream mapping was also done by obtaining either a center point or a control point with the GPS unit and then using ground mapping or aerial photo interpretation to extrapolate the boundaries of the wetland or stream to their correct dimensions.

3.0 RESULTS

3.1 White Pass Ski Area Topography

The developed ski area facilities at White Pass are located at the crest of White Pass off Route 12 at approximately 4500 feet elevation. The ski area is situated on the northern slope of Tieton Peak in the Cascade mountain range. Numerous snowmelt fed streams have partially dissected

the convex interfluves between the glacial valleys on the north side of Tieton Peak. The streams have formed many gulleys and swales that generally trend southeast to northwest. Elevations of the proposed White Pass Expansion range from 5420 feet above sea level at the lower terminal of the proposed Chair 5 chairlift to 6820 feet above sea level at the upper terminal of the proposed Chair 6 chairlift. Slopes in the proposed White Pass Express area typically range from approximately 5 to 40 percent.

3.2 Wetland Delineation Findings

SE GROUP has determined that the total area of the 114 wetlands identified within the White Pass Study Area is 5.28 acres (229,890 square feet, see Appendix D). The findings of SE GROUP's wetland delineation are best presented by grouping wetlands based on their geomorphologic characteristics: (1) slope wetlands, (2) riverine wetlands, and (3) depression wetlands (ACOE, 1995). Table 3 provides a summary by wetland type of the morphology and calculated area of the wetlands that were delineated by SE GROUP in the White Pass Expansion FEIS. The complete wetland delineation log is given in Appendix D. This wetland and stream delineation is conditional upon field review and final jurisdictional determination by the USACOE.

Table 3.
Summary of Wetlands Delineated within the White Pass Expansion Study Area

Wetland Type	Vegetation Type	Number of Wetlands	Total Acres	Total Square Feet
Depression	Emergent	4	0.569	24,788
Slope	Emergent	17	2.841	123,764
Riverine	Emergent	93	1.867	81,337
	Total	**114**	**5.278**	**229,890**

3.2.1 Depression Wetlands

SE GROUP delineated a total of 4 depression wetlands, which are located in the general areas of level to gently inclined topography (see Sheet 1 in Appendix F). The depression wetlands usually occur in topographic depressions where accumulation of surface water can occur. Dominant hydrologic input into depression wetlands is from precipitation, groundwater discharge, and interflow from adjacent uplands. The depression wetlands generally had a hydrology indicator such as saturated soils within 12 inches or open water conditions. The following indirect field indicators were used to determine the presence of wetland hydrology for the depression wetlands; visual observation of soil saturation in the upper 12 inches, sediment deposition, drainage patterns in wetlands, water stained leaves, and oxidized root channels (See wetland datasheets in Appendix C).

The composition of the soils observed in the depression wetlands ranged from mucky organic soils (i.e., histic epipedons) to mineral soils with sandy loam texture classes. Soil profiles observed in a depression wetland is recorded on a data sheet in Appendix C. A typical profile of the soils observed in the depression wetlands is summarized below. The surface (O) horizon averages 2 inches thick and has a gray colored gley (Munsell color (MC) GLEY 1 6/5 GY). The sub-surface (A) horizon averages 16 inches thick and is characterized by a dark brown loamy sand (MC 10YR 3/2), with distinct redox. The hydric soil field indicators that were observed in

the depression wetlands and used to meet the hydric soil parameter include; A2-histic epipedon, F1-loamy mucky minerals, F2-loamy gleyed matrix, F6-redox dark surface, reducing conditions, and gleyed or low-chroma colors (see Appendices B and C).

Vegetation in the depression wetlands is dominated by Douglas fir (*Pseudotsuga menziesil*), Mountain hemlock (*Tsuga mertensiana*), and Pacific silver fir (*Abies amabilis*) in the tree layer, Salix species (*Salix sp.*), Sitka alder (*Alnus sinuate*), and Subalpine spirea (*Spirea denisifolia*) in the shrub layer, and Black alpine sedge (*Carex nigricans*), Falkland island sedge (*Carex macloviana*), and Showy sedge (*Carex spectabilis*) in the herb layer. Other species that were commonly found in the depression wetlands in the White Pass Study Area include Bearded fescue (*Festuca subulata*) and Fan-leaved cinqufoil (*Potentilla flabellifolia*). The plant communities in all of the depression wetlands met the hydrophytic vegetation parameter, where more than 50 % of the dominant plant species within each stratum are Obligate (OBL), Facultative Wetland (FACW), or Facultative (FAC). Dominant plant species identified in the depression wetlands are included on the data sheets in Appendix C and in the list of plant species in Appendix A.

3.2.2 Slope Wetlands

SE GROUP delineated a total of 17 slope wetlands, which are throughout the White Pass Study Area (see Sheet 1 in Appendix F). The slope wetlands usually occur on sloping land where groundwater discharges at the soil surface. The primary hydrologic input to the slope wetlands in the White Pass Study Area is shallow sub-surface flow that discharges at or near the surface in response to breaks in slope and/or soil texture changes. The following indirect field indicators were used to determine the presence of wetland hydrology for the slope wetlands; visual observation of soil saturation in the upper 12 inches, sediment deposition, drainage patterns in wetlands, water stained leaves, and oxidized root channels (see wetland datasheets in Appendix C).

The composition of the soils observed in the slope wetlands ranged from mucky organic soils (i.e., histic epipedons) to mineral soils with sandy loam texture classes. The slope wetlands can be divided into two subgroups based on whether or not there was a presence of gleyed material. A soil profiles observed in a slope wetland is recorded on a data sheet in Appendix C. A typical profile of the soils observed in the gleyed slope wetlands is summarized below. The surface (O) horizon averages 6 inches thick and is a gray colored gley (MC GLEY 1 5/10 Y). The sub-surface (A) horizon averages 16 inches thick and is characterized by a dark brown fibric loamy sand (MC 10YR 2/2), with distinct redox. The non-gleyed slope wetlands possessed a similar soil profile composition but lacked the gleyed component. The hydric soil field indicators that were observed in the slope wetlands and used to meet the hydric soil parameter include; A2-histic epipedon, A5-stratified layers, F1-loamy mucky minerals, F2-loamy gleyed matrix, F6-redox dark surface, reducing conditions, and gleyed or low-chroma colors (see Appendices B and C).

Vegetation in the slope wetlands is dominated by Douglas fir, Mountain hemlock, and Pacific silver fir in the tree layer, Salix species, Sitka alder, and Subalpine spirea in the shrub layer, and Black alpine sedge, Falkland island sedge, and Brown bog sedge (*Carex buxbaumii*) in the herb

layer. Other species that were commonly found in slope wetlands in the White Pass Study Area include Bearded fescue, Fan-leaved cinquefoil, Showy sedge, Partridge-foot (*Luetkea pectinata*), and Avalanche lily (*Erythonium montanum*). The plant communities in all of the slope wetlands met the hydrophytic vegetation parameter, where more than 50 % of the dominant plant species within each stratum are Obligate (OBL), Facultative Wetland (FACW), or Facultative (FAC). Dominant plant species identified in the slope wetlands are included on the data sheets in Appendix C and in the list of plant species in Appendix A.

3.2.3 Riverine Wetlands

The 93 riverine wetlands that were delineated by SE GROUP are generally located throughout the White Pass Study Area (see Sheet 2 in Appendix F). Riverine wetlands are differentiated from slope wetlands for this study by their association with a stream channel or a stream channel's floodplain/terrace. The primary hydrologic input to the riverine wetlands is surface water that flows from streams onto adjacent floodplains during high flow events (e.g., spring melt). Secondary hydrologic inputs include shallow sub-surface flow from up-gradient source areas (e.g., valley walls), and from direct precipitation. The indirect field indicators that were used to determine the presence of wetland hydrology for the riverine wetlands included; visual observation of soil saturation in the upper 12 inches, sediment deposition, and drainage patterns in wetlands (see Appendix C).

The soils observed in the riverine wetlands were similar to the slope wetlands and ranged from mucky organic soils (i.e., histic epipedons) to mineral soils with sandy loam texture classes. The majority of the riverine wetlands exhibited gleyed soils. A soil profile observed in a riverine wetland is recorded on a data sheet in Appendix C, and a typical profile of the soils observed in the riverine wetlands is summarized below. The surface (O) horizon averages 6 inches thick and is characterized as a gray colored gleyed loam (MC GLEY 1 5/10 Y). The sub-surface (A) horizon averages 16 inches thick and is characterized by a dark brown loamy sand (MC 10YR 2/2), with distinct redox. The non-gleyed riverine wetlands possessed a similar soil profile composition but lacked the gleyed component. The hydric soil field indicators that were observed in the riverine wetlands and used to meet the hydric soil parameter include; A2-histic epipedon, A5-stratified layers, F1-loamy mucky minerals, F2-loamy gleyed matrix, F6-redox dark surface, reducing conditions, and gleyed or low-chroma colors (see Appendices B and C).

Vegetation in the riverine wetlands is dominated by Douglas fir, Mountain hemlock, and Pacific silver fir in the tree layer, Salix species, Sitka alder, and Subalpine spirea in the shrub layer, Black alpine sedge, Fan-leaved cinqufoil, and Showy sedge in the herb layer. Other species that were commonly found in slope wetlands in the White Pass Study Area include Falkland island sedge, Bearded fescue, Partridge-foot, Avalanche lily, Western Indian paintbrush (*Castilleja occidentalis*), Broadleaf lupine (*Lupinus latifolius*), and Ducksbill lousewart (*Pedicularis ornithorhyncha*). The plant communities in all of the riverine wetlands met the hydrophytic vegetation parameter, where more than 50 % of the dominant plant species within each stratum are Obligate (OBL), Facultative Wetland (FACW), or Facultative (FAC). Dominant plant species identified in the riverine wetlands are included on the data sheets in Appendix C and in the list of plant species in Appendix A.

3.2.4 Isolated Wetlands

On January 9, 2001, the U.S. Supreme Court ruled that the ACOE could no longer use the "Migratory Bird Rule" to extend its regulation over "waters of the U. S." to include isolated, non-navigable, intrastate waters (Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers, No. 99-1178 [January 9, 2001]). This recent court decision, referred to as the SWANCC decision, clarified the definition of "isolated waters" by stating that they are waters that lack a hydrologic connection to other waters that are part of or adjacent to interstate waters, a tributary system, or traditionally navigable waters. The SWANCC decision will affect any federal, state, or tribe implementing provisions of the Clean Water Act that apply the definition of "waters of the U. S.". The following subsections of the regulatory definition of "waters of the U. S." are, or potentially are, affected by SWANCC: intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds.

In light of SWANCC, ACOE field staff should seek formal project-specific headquarters approval prior to asserting jurisdiction over isolated non-navigable intrastate waters based on other types of interstate commerce links listed in current regulatory definitions of "waters of the U. S."

3.3 Waters of the U. S. Delineation Findings

SE GROUP determined that the total length of waters of the U.S. within the White Pass Study Area is 15.28 miles (80,675 linear feet). The stream length calculation is based on field observations and analysis of GPS and air-photo mapping by SE GROUP using ARCVIEW GIS software. Areas such as upland swales and rivulets were not flagged during the delineation because they did not meet the criteria that SE GROUP used for identifying waters of the U. S. (see Section 2.2). This waters of the U.S. delineation is conditional upon field review and final jurisdictional determination by the ACOE.

Streams can be classified into three different types: perennial, intermittent, and ephemeral. Perennial streams have continuous flow during years of normal precipitation. Intermittent streams also have well defined channels, but do not flow continuously, and are typically fed by groundwater sources. Ephemeral streams have water flowing in them normally only after precipitation events and their hydrologic source is usually from overland surface flow. One hundred and sixty-two (162) streams were delineated by SE GROUP at the White Pass Study Area, of which 122 were ephemeral, 24 were intermittent, and 16 were perennial. Table 4 presents a summary of the streams identified at the White Pass Facilities Expansion Study Area, summarized by stream type. See Appendix F for a data log of all streams flagged in the White Pass Expansion Study Area.

Table 4.
Type and Length of the Streams Delineated within the White Pass Expansion Study Area

Stream Type	Number of Streams	Slope Range	Total Length (Feet)	Total Length (Miles)
CHAIR 5 POD				
Ephemeral	54	3-40	14167.3	2.683
Intermittent	6	-	6008.7	1.138
CHAIR 6 POD				
Ephemeral	67	10-40	21418.4	4.057
Intermittent	5	-	2676.4	0.507
EXISTING SUP POD				
Ephemeral	1	10-40	1697.3	0.321
Intermittent	13		17175.8	3.253
Perennial	16	-	17531.4	3.320
TOTAL	**162**	**-**	**80675.3**	**15.279**

3.4 Riparian Reserves

Riparian Reserves are U.S. Forest Service land allocations that are defined as "lands along wetlands and streams as well as along potentially unstable areas where special standards and guidelines direct land use." (USDA, USFS, 1994). The 5 categories of Riparian Reserves have been classified as follows:

1) permanently flowing nonfish-bearing streams
2) seasonally flowing or intermittent streams
3) wetlands greater than 1 acre
4) wetlands less than 1 acre
5) lakes and natural ponds

In the White Pass Study Area, SE Group determined the width of the Riparian Reserves for wetlands and streams based on the rationale presented in Table 5. The width of Riparian Reserves for the wetlands and streams within the White Pass Study Area are also displayed graphically in Appendix F, Sheet 2.

Table 5.
Riparian Reserve Categories, Reserves, and Rationale for Wetland, Stream, and Lake Classification.

Classification Rationale	Reserve Width	Riparian Reserve Width Rationale
Permanently flowing, non-fish bearing streams	150 feet	The default 150 feet slope distance is greater than the distance equal to the height of one site-potential tree (100 ft.), the outer edges of 100-year floodplain, the top of the inner gorge, and the outer edges of riparian vegetation (USFS, 1998b; USFS, 1998c; and USDA, USDI, 1994).
Seasonally flowing or intermittent streams	100 feet	The distance equal to the height of one site-potential tree (100 ft.) is equal to the default 100 feet slope distance, and larger than the extent of unstable and potentially unstable areas, the outer edge of riparian vegetation, and the top of the inner gorge (USFS, 1998b; USFS, 1998c; and USDA, USDI, 1994).
Wetland greater than 1 acre	150 feet	The wetland boundary is defined, in part, as the outer edge of riparian vegetation and saturated soil, so the riparian reserve includes the wetland plus the default 150 feet slope distance which is greater than the one site potential tree height (100 ft.) (USFS, 1998b; USFS, 1998c; and USDA, USDI, 1994).
Wetland less than 1 acre	300 feet	The GPNF *Land and Resource Management Plan – Amendment 11* states that the Riparian Reserve boundary for wetlands less than 1 acre is 300 ft., which is greater than the extent of the riparian vegetation, saturated soil, and one site potential tree height (100 ft.) (USFS, 1998b; USFS, 1998c; and USDA, USDI, 1994).
Natural Lakes and Ponds	300 feet	The default 300 feet slope distance is greater than the distance equal to the height of one site-potential tree (100 ft.), the outer edges of riparian vegetation, and the extent of saturated soil (USFS, 1998b; USFS, 1998c; and USDA, USDI, 1994).

5.0 CONCLUSION

SE GROUP determined that the White Pass Study Area contains 15.28 miles of waters of the U.S., and that the White Pass Study Area contains 5.28 acres of wetlands. It is SE GROUP's recommendation that a field verification be scheduled with the ACOE prior to construction of the White Pass Expansion, if approved. In addition, all of the pertinent permits and approvals will need to be acquired from the appropriate federal, state, and local agencies prior to implementation of the White Pass FEIS. It is also important to note that delineation of the streams and wetlands within the White Pass Study Area is conditional upon final jurisdictional determination by the ACOE.

5.0 REFERENCES

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APPENDIX A

List of Plants Identified during the Delineation of the White Pass Express Proposal

Plant Species Identified by SE GROUP within the White Pass Study Area

STRATUM	COMMON NAME	SCIENTIFIC NAME	INDICATOR STATUS
Tree	Douglas fir	*Pseudotsuga menziesil*	FACU
	Mountain hemlock	*Tsuga mertensiana*	FACU
	Pacific silver fir	*Abies amabilis*	FACU
	Ponderosa pine	*Pinus ponderosa*	FACU-
	Subalpine fir	*Abies lasiocarpa*	FACU
	Western red cedar	*Thuja plicata*	FAC
Shrub	Beargrass	*Xerophyllum*	FACU
	Big huckleberry	*Vaccinium membranaceum*	FACU+
	Dwarf bramble	*Rubus lasiococcus*	FACU+
	False azelia	*Menziesia ferruginea*	FACU+
	Low huckleberry	*Vaccinium myrtillus*	NI
	Mountain ash	*Sorbus scopulina*	FACU
	Salix species	*Salix sp.*	FACW
	Sidebells pyrola	*Pyrola secunda*	FACU
	Sitka alder	*Alnus sinuate*	FACW
	Subalpine spirea	*Spirea denisifolia*	FACU-
Herb	Avalanche lily	*Erythonium montanum*	FACU
	Bearded fescue	*Festuca subulata*	FAC
	Black alpine sedge	*Carex nigricans*	FACW
	Broadleaf lupine	*Lupinus latifolius*	NI
	Brown bog sedge	*Carex buxbaumii*	OBL
	Ducksbill lousewart	*Pedicularis ornithorhyncha*	FACW
	Falkland island sedge	*Carex macloviana*	NI
	Fan-leaved cinqufoil	*Potentilla flabellifolia*	FAC
	Partridge-foot	*Luetkea pectinata*	FACU-
	Showy sedge	*Carex spectabilis*	FACW
	Smooth woodrush	*Luzula hitchockii*	FAC-
	Western indian paintbrush	*Castilleja occidentalis*	FAC+
	Western rattlesnake plantain	*Goodyera oblongifolia*	FACU-

APPENDIX B

List of Hydric Soil Indicators used in the Delineation of the White Pass Mountain Facilities Expansion Proposal

List of Hydric Soil Indicators used in the Delineation of the White Pass Mountain Facilities Expansion Proposal

INDICATOR NAME	DESCRIPTION OF CRITERIA
A2 – Histic Epipedon	Surface organic soil material 20 cm (8 in.) or more thick.
F1 – Loamy Mucky Mineral	A mucky modified mineral layer 10 cm (4 in.) or more thick starting within 15 cm (6 in.) of the soil surface.
F2 - Loamy gleyed matrix	A gleyed matrix that occupies 60% or more of a layer starting within 30 cm (12 in.) of the soil surface.
F6 – Redox Dark Surface	A layer at least 10 cm (4 in.) thick entirely within the upper 30 cm (12 in.) of the mineral soil that has: a. matrix value 3 or less and chroma 1 or less and 2% or more distinct or prominent redox concentrations as soft masses or pore linings, or b. matrix value 3 or less and chroma 2 or less and 5% or more distinct or prominent redox concentrations as soft masses or pore linings.
A5 – Stratified Layers	Several stratified layers starting within the upper 15 cm (6 in.) of the soil surface. One or more of the layers has value 3 or less with chroma 1 or less and/or it is muck, mucky peat, peat or mucky modified mineral texture. The remaining layers have value 4 or more and chroma 2 or less.

Source: Field Indicators of Hydric Soils in the United States (USDA NRCS, 1998)

APPENDIX C

Wetland Delineation Data Forms of Representative Wetland Types (Depression, Slope, Riverine) for the Delineation of the White Pass Mountain Facilities Expansion Proposal

SE Group DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	*White Pass Expansion*			Date:	*8/26 - 9/16/02*
Applicant/Owner:	*White Pass Co., Inc.*			County or City:	*Lewis, Yakima*
Investigator:	*TS, AW, LG, BE*			State:	*Washington*
Do Normal Circumstances exist on the site?	Yes	X	No 0	Community ID:	*Depression*
Is the site significantly disturbed (Atypical Situation)?	Yes	0	No X	Transect ID:	*Pod 5*
Is the area a potential Problem Area? (If needed, explain in remarks.)	Yes	0	No X	Plot ID:	*P5 - W1*

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
Carex nigricans	*Herb*	*FACW*	*0*	*0*	*0*
Festuca subulata	*Herb*	*FAC*	*0*	*0*	*0*
Potentilla flabellifolia	*Herb*	*NI*	*0*	*0*	*0*
Carex spectabilis	*Herb*	*FACW*	*0*	*0*	*0*
Carex macloviana	*Herb*	*NI*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 60

Remarks: *0*

HYDROLOGY

Recorded Data (Describe in Remarks:)
- 0 Stream, Lake or Tide Gauge
- 0 Aerial Photographs
- 0 Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: *3 to 12* (in.)
- Depth to Free Water in Pit *0 to 12* (in.)
- Depth to Saturated Soil: *9* (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- X Inundated
- X Saturated in Upper 12 inches
- X Water Marks
- X Drift Lines
- X Sediment Deposits
- 0 Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in upper 12 in.
- X Water-Stained Leaves
- 0 Local Soil Survey Data
- 0 FAC-Neutral Test
- 0 Other (Explain in Remarks)

Remarks: *0* *0* *0*

Community *Depression*
Transect ID: *Pod 5*
Plot ID: *P5 - W1*

SOILS

Map Unit Name (Series and Phase): *0*
Taxonomy Subgroup: *0*
Drainage Class: *0*
Confirm Mapped Type?
- 0 Yes
- X No

Profile Description: 0

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 to 2	*Ag*	*GLEY 1 6/5 GY*	*5 YR 4/6*	*NA*	*loam*
2 to 8	*A2*	*10 YR 3/2*	*5 YR 4/6*	*few, distinct*	*v. sandy loam*
8 to 17	*B*	*10 YR 3/1*	*2.5 YR 5/6*	*common, prominent*	*silt loam*
0	*0*	*0*	*0*	*0%*	*0*
0	*0*	*0*	*0*	*0%*	*0*

Hydric Soil Indicators:
- 0 Histosol
- X Histic Epipedon
- 0 Sulfidic Odor
- X Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- 0 Concretions
- 0 High Organic Content in Surface Layer in Sandy Soils
- 0 Organic Streaking in Sandy Soils
- 0 Listed on Local Hydric Soils List
- 0 Listed on National Hydric Soils List
- 0 Other (Explain in Remarks)

Remarks: *F1: loamy mucky minerals, F2: loamy gleyed matrix, F6: redox dark surface* *0* *0*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X Yes	0 No
Wetland Hydrology Present?	X Yes	0 No
Hydric Soils Present?	X Yes	0 No
Is this Sampling Point Within a Wetland?	X Yes	0 No

Remarks: *0* *0* *0* *0* *0* 0

SE Group DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	*White Pass Expansion*			Date:	*8/26 - 9/16/02*
Applicant/Owner:	*White Pass Co., Inc.*			County or City:	*Lewis, Yakima*
Investigator:	*TS, AW, LG, BE*			State:	*Washington*
Do Normal Circumstances exist on the site?	Yes X	No 0		Community ID:	*Slope*
Is the site significantly disturbed (Atypical Situation)?	Yes 0	No X		Transect ID:	*Pod 5*
Is the area a potential Problem Area? (If needed, explain in remarks.)	Yes 0	No X		Plot ID:	*P5 - W7*

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
Carex nigricans	*Herb*	*FACW*	*0*	*0*	*0*
Carex buxbaumii	*Herb*	*OBL*	*0*	*0*	*0*
Carex spectabilis	*Herb*	*FACW*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100

Remarks: *0*

HYDROLOGY

Recorded Data (Describe in Remarks:)
- 0 Stream, Lake or Tide Gauge
- 0 Aerial Photographs
- 0 Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: *0* (in.)
- Depth to Free Water in Pit *0* (in.)
- Depth to Saturated Soil: *12 to 24* (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- X Inundated
- X Saturated in Upper 12 inches
- X Water Marks
- X Drift Lines
- X Sediment Deposits
- 0 Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- X Oxidized Root Channels in upper 12 in.
- X Water-Stained Leaves
- 0 Local Soil Survey Data
- 0 FAC-Neutral Test
- 0 Other (Explain in Remarks)

Remarks: *0* *0* *0*

Community *Slope*
Transect ID: *Pod 5*
Plot ID: *P5 - W7*

SOILS

Map Unit Name (Series and Phase): *0*
Taxonomy Subgroup: *0*
Drainage Class: *0*
Confirm Mapped Type?
- 0 Yes
- X No

Profile Description: 0

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 to 5	*Ag*	*GLEY 1 6/5 GY*	*5 YR 4/6*	*NA*	*coarse sand*
5 to 11	*B*	*10 YR 2/2*	*5 YR 4/6*	*few, distinct*	*fibric, loam*
11 to 18	*B2*	*10 YR 2/1*	*2.5 YR 5/6*	*moderate, distinct*	*clay, mucky mineral*
0	*0*	*0*	*0*	*0%*	*0*
0	*0*	*0*	*0*	*0%*	*0*

Hydric Soil Indicators:
- 0 Histosol
- X Histic Epipedon
- 0 Sulfidic Odor
- X Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- 0 Concretions
- 0 High Organic Content in Surface Layer in Sandy Soils
- 0 Organic Streaking in Sandy Soils
- 0 Listed on Local Hydric Soils List
- 0 Listed on National Hydric Soils List
- 0 Other (Explain in Remarks)

Remarks: *F1: loamy mucky minerals, F2: loamy gleyed matrix, F6: redox dark surface* *0* *0*

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X Yes	0 No
Wetland Hydrology Present?	X Yes	0 No
Hydric Soils Present?	X Yes	0 No
Is this Sampling Point Within a Wetland?	X Yes	0 No

Remarks: *0* *0* *0* *0* *0* 0

SE Group DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: *White Pass Expansion* — Date: *8/26 - 9/16/02*
Applicant/Owner: *White Pass Co., Inc.* — County or City: *Lewis, Yakima*
Investigator: *TS, AW, LG, BE* — State: *Washington*

Do Normal Circumstances exist on the site?	Yes	X	No	0	Community ID: *Riverine*
Is the site significantly disturbed (Atypical Situation)?	Yes	0	No	X	Transect ID: *Pod 5*
Is the area a potential Problem Area?	Yes	0	No	X	Plot ID: *P5 - W4*

(If needed, explain in remarks.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
Carex nigricans	*Herb*	*FACW*	*0*	*0*	*0*
Festuca subulata	*Herb*	*FAC*	*0*	*0*	*0*
Potentilla flabellifolia	*Herb*	*NI*	*0*	*0*	*0*
Carex spectabilis	*Herb*	*FACW*	*0*	*0*	*0*
Carex macloviana	*Herb*	*NI*	*0*	*0*	*0*
Castilleja occidentalis	*Herb*	*FAC+*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 67

Remarks: *0*

HYDROLOGY

Recorded Data (Describe in Remarks:)
0 Stream, Lake or Tide Gauge
0 Aerial Photographs
0 Other
X No Recorded Data Available

Field Observations:
Depth of Surface Water: *0* (in.)
Depth to Free Water in Pit *0* (in.)
Depth to Saturated Soil: *12+* (in.)

Wetland Hydrology Indicators:
Primary Indicators:
X Inundated
X Saturated in Upper 12 inches
X Water Marks
X Drift Lines
X Sediment Deposits
0 Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
X Oxidized Root Channels in upper 12 in.
X Water-Stained Leaves
0 Local Soil Survey Data
0 FAC-Neutral Test
0 Other (Explain in Remarks)

Remarks: *0*
0
0

Community *Riverine*
Transect ID: *Pod 5*
Plot ID: *P5 - W4*

SOILS

Map Unit Name (Series and Phase): *0*
Taxonomy Subgroup: *0*
Drainage Class: *0*
Confirm Mapped Type?
0 Yes
X No

Profile Description: 0

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0 to 2	*Ag*	*GLEY 1 6/10Y*	*5 YR 4/6*	*NA*	*loam*
2 to 7	*B*	*7.5 YR 6/4*	*5 YR 4/6*	*few, distinct*	*sand*
7 to 16+	*B2*	*10 YR 2/2*	*2.5 YR 5/6*	*common, prominent*	*mucky mineral*
0	*0*	*0*	*0*	*0%*	*0*
0	*0*	*0*	*0*	*0%*	*0*

Hydric Soil Indicators:

0	Histosol	0	Concretions
X	Histic Epipedon	0	High Organic Content in Surface Layer in Sandy Soils
0	Sulfidic Odor	0	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	0	Listed on Local Hydric Soils List
X	Reducing Conditions	0	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	0	Other (Explain in Remarks)

Remarks: *F1: loamy mucky minerals, F2: loamy gleyed matrix, F6: redox dark surface*
0
0

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	X	Yes	0	No
Wetland Hydrology Present?	X	Yes	0	No
Hydric Soils Present?	X	Yes	0	No
Is this Sampling Point Within a Wetland?	X	Yes	0	No

Remarks: *0*
0
0
0
0
0

APPENDIX D

Wetland Data Log for the Delineation of the White Pass Mountain Facilities Expansion Proposal

Wetlands Delineated within the White Pass Expansion Study Area

CHAIR 5 POD			
Wetland ID	**Wetland Type**	**Acres**	**Square Feet**
W-1	Depressional	0.01384	602.8
W-10	Riverine	0.01029	448.1
W-11	Riverine	0.02103	915.9
W-117	Riverine	0.00569	247.9
W-119	Riverine	0.00496	215.9
W-12	Riverine	0.01471	640.7
W-120	Riverine	0.03373	1,469.3
W-121	Riverine	0.04968	2,164.3
W-122	Riverine	0.00329	143.5
W-123	Riverine	0.02430	1,058.5
W-124	Riverine	0.01430	623.1
W-125	Riverine	0.02620	1,141.2
W-127	Riverine	0.03095	1,348.1
W-128	Riverine	0.02170	945.1
W-13	Riverine	0.02150	936.4
W-130	Depressional	0.11396	4,964.0
W-132	Riverine	0.01790	779.8
W-134	Riverine	0.00758	330.4
W-136	Riverine	0.00251	109.5
W-138	Riverine	0.06670	2,905.5
W-14	Riverine	0.02391	1,041.3
W-140	Riverine	0.09813	4,274.6
W-142	Riverine	0.01959	853.1
W-144	Riverine	0.19709	8,585.4
W-15	Riverine	0.00763	332.2
W-16	Riverine	0.00735	320.3
W-17	Riverine	0.01299	565.8
W-18	Riverine	0.01450	631.8
W-19	Riverine	0.01382	601.9
W-2	Depressional	0.18574	8,090.7
W-20	Riverine	0.00847	368.8
W-21	Riverine	0.02975	1,295.8
W-22	Riverine	0.01241	540.8
W-23	Riverine	0.03332	1,451.3
W-24	Riverine	0.00448	195.0
W-25	Riverine	0.00828	360.6
W-26	Riverine	0.01818	791.8
W-27	Riverine	0.01865	812.3
W-28	Riverine	0.01047	456.1
W-29	Riverine	0.02000	871.2
W-3	Riverine	0.02026	882.4
W-30	Riverine	0.00939	408.9
W-31	Riverine	0.01758	765.7
W-33	Riverine	0.00716	312.0

W-35	Riverine	0.01208	526.2
W-37	Riverine	0.01622	706.7
W-39	Riverine	0.00104	45.5
W-4	Riverine	0.04311	1,877.8
W-41	Riverine	0.01958	853.0
W-43	Riverine	0.00208	90.4
W-46	Riverine	0.00338	147.1
W-5	Riverine	0.00122	53.0
W-6	Riverine	0.00768	334.7
W-7	Riverine	0.00580	252.6
W-8	Riverine	0.00898	391.2
W-9	Riverine	0.00397	172.7
Chair 6 POD			
Wetland ID	**Wetland Type**	**Acres**	**Square Feet**
W-1	Riverine	0.06043	2,632.4
W-10	Riverine	0.00852	371.3
W-101	Riverine	0.00449	195.8
W-102	Riverine	0.05996	2,611.8
W-103	Depressional	0.25553	11,130.8
W-105	Riverine	0.00436	189.7
W-106	Riverine	0.01520	662.3
W-107	Riverine	0.00491	213.7
W-108	Riverine	0.00371	161.6
W-109	Riverine	0.02436	1,061.0
W-11	Riverine	0.02867	1,248.7
W-110	Riverine	0.01143	498.1
W-111	Riverine	0.02798	1,218.9
W-112	Riverine	0.01299	565.7
W-113	Riverine	0.00906	394.6
W-114	Riverine	0.00361	157.1
W-115	Riverine	0.01220	531.3
W-116	Riverine	0.01165	507.6
W-117	Riverine	0.00837	364.6
W-118	Riverine	0.02576	1,122.2
W-12	Riverine	0.00160	69.6
W-13	Riverine	0.00619	269.4
W-14	Riverine	0.00690	300.7
W-15	Riverine	0.00222	96.6
W-16	Riverine	0.01795	782.0
W-17	Riverine	0.00668	290.9
W-18	Riverine	0.02290	997.4
W-2	Riverine	0.01087	473.3
W-20	Riverine	0.01018	443.4
W-22	Riverine	0.00451	196.6
W-24	Riverine	0.00790	344.0
W-26	Riverine	0.00772	336.3
W-28	Riverine	0.01593	694.0

W-3	Riverine	0.00546	237.8
W-4	Riverine	0.00236	102.7
W-45	Riverine	0.01250	544.4
W-5	Riverine	0.00548	238.9
W-6	Riverine	0.00501	218.1
W-7	Riverine	0.00688	299.7
W-8	Riverine	0.01758	765.6
Existing SUP POD			
Wetland ID	**Wetland Type**	**Acres**	**Square Feet**
W-201	Slope	0.11206	4,881.3
W-202	Slope	0.02042	889.3
W-203	Slope	0.14549	6,337.7
W-204	Slope	0.02356	1,026.4
W-205	Slope	0.17294	7,533.1
W-206	Slope	0.01396	608.2
W-207	Slope	0.80715	35,159.6
W-208	Slope	0.01137	495.1
W-210	Slope	0.01751	762.9
W-211	Slope	0.09589	4,177.1
W-213	Slope	0.10796	4,702.9
W-215	Slope	0.29571	12,881.2
W-217	Slope	0.78284	34,100.5
W-220	Slope	0.08080	3,519.7
W-221	Riverine	0.23724	10,334.2
W-222	Slope	0.05467	2,381.4
W-223	Slope	0.05710	2,487.3
W-224	Slope	0.04180	1,820.9
White Pass Study Area Total		**5.27755**	**229,890.1**

APPENDIX E

Stream Data Log for the White Pass Mountain Facilities Expansion Proposal

Streams Delineated within the White Pass Expansion Study Area

Chair 5 POD				
Stream ID	**Flow Regime**	**Slope (%)**	**Length (Feet)**	**Length (Miles)**
S-1	Intermittent	3	66.9	0.01266
S-10	Ephemeral	40	60.3	0.01142
S-11	Ephemeral	20	199.3	0.03774
S-114	Ephemeral	<10	47.2	0.00893
S-116	Ephemeral	<10	463.3	0.08775
S-116	Ephemeral	>10	215.7	0.04084
S-118	Ephemeral	>10	87.2	0.01651
S-120	Ephemeral	>10	69.7	0.01319
S-122	Ephemeral	>10	65.5	0.01240
S-124	Ephemeral	<10	103.1	0.01953
S-126	Ephemeral	<10	175.5	0.03324
S-128	Ephemeral	<10	119.6	0.02265
S-13	Ephemeral	4	452.8	0.08575
S-130	Ephemeral	<10	132.3	0.02505
S-131	Ephemeral	>10	62.3	0.01180
S-133	Ephemeral	>10	715.1	0.13544
S-135	Ephemeral	>10	765.8	0.14503
S-137	Ephemeral	>10	61.4	0.01163
S-139	Ephemeral	>10	437.9	0.08294
S-14	Ephemeral	25	171.4	0.03246
S-141	Ephemeral	<10	159.6	0.03024
S-143	Ephemeral	<10	62.3	0.01179
S-145	Ephemeral	>10	42.7	0.00809
S-147	Ephemeral	>10	87.7	0.01660
S-149	Ephemeral	>10	86.2	0.01633
S-15	Ephemeral	15	48.7	0.00922
S-153	Ephemeral	<10	517.1	0.09794
S-155	Ephemeral	<10	325.7	0.06169
S-16	Ephemeral	20	98.2	0.01860
S-17	Ephemeral	>10	145.6	0.02758
S-18	Ephemeral	>10	74.0	0.01401
S-19	Ephemeral	>10	563.1	0.10664
S-2	Intermittent	3	924.9	0.17517
S-20	Ephemeral	20	120.1	0.02274
S-200	Ephemeral	>10	139.2	0.02636
S-201	Ephemeral	>10	47.2	0.00894
S202	Ephemeral	40	1,021.4	0.19345
S202	Intermittent	n/a	14.6	0.00277
S-21	Ephemeral	>10	47.3	0.00896
S-22	Ephemeral	15	140.9	0.02669
S-23	Ephemeral	20	317.2	0.06007
S238	Intermittent	>10	2,397.5	0.45407
S239	Ephemeral	>10	777.0	0.14716

S-24	Ephemeral	20	375.4	0.07110
S-25	Ephemeral	4	640.0	0.12121
S-26	Ephemeral	10	38.8	0.00735
S-27	Ephemeral	8	530.2	0.10041
S-28	Ephemeral	15	225.1	0.04263
S-3	Ephemeral	>10	562.2	0.10648
S-3	Ephemeral	10	16.8	0.00318
S-3	Intermittent	>10	550.0	0.10417
S-3	Intermittent	10	249.1	0.04719
S-30	Ephemeral	40	19.1	0.00361
S-32	Ephemeral	25	138.5	0.02622
S-36	Ephemeral	15	433.0	0.08202
S-38	Ephemeral	15	60.3	0.01142
S-4	Ephemeral	>10	227.5	0.04310
S-4	Intermittent	<10	590.5	0.11184
S-4	Intermittent	>10	1,215.2	0.23015
S-42	Ephemeral	15	64.2	0.01216
S-44	Ephemeral	<10	472.2	0.08943
S-5	Ephemeral	>10	387.9	0.07346
S-6	Ephemeral	25	208.1	0.03942
S-7	Ephemeral	>10	272.3	0.05156
S-8	Ephemeral	25	205.6	0.03894
S-9	Ephemeral	5	63.7	0.01207
Chair 6 POD				
Stream ID	**Flow Regime**	**Slope (%)**	**Length (Feet)**	**Length (Miles)**
S-1	Ephemeral	<10	96.4	0.01826
S-10	Ephemeral	15	89.1	0.01688
S-101	Ephemeral	15	217.6	0.04121
S-102	Ephemeral	40	518.4	0.09818
S-103	Ephemeral	15	248.6	0.04709
S-104	Ephemeral	30	226.0	0.04281
S105	Ephemeral	15	190.9	0.03616
S-106	Ephemeral	25	18.3	0.00346
S107	Ephemeral	>10	178.3	0.03378
S-108	Ephemeral	>10	55.1	0.01044
S-109	Ephemeral	>10	83.7	0.01584
S-11	Ephemeral	>10	243.7	0.04615
S-110	Ephemeral	>10	164.6	0.03117
S-111	Ephemeral	>10	353.6	0.06697
S-112	Ephemeral	>10	235.8	0.04465
S-113	Ephemeral	>10	42.2	0.00799
S-115	Ephemeral	>10	34.9	0.00662
S-117	Ephemeral	<10	72.0	0.01363
S-119	Ephemeral	<10	739.5	0.14005
S-12	Ephemeral	15	65.7	0.01244
S-123	Ephemeral	>10	92.7	0.01755

S-125	Ephemeral	>10	594.3	0.11255
S-127	Ephemeral	>10	49.3	0.00933
S-129	Ephemeral	>10	85.9	0.01627
S-13	Ephemeral	>10	228.5	0.04327
S-130	Ephemeral	<10	99.4	0.01882
S-14	Ephemeral	20	309.0	0.05853
S-15	Ephemeral	>10	156.3	0.02960
S-16	Ephemeral	20	189.1	0.03582
S-17	Ephemeral	>10	66.0	0.01250
S-18	Ephemeral	20	155.2	0.02939
S-19	Ephemeral	>10	331.9	0.06286
S-2	Ephemeral	20	336.8	0.06379
S-20	Ephemeral	20	135.6	0.02568
S-21	Ephemeral	25	331.1	0.06272
S-22	Ephemeral	15	68.4	0.01296
S-23	Ephemeral	>10	474.6	0.08989
S235	Ephemeral	<10	173.5	0.03286
S235	Intermittent	>10	254.6	0.04821
S236	Ephemeral	<10	59.5	0.01127
S236	Intermittent	<10	137.6	0.02606
S236	Intermittent	>10	667.0	0.12633
S237	Intermittent	>10	396.3	0.07506
S-24	Ephemeral	20	73.3	0.01388
S-25	Ephemeral	>10	193.9	0.03673
S-26	Ephemeral	>10	147.2	0.02787
S-27	Ephemeral	>10	872.6	0.16527
S-28	Ephemeral	15	99.5	0.01885
S-29	Ephemeral	>10	145.4	0.02754
S-3	Ephemeral	<10	421.8	0.07989
S-3	Ephemeral	>10	2,257.9	0.42763
S-3	Intermittent	<10	474.6	0.08988
S-3	Intermittent	>10	533.0	0.10095
S-31	Ephemeral	<10	512.2	0.09700
S-31	Ephemeral	>10	39.8	0.00753
S-32	Ephemeral	18	1,001.7	0.18971
S-32	Intermittent	<10	213.4	0.04041
S-33	Ephemeral	<10	278.5	0.05274
S-34	Ephemeral	15	100.6	0.01906
S-35	Ephemeral	<10	119.3	0.02260
S-36	Ephemeral	15	774.2	0.14663
S-37	Ephemeral	>10	59.7	0.01130
S-38	Ephemeral	15	447.3	0.08472
S-4	Ephemeral	10	90.0	0.01705
S-40	Ephemeral	18	64.8	0.01228
S-42	Ephemeral	20	410.9	0.07782
S-44	Ephemeral	18	495.6	0.09386

S-46	Ephemeral	<10	541.9	0.10263
S-46	Ephemeral	20	799.1	0.15134
S-48	Ephemeral	15	82.7	0.01566
S-5	Ephemeral	>10	305.9	0.05794
S-50	Ephemeral	20	169.6	0.03213
S-52	Ephemeral	<10	248.6	0.04709
S-58	Ephemeral	<10	84.5	0.01599
S-6	Ephemeral	<10	357.4	0.06769
S-60	Ephemeral	>10	156.9	0.02972
S-62	Ephemeral	>10	113.7	0.02154
S-64	Ephemeral	<10	326.1	0.06176
S-64	Ephemeral	20	676.7	0.12817
S-7	Ephemeral	>10	903.2	0.17107
S-8	Ephemeral	15	159.5	0.03021
S-9	Ephemeral	>10	74.9	0.01419
Existing SUP POD				
Stream ID	**Flow Regime**	**Slope (%)**	**Length (Feet)**	**Length (Miles)**
S-201	Intermittent	20	609.9	0.11551
S-203	Intermittent	n/a	167.7	0.03176
S-203	Intermittent	>10	2073.3	0.39266
S-203	Intermittent	7	204.7	0.03877
S-203	Perennial	>10	1,438.7	0.27248
S-204	Ephemeral	n/a	41.9	0.00793
S-204	Ephemeral	35	724.6	0.13723
S-204	Intermittent	n/a	14.1	0.00267
S-205	Intermittent	n/a	819.3	0.15516
S-205	Intermittent	>10	1,423.9	0.26967
S-205	Intermittent	9	831.1	0.15740
S-205	Perennial	>10	1,018.3	0.19285
S-207	Intermittent	n/a	16.7	0.00317
S-207	Intermittent	15	782.4	0.14819
S-209	Intermittent	n/a	197.3	0.03737
S-209	Intermittent	>10	571.7	0.10828
S-209	Intermittent	8	488.2	0.09247
S-209	Perennial	>10	663.0	0.12557
S-209	Perennial	14	1,577.2	0.29871
S-210	Ephemeral	n/a	216.3	0.04096
S-210	Ephemeral	25	238.2	0.04512
S-211	Intermittent	n/a	285.7	0.05411
S-211	Intermittent	30	1,505.5	0.28514
S-212	Intermittent	30	366.9	0.06949
S-213	Intermittent	30	257.6	0.04878
S-214	Perennial	n/a	136.0	0.02575
S-214	Perennial	35	438.4	0.08303
S-215	Intermittent	n/a	185.7	0.03517
S-215	Intermittent	23	1,122.0	0.21250

S-215	Perennial	23	390.1	0.07389
S-216	Perennial	35	132.4	0.02507
S-217	Intermittent	21	370.0	0.07008
S-218	Perennial	n/a	44.4	0.00840
S-218	Perennial	35	892.5	0.16903
S-219	Intermittent	>10	487.0	0.09223
S-220	Perennial	35	309.3	0.05858
S-221	Intermittent	>10	830.3	0.15726
S-221	Perennial	>10	2,105.4	0.39876
S-222	Perennial	35	630.4	0.11940
S-223	Intermittent	n/a	55.6	0.01053
S-223	Intermittent	>10	786.4	0.14893
S-224	Perennial	n/a	39.7	0.00752
S-224	Perennial	35	1,082.8	0.20507
S-225	Perennial	n/a	14.2	0.00270
S-225	Perennial	<10	666.3	0.12620
S-225	Perennial	>10	323.7	0.06130
S-226	Perennial	n/a	279.5	0.05294
S-226	Perennial	>10	1,078.7	0.20430
S-227	Intermittent	<10	191.2	0.03621
S-228	Perennial	n/a	173.4	0.03283
S-228	Perennial	35	1,394.9	0.26419
S-230	Perennial	n/a	869.9	0.16474
S-230	Perennial	>10	1,642.9	0.31115
S-231	Intermittent	n/a	199.2	0.03772
S-231	Intermittent	<10	1,814.2	0.34361
S-232	Intermittent	>10	261.9	0.04960
S-233	Ephemeral	>10	476.3	0.09020
S-233	Intermittent	>10	256.4	0.04856
S-234	Perennial	<10	189.5	0.03589
Total			**80,675.3**	**15.3**

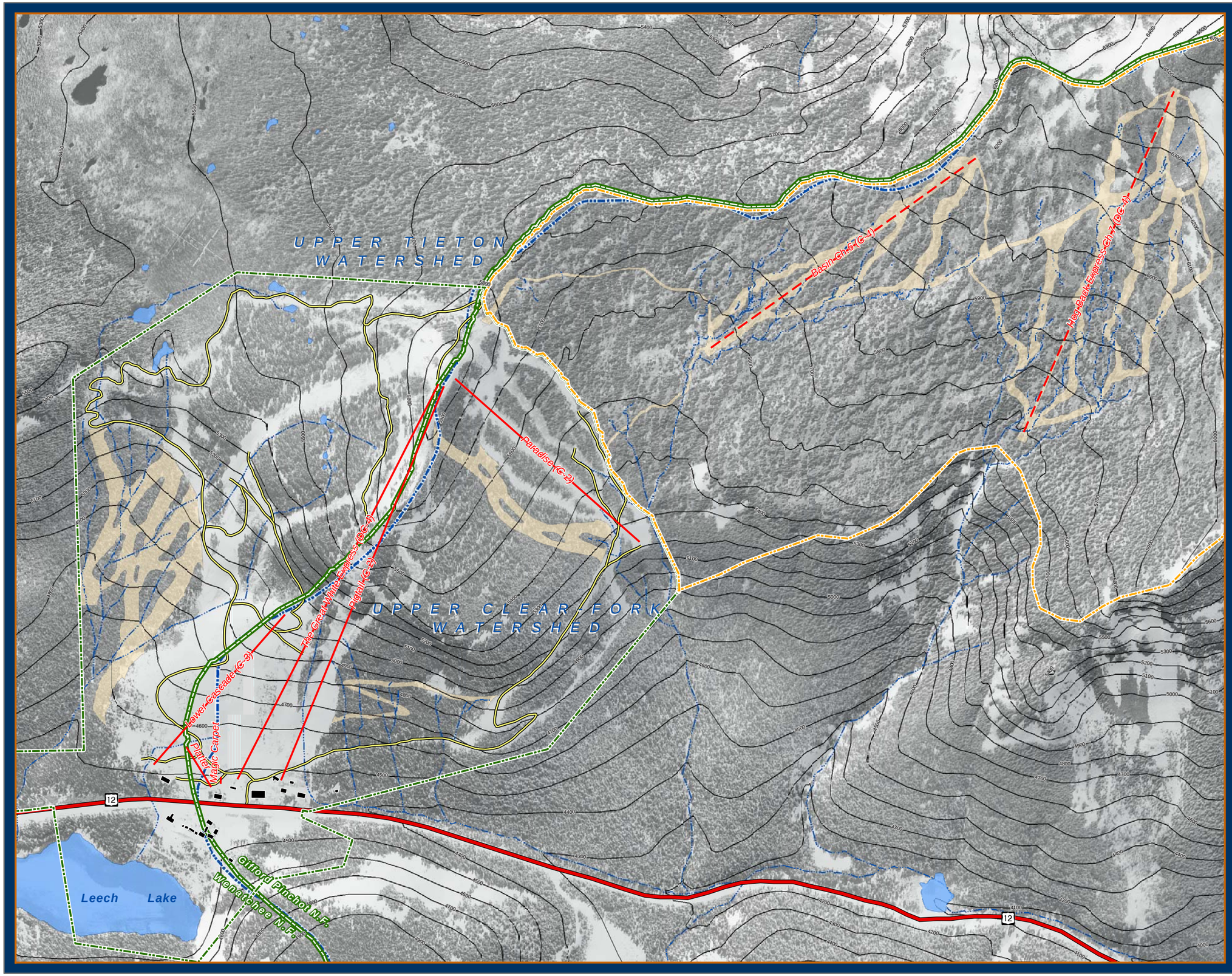
APPENDIX F

Wetland and Stream Maps for the White Pass Mountain Facilities Expansion Proposal

WhitePass WASHINGTON

Stream and Wetland Report

Sheet 1 of 2



Legend

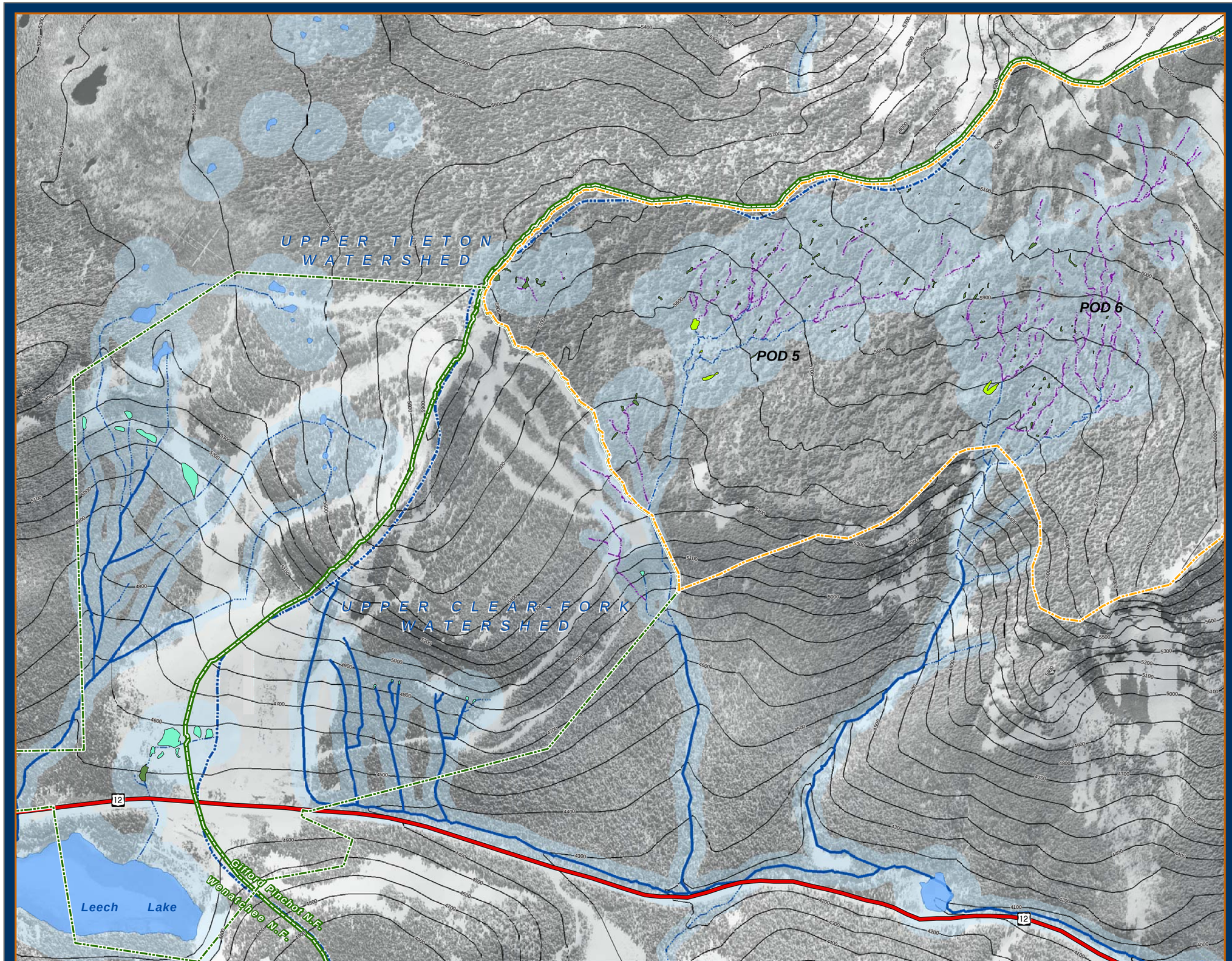
- Proposed Lifts
- Existing Lifts
- Proposed Ski Trails (All Alts.)
- Existing Buildings
- Existing Roads
- National Forest Boundary
- Existing Special Use Permit Boundary
- Proposed Special Use Permit Expansion
- Watershed Boundary
- Lakes
- Streams

Scale: 1" = 1000'
Date: 9.9.04

Produced By:

0 500 1,000 ft.

SE GROUP



WhitePass WASHINGTON

Stream and Wetland Report

Sheet 2 of 2

Legend

- Stream - Perennial
- Stream - Intermittent
- Stream - Ephemeral
- Wetland - Depressional
- Wetland - Slope
- Wetland - Riverine
- National Forest Boundary
- Existing Special Use Permit Boundary
- Proposed Special Use Permit Expansion
- Watershed Boundary
- Lakes
- Riparian Reserves

Scale: 1" = 1000'
Date: 9.9.04

Produced By:

0 500 1,000 ft.

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