

Draft
Conceptual Reclamation Permit Package
Borrow Areas 3 and 4
Sea-Tac International Airport
City of SeaTac, Washington



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Prepared for
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**DRAFT CONCEPTUAL RECLAMATION PERMIT PACKAGE
BORROW AREAS 3 AND 4
SEA-TAC INTERNATIONAL AIRPORT
CITY OF SEATAC, WASHINGTON**

1.0 INTRODUCTION

This document presents a conceptual reclamation plan prepared on behalf of the Port of Seattle (the Port) for discussion with the Department of Natural Resources (DNR). The plan presents the Port's reclamation concepts for developing and reclaiming that will be employed to extract borrow material from Port-owned property for use in constructing a third runway at the Seattle-Tacoma International Airport (STIA).

As part of constructing a new runway at STIA, the Port plans to obtain embankment fill material by excavating it from Port-owned property immediately adjacent to the airfield. Conceptual mining and reclamation plans are discussed herein for two proposed excavation areas, referred to as Borrow Areas 3 and 4. The Port expects to obtain a total of about 2.5 million cubic yards (CY) of earth fill from these two areas. Drawing No. 1 shows that location and general setting of the borrow sites and the airfield.

DNR has previously reviewed the borrow sites as shown in the Port's environmental documents for the Sea-Tac International Airport Master Plan Updates ("Master Plan Updates"). In 1996, DNR reviewed the Final Environmental Impact Statement for the project and wrote a letter to the Federal Aviation Administration (FAA) stating,

A Surface Mine Reclamation Permit is NOT required for the borrow sites located within the Port of Seattle ownership.

DNR letter to FAA, March 20, 1996 (Attachment 1).

It was noted that it appeared that the borrow sites are not adjacent or contiguous to the proposed fill project. However, it was also noted that the land appears to be under one ownership by the Port of Seattle and the argument could be made that the sole purpose or dedicated use for the entire ownership is for the airport facility.

In 1997, DNR reviewed the Supplemental Environmental Impact Statement for the Sea-Tac Airport Expansion and wrote a letter to the FAA stating,

A Surface Mine Reclamation Permit will not be required for Borrow Sites 1, 2, 3, and 4 because they fit the exclusion in RCW 78.44.31(17).

DNR letter to FAA, March 31, 1997 (Attachment 2).

RCW 78.44.31 excludes excavations or grading used primarily for "on-site construction." RCW 78.44 does not contain a definition for the terms "on-site," "adjacent," or "contiguous." However, RCW 76.09, Forest Practice Act, also administered by DNR, defines "contiguous" as meaning "...land adjoining or touching by common corner or otherwise. Land having common ownership divided by a road or other right of way shall be considered contiguous."

Drawing No. 3 shows Port-owned property within the Airport Operation Area (AOA) to the south of the airfield. Roads and right-of-way are the only features that divide Borrow Sites 3 and 4 from the AOA. The haul route from the borrow sites to the embankment site will be on Port property with the exception of the crossing of existing roads and right-of-way. Therefore, the previous determinations by DNR that the borrow sites fit the exclusion in RCW 78.44.31(17) should still be valid.

The Port intends to develop and reclaim the borrow areas in accordance with environmental standards that meet agreements with the City of SeaTac, as well as permits and other requirements of agencies having jurisdiction such as the Washington State Department of Ecology (Ecology) groundwater and surface water protection standards. Although DNR has previously determined that a Surface Mine Reclamation Permit is not required, the Port plans to comply with all substantive DNR requirements as outlined in DNR's Standard Reclamation Permit and Plan Applications (Forms SM-2 and SM-8A). Based upon discussion of this conceptual permit package, the Port would like to obtain confirmation from DNR that a Surface Mine Reclamation Permit is not required. In the event a permit is required, the Port asks DNR to provide technical comments on the information necessary to prepare a complete application and supporting technical documents for the proposed project.

This document includes this text, attachments, and a list of referenced documents, along with the accompanying set of 17 drawings. The drawings include maps, plans, and cross sections, which depict the location and work described herein.

Subsequent to review with DNR and others, the Port will prepare a more detailed reclamation plan, which, along with other applicable Port environmental

planning documents and permits, will be used or incorporated into a construction contract to develop, operate, and reclaim the borrow sites.

1.1 Project Proponent and Overview

The Port of Seattle, a municipal corporation within the City of SeaTac, Washington, operates the Seattle-Tacoma International Airport (STIA). A site map is shown on Drawing No. 1.

In 1996, the Port adopted the development actions contained in the Master Plan Update ("Master Plan"). These actions included a proposal to construct a new 8,500-foot runway to meet the demands for travel and reduced delays associated with inclement weather patterns. As currently configured, STIA cannot effectively accommodate the increasing passenger and operational demands at the air terminal. A third runway would alleviate this congestion.

The present configuration of two closely spaced runways has caused significant delays, a condition aggravated by poor weather conditions. These delays result in slowed inbound air traffic, prevent timely flight departures from originating airports, and create inefficient airfield operations. Regional population growth is expected to contribute to a growing demand for airport services that will increase current burdens and inefficiencies at STIA. Unabated, the present runway configuration is predicted to cause increasingly longer delays in the future.

Construction of the runway will improve the poor weather airfield operating capability by reducing aircraft activity delays, and improve management of increasing payload capacities and services to the Pacific Rim. Without these and other Master Plan improvements, the air/surface transportation and cargo systems would become more congested.

A more complete scope, purpose, and statement of need for the third runway and other Master Plan improvements are described in Chapter 1 of the Final Environmental Impact Statement (FEIS) (FAA, 1996) prepared for the STIA Master Plan Update.

As described in the FEIS and Final Supplemental Environmental Impact Statement (FSEIS, or collectively EIS documents) (FAA, 1997), to construct the third runway, an earth-fill embankment needs to be constructed to modify existing topography to support the new runway. The earth fill used for embankment construction would be obtained from a combination of on-site (borrow) and off-site sources (import). The Master Plan EIS, including plans for

the borrow sites and use of imported fill, was approved in the Record of Decision in 1997 (FAA, 1997).

1.2 Project Summary Description

Seattle-Tacoma International Airport is undertaking construction of a third runway parallel to and 2,500 feet west of the two currently operating runways, Runways 16L/34R. About 17 million CY of earth fill is needed to construct the embankment needed to support the new runway. The EIS documents, prepared for STIA's Master Plan update development actions, discussed a number of alternatives for both the runway and its associated embankment. The development of construction fill material borrow areas on Port property as well as use of fill that could be obtained by the construction contractors from off-site sources was evaluated in depth during the EIS process. Development of on-site borrow areas will produce cost savings to the Port as well as reduce traffic impacts to local streets and public highways associated with truck traffic from off-site fill sources.

The proposed Borrow Areas 3 and 4 are within property acquired by the Port as part of its noise remedy program, at the south end of the airfield. The Port is also coordinating the excavation of Borrow Area 4 with the Washington State Department of Transportation (WSDOT) to ensure that the final grade and configuration will facilitate the future SR 509 extension. WSDOT is still developing a final alignment and grade, so it is possible that some minor adjustments in the borrow area contours may be necessary. As of February 2001, the proposed alignment of SR 509 through Borrow Area 4 was primarily south of WSDOT's right-of-way with ramps terminating at 200th Street. Since these borrow sites are contiguous to the airfield, the fill can be delivered via either truck or conveyor belt across Port property. Concurrence by the City of SeaTac would be obtained where the proposed haul route crosses City streets between adjacent parcels owned by the Port. The Port and the City of SeaTac have established an interlocal agreement (ILA) that establishes the basis for addressing construction-related issues such as grading and haul permits.

Preliminary investigations supporting the Master Plan EIS included identification and preliminary assessment of eight potential sources within property controlled by the Port (Draft Borrow Source Study, AGI, 1995). Based on several factors (including wetlands impacts, material types, operational costs) the FSEIS indicated that four of these eight on-site resource areas could likely be used to provide a maximum quantity of 15.4 million CY of fill material.

To avoid impacts to wetlands, potential borrow areas were eliminated or modified. The Port proposes to use three on-site borrow areas located on

airport property between 24th Avenue South and 15th Avenue South, and between South 196th and South 216th Streets. These borrow areas are planned to supply approximately 6.7 million CY of fill material. Current engineering estimates suggest that Borrow Site 1 will supply up to 4.2 million CY, and Borrow Sites 3 and 4 will supply 2.5 million CY. This document discusses conceptual development and reclamation plans for Borrow Sites 3 and 4.

Construction to date (1998 to present) has used fill from a number of commercial sources operating under existing DNR permits, as well as soil from large construction excavations in the Seattle/Bellevue metropolitan area. The Port has applied for environmental permits for the Master Plan projects (including borrow area excavation), including Clean Water Act Section 404 and 401 and Hydraulic Project Approval. Upon issuance of these permits, the Port will proceed with development of the resources in Borrow Areas 3 and 4. Mining and reclamation plans would be developed in the future, in the event it appears practical to develop additional resources in other Port-owned borrow areas.

The Port proposes to obtain fill materials from Borrow Areas 3 and 4 within the framework of a construction contract that would likely be completed within the period 2002 to 2003. Borrow Area development will avoid and minimize impacts to wetlands as described here, and in the Port's *Natural Resource Mitigation Plan* (Parametrix 2000a) (NRMP) and *Wetland Functional Assessment and Impact Analysis* (Parametrix 2000b) (Functional Assessment).

Stormwater management and temporary erosion and sediment control (TESC) facilities would be installed prior to site development. Groundwater seepage into the Area 3 excavation from a perched zone would also be collected and managed to ensure the preservation of downgradient wetlands in the southern half of Area 3. Topsoil would be stockpiled, during the site clearing and pre-production stage, at one of the proposed or alternate sites outside of areas utilized for excavation and wetland protection areas, for subsequent use in reclaiming each area.

Borrow materials will be transported to the embankment construction site along a haul route across upland portions of the existing aviation operations area (AVO) and onto the airfield. Part of the AVO has previously been used as the Tyee Golf Course, which will be closed prior to development of Borrow Areas 3 and 4. The Port would like to use a portion of the upland area of the AVO (former Tyee Golf Course) as a staging area for Borrow Areas 3 and 4, and location of topsoil stockpile(s) and possibly TESC pond(s). After reclamation of the borrow areas and haul road, a portion of the AVO will be used for the future King County regional stormwater detention facility (RDF).

The Port is considering three haulage alternatives, all of which would extend north from the vicinity of South 200th Street where it passes between Borrow Areas 3 and 4. Haul routes have been designed to avoid and minimize impacts to wetlands and aquatic resources. A conveyor belt alternative, along with two truck haulage alternatives, are being considered as described later in this document. The haul route would go north through the upland areas of the AVO area formerly used as the Tye Golf Course, across 188th Street, and then along the southern and western side of the airfield to the embankment construction site, as shown on Drawing No. 1.

The conveyor belt alternative would incorporate grade-separated crossings over the two public streets that cross the haul route across Port property. The truck crossing at South 200th Street would likely be an at-grade crossing, whereas the truck crossing at South 188th Street would use an existing Port bridge or possibly a new bridge structure. The existing 18th Avenue South right of way would likely be abandoned by the City of SeaTac prior to construction.

The Port plans to develop the borrow areas in segments and use contemporaneous reclamation. The fill material from Borrow Areas 3 and 4 is moisture-sensitive, thus excavation is expected to be limited to the dry summer months, roughly early June to mid-September. Each area would be reclaimed and revegetated at the end of the construction season. Assuming a 2-year period of operations, the conceptual mine plan described herein includes permanent reclamation of Borrow Area 4 along with temporary stabilization of Borrow Area 3 at the end of the first year. Permanent reclamation of Borrow Area 3 would be completed by the end of the second year. The sites would then be periodically monitored consistent with DNR requirements to verify success of the reclamation. A further part of the mitigation plan would include Port monitoring of the wetland hydrology within Borrow Area 3 (Parametrix 2000a).

2.0 SURROUNDING ENVIRONMENT

2.1 Overview of the Borrow Areas and the Master Plan EIS Process

Drawing No. 4 shows the location of Borrow Areas 3 and 4 along with adjacent land use and zoning.

Borrow Areas 3 and 4 are situated within the STIA's property, and are contiguous to the airfield. Borrow Areas 3 and 4 are within the fenced security

portion of the Airport runway protection zone. These areas are zoned for commercial aviation use (AVC).

Other land users bound Borrow Areas 3 and 4 as follows:

- ▶ Residential areas bound each area on the west side, and the site of the former Maywood Elementary School is immediately west of Borrow Area 4;
- ▶ Tyee Valley Golf Course (also part of the Aviation Operations Zone) is immediately east and north of Borrow Area 4;
- ▶ Undeveloped land owned by the State of Washington (future right of way for SR 509) is located east of Borrow Area 3; and
- ▶ The Des Moines Creek Park is situated south of Borrow Area 3.

The Port has characterized the surrounding environment in the EIS documents and supported the completed EIS process with relevant baseline studies and other technical studies; some of which are listed in the reference section of this plan. In addition, the Port has evaluated the environmental impacts and discussed mitigation for the Master Plan projects, including borrow area excavation, in the Functional Assessment (Parametrix 2000b) and the NRMP (Parametrix 2000a). Potential impacts of Master Plan projects on endangered species have been evaluated in the Biological Assessment (Parametrix 2000c).

Development and transportation of borrow materials were two construction activities specifically addressed by the Master Plan EIS documents. The Port has addressed potential impacts to wetlands, streams, endangered species, floodplain, drainage channels, and stormwater in the Des Moines Creek Basin through the EIS as well as subsequent studies to support the 401 and 404 permits.

The impacts from and mitigation of borrow area development and transport activities are described in Chapter IV, Sections 19 (Earth) and 23 (Construction) of the FEIS and reconsidered in Chapter 5-4 (Construction Impacts) of the SFEIS.

Recent wetland mitigation measures were developed to facilitate issuance of a Section 404 permit to the Port for the range of activities, including borrow development, proposed by the Master Plan. Details of wetland mitigation and seepage control for Borrow Area 3 are described in a report entitled "Evaluation of Perched Zone Interception and Possible Impacts to Wetland Hydrology, Borrow Area 3." (Hart Crowser, 2000a)

All of this information is available for DNR review and can be appended to or otherwise addressed in a formal permit application, should one be required.

2.2 Site Soils and Geology

The airport and surrounding areas are part of the Des Moines Drift Plain in the Puget Sound Lowland, whereupon a substantial thickness of glacial soils were deposited that include Borrow Areas 3 and 4. The hill forming Borrow Areas 3 and 4 is a drumlin—an elongated mound deposited beneath glacial ice, and typically capped with glacial till. Borrow Areas 3 and 4 slope moderately to the east toward the upper reaches of Des Moines Creek (the creek is not located within either area).

Borrow area soils have been identified as belonging to either the Alderwood, Everett, or Indianola soil associations (USDA-SCS, 1973). Surficial soils within the borrow areas tend to be thinly developed, characteristically reflect the underlying glacial lithology, and texturally range from gravelly to sandy loams with variable drainage characteristics. Thicker sequences occur sporadically and are generally associated with alluvial fill.

Underlying glacial sediments include a range of silts, sands, and gravels, with typically variable gradations in the amount of silt within each lithologic unit. Glacial sediments have been deposited in this area and extensively reworked by glacial episodes.

Except for the topsoil, the materials excavated from the borrow areas would be used as common fill. These soils are referred to as “moisture sensitive,” because they typically have more than about 12 percent fines (silt and clay). Compaction for use as embankment fill can only be accomplished when the soil moisture content is suitable, which means the borrow soils cannot be used in the winter. Even excavation and stockpiling needs to be avoided in the winter months, to avoid increasing soil moisture content prior to placement in the embankment. As a result the borrow sites are planned to provide “fair weather fill.”

Drawing No. 5 illustrates the site exploration plan used to delineate geologic profiles of the borrow resources and related hydrogeologic information, as discussed below.

2.3 Site Hydrology

Glacial deposits beneath the site include relatively permeable sands and gravels, interbedded with low-permeability glacial till or other silty/clayey members. The primary aquifers, as noted in a series of studies and analyses for the project, are

indicated below in **bold** type, and occur within the deeper porous strata below the borrow sites (AGI, 1996, and Hart Crowser, 1998, 1999, 2000a, 2000b).

- ▶ Fill, Alluvium, Vashon Recessional Outwash — **Perched Zones**
- ▶ Vashon Till — **Aquitard**
- ▶ Vashon Advance Outwash — **Shallow Regional Aquifer**
- ▶ Lawton Clay — **Aquitard**
- ▶ "Third" Coarse-Grained Deposit — **Intermediate Aquifer**
- ▶ Puyallup Formation — **Aquitard**
- ▶ "Fourth" Coarse-Grained Deposit — **Deep Aquifer**

The borrow areas are located within the upper sequence of recessional outwash deposits and glacial till, and extend into the upper part of the advance outwash deposits. Borrow Areas 3 and 4 contain perched groundwater zones (see Drawing No. 5) but are situated above the water table referred to as the Shallow Regional Aquifer (see Drawing No. 6). A conceptual cross section through the borrow areas, showing the relationships between the site geology and hydrogeology, is presented on Drawing No. 7.

Development of materials within Borrow Area 3 is anticipated to encounter a relatively flat-lying perched zone of shallow groundwater along parts of the western and northern excavation slopes. The Port plans to collect this seepage in a grassed swale and convey it to augment existing surface water and shallow groundwater discharging into wetlands, in the unmined portion of Borrow Area 3 as depicted in Drawing Nos. 5 and 8 and described below in Section 2.4.2. Any excess water above that needed to sustain the wetlands will be diverted to the stormwater management system (Hart Crowser 2000b, Parametrix 2000a).

The proposed mining sites lie within the Des Moines watershed, where stormwater generally drains to the east. Stormwater runoff from Borrow Area 3 appears to infiltrate on site, or pool in low areas to the southeast. Stormwater runoff from most of Borrow Area 4 flows into roadside ditches along South 196th Street and 18th Avenue South.

2.4 Wetlands

Wetlands within the STIA Master Plan improvement area were originally delineated during preparations for the FEIS (1996) and SFEIS (1997). The Port re-evaluated the wetlands and other aquatic resources to present updated information to the U.S. Army Corps of Engineers (Corps) in 1998 and 1999; (Port, 1999, Parametrix, 2000d). The wetlands delineation, functional analysis, and impact assessment and mitigation are set forth in a series of technical reports prepared by Parametrix (2000d).

2.4.1 Wetland Impacts

Development of Borrow Areas 3 and 4 will not have any direct impact on the wetlands located near the excavation resources within the borrow areas, as shown on Drawing No. 9. Excavation of Borrow Area 3 has been designed to avoid wetlands and to maintain at least 50 foot buffers around existing wetlands (Drawing No. 9). Borrow Area 4 does not contain wetlands and excavation will not result in wetland impacts.

Borrow area excavations have been designed to the extent practicable to avoid direct impacts to wetlands. Hydrological studies conducted by Hart Crowser (Hart Crowser 2000a, 2000b) indicate that the potential for indirect impacts to the hydrology of wetlands near the borrow areas is low. To avoid and mitigate for potential indirect impacts, during and after excavation, the borrow areas will be graded to establish drainage systems that collect surface runoff and/or groundwater seepage and direct this water to the wetlands as shown in Drawing Nos. 5 and 8.

The proposed haul route alternatives have been aligned through Borrow Areas 3 and 4, and the former Tyee Golf course, with the goal of avoiding the potential for impacts to wetlands.

2.4.2 Mitigation

In Borrow Area 3, Wetland 29 occurs on the hillside at the west edge of the borrow area. Hydrology in this wetland is supported by groundwater seeps discharging on the face of the slope from a zone of perched groundwater that extends to the north and west (Hart Crowser 2000a, b). Wetlands 30, B7, B6, and B5 occupy a series of depressions in the lower southeastern corner of Borrow Area 3. These wetlands may be supported by some shallow subsurface flow or interflow moving down slope from Wetland 29 (Hart Crowser 2000c), and by precipitation. Since these wetlands occur below the main perched groundwater layer on this site, groundwater seepage is available to support

wetland hydrology. Water is held in these wetlands by the relatively impermeable soils lining the depressions, promoting shallow perched conditions within the wetlands (Hart Crowser 2000c).

A drainage swale will be installed during excavation of Borrow Area 3 to convey groundwater to Wetland 29 and replace the potential loss of seepage from the perched groundwater zone as shown in Drawing Nos. 5 and 8 (see also, Hart Crowser 2000b, Figures 3, 7, 8). Seepage generated from intersecting this zone is expected to vary seasonally but is estimated to be on the order of a few tens of gallons per minute (12.5 gpm) over the entire affected slope. This swale will collect groundwater seepage from the excavated slope face on the north and west sides of Borrow Area 3. Flow in this swale will be collected and conveyed south in a swale that drains into Wetland 29 (Drawing No. 8).

Since the swale will extend for the full length of the seepage face in the borrow area, it may convey flows in excess of those needed to support hydrology in Wetland 29 and downslope wetlands (i.e., Wetland 30, which receives overland flow and shallow interflow from Wetland 29). To optimize the distribution of water to Wetland 29, a flow control structure (weir and diversion structure) will be constructed in the swale just before it flows into Wetland 29 (Hart Crowser 2000b, Figure 9).

This control structure will allow a controlled flow to be directed into Wetland 29 and enable diversion of other flows away from the wetland and into the base of Borrow Area 3. Diverted flows will either be allowed to infiltrate at the base of Borrow Area 3 or be diverted to stormwater management facilities that will be constructed to manage runoff from the remainder of the borrow area. The length of the collector swale can also be modified (consistent with the adaptive management approach) based on post-construction monitoring to control the amount of seepage and runoff that is collected in the swale and diverted to Wetland 29.

Evaluations indicate that impacts to the hydrology of the remaining wetlands in Borrow Area 3 (B5, B6, B7, B9a, B9b, B10, and 30) would not occur because these wetlands receive water from precipitation and/or seepage from Wetland 29 (Hart Crowser 2000a, b). Wetlands in Borrow Area 3 will be monitored before, during, and after excavation to verify that wetland hydrology is maintained.

2.5 Other Anticipated Watershed and Habitat Issues

The Port has addressed a number of other watershed issues including potential for erosion, flooding (avulsion), fisheries, and habitat issues, in the Master Plan's

FEIS and SFEIS. The Port completed a mitigation plan and wetland functional assessment as part of the Clean Water Act Section 404 permit application (Parametrix 2000b). The Port has also completed a detailed Biological Assessment (Parametrix 2000c) to address endangered species issues as part of the wetlands permitting process. All of this information is available for DNR review, and could be appended to or otherwise addressed in a formal permit application should one be required.

The Port, King County, and the Cities of SeaTac and Des Moines are currently involved in efforts to develop the Des Moines Creek Basin Plan through inter-local agreements among the jurisdictions. In addition to other improvements within the Des Moines Creek Basin, this plan provides for construction of a Regional Detention Facility (RDF) within the former Tyee Golf Course, near the haul route as indicated on Drawing No. 9. Development of Borrow Areas 3 and 4, and haulage, is not expected to affect construction of the RDF.

3.0 SUMMARY OF BORROW DEVELOPMENT OPERATIONS

Embankment fill materials developed from Borrow Areas 3 and 4 are suitable for use only during the fair weather periods of the construction season, due to their moisture-sensitive nature, as noted above. Consequently, site preparations (TESC installation, site clearing, topsoil stockpiling, etc.) would occur during the first and second quarters of the year, followed by development of borrow materials. The "fair weather" borrow development period typically would not extend outside the period from late May to October, and may be further constrained within this period. Near the end of the third quarter, the borrow sites would be stabilized and both temporary and permanent reclamation and revegetation measures applied as appropriate. All borrow area development operations would be conducted in a manner consistent with the relevant environmental permit conditions and requirements.

3.1 Description of Site Preparation Activities

3.1.1 Site Description and Permit Boundaries

As depicted on Drawing No. 1, the borrow development "project site" will include four basic land components: Borrow Areas 3 and 4, staging and haul areas within upland areas of the former Tyee Golf course, and a haul corridor that will border the south and west perimeter of the airfield operations area and terminate at the embankment construction site.

Surface disturbances related to the borrow material development permit would occur within the proposed permit boundary as generally depicted on Drawing Nos. 1, 7 and 8. The project site is generally located in portions of Sections 4 and 5, Township 23 North, Range 4 East, W.M., King County, Washington.

Borrow Area 3 is located south of the Airport's 34L runway, in the City of SeaTac. It consists of approximately 48 acres, bounded on the north by South 200th Street, and to the east by 18th Avenue South and the WSDOT right of way. The resource consists of glacially deposited, slightly silty to silty sands and gravels. Borrow Area 3 contains 2.35 acres of wetlands. Full utilization of the available resource would produce approximately 1.5 million bank cubic yards (BCY) of borrow material for use in the construction of the Third Runway embankment. Under the Port's current proposal, avoiding impacts to all the wetlands in Borrow Area 3, approximately 1.0 million BCY of the borrow resource would be available (see Drawing No. 9).

Immediately north of Borrow Area 3 and approximately 1,100 feet south-southwest of the runway is Borrow Area 4. It comprises an area of approximately 40 acres and is located west of the Tye Golf Course. It is bounded to the south by South 200th Street, to the east by 18th Avenue South, and to the north by South 196th Street. The resource has been identified as being generally similar to that of Borrow Area 3. No wetlands exist in Borrow Area 4. Full utilization of the available resource will produce approximately 1.6 million BCY of borrow material for use as embankment fill.

Transfer of excavated soil from Borrow Areas 3 and 4 to the embankment construction site will be accomplished by truck or conveyor haulage. Three conceptual haulage mechanisms are being evaluated: conventional or heavy mining truck haulage using a dedicated haul road on Port property; and a material conveyor system aligned along a similar route with a dedicated service road. Conceptual haul route alternatives have been laid out to avoid wetlands impacts to the maximum extent possible, and to avoid conflicts with future construction of the proposed RDF to be located within the existing Port-owned Tye Golf Course. Drawing Nos. 10 and 11 show conceptual haul routes across Port property consisting of the Tye Golf Course and the southern airport roadway system, to transport materials from Borrow Areas 3 and 4 as presented in the FSEIS.

3.2 Description of Mining Practices and Operating Plan

3.2.1 Vegetation and Topsoil Removal

This subsection discusses concepts the Port will use to address erosion control, vegetation and topsoil salvage, and the physical management of woody and other debris and topsoil. A single General Contractor will accomplish most of the third runway embankment construction including development of the borrow areas, construction of the haul route, and reclamation of all permitted disturbances. Contracted material development and hauling activities will comply with the terms and conditions of the Port's Master Plan EIS and ILA between the Port and the City of SeaTac (material hauling hours, construction best management practices [BMPs], site-specific TESC plan, etc.), and relevant environmental permits.

Prior to commencing with borrow development, approved TESC facilities would be installed around each area and along the haul route. The temporary erosion and sediment control features will be placed around all borrow site, staging, and stockpiling areas associated with this work and are likely to include perimeter silt fencing and collection ditches, infiltration or sedimentation ponds, and stormwater treatment facilities. The collection ditches will be used to direct all site runoff to the proposed pond sites and sized to accommodate a 100-year storm event while providing filtration for lesser flows. The infiltration or sedimentation ponds will allow gravity removal of suspended solids and also provide stormwater detention. The stormwater treatment facility will remove any remaining turbidity and provide for pH adjustment of the stormwater before release. All measures would be consistent with the provisions of the NPDES Sand and Gravel General Stormwater Permit ("General Permit") and other relevant permits.

Site clearing preparations would consist of vegetation stripping and topsoil removal. Prior to vegetation stripping and topsoil removal, merchantable timber will be harvested and removed from the site in accordance with the Port's Forest Practices Act Permit. All remaining vegetation would be removed and managed by composting or land filling as needed.

The Port has a Forest Practices Act Permit in place to cover logging associated with the Third Runway construction, and would amend that plan as needed to include the borrow areas. Typically, vegetation removal would follow installation of TESC measures and immediately precede topsoil removal. Tree felling activities may occur during the fall or winter preceding the first construction season.

3.2.2 Topsoil Stockpiling

Use of topsoil is a critical component of the revegetation plan and will enhance recovery of reclaimed borrow site facilities. Topsoil is defined as the soil of the A and B horizons, or referred to as all solum materials that will sustain plant growth.

The Port has tested topsoil in Borrow Areas 3 and 4 and determined that similar to other undisturbed surficial soils in the area. The surficial 2 inches in Borrow Area 4 has been impacted by wind-blown dust containing measurable concentrations of arsenic from the former ASARCO smelter in Tacoma. The topsoil suitable for revegetation will be selectively excavated, salvaged, and stockpiled prior to initiation of borrow material development activities. Topsoil with arsenic concentrations that exceed regulatory levels established by Ecology will be managed in a suitable manner.

The opening of each borrow site will start with the removal and recovery of topsoil for use during the concurrent and final reclamation stages. The General Contractor will conduct topsoil salvage using graders, dozers, front-end loaders, haul trucks, and/or other equipment as deemed necessary. Topsoil will be stripped up to a depth of at least 6 inches, depending on soil depths, once the arsenic-impacted surface layer has been removed and stockpiled within Borrow Area 4 or adjacent AVO (former golf course) as indicated on Drawing Nos. 13, 14, and 15.

Topsoil stockpiles will be constructed no higher than 30 feet and with slopes no steeper than three horizontal to one vertical (3H:1V). Stockpile heights may vary according to their duration of use to maintain adequate levels of bioorganic activity necessary to facilitate revegetation growth. Soil stockpiles may be located at alternative sites established in the borrow permit area outside of areas utilized for excavation and wetland protection areas.

Stormwater and erosion controls will be installed around each stockpile. Topsoil will be used at the end of each year to facilitate revegetation of areas disturbed by borrow development operations. Thickness of the replaced topsoil will typically be 6 inches or the same as is removed. To the extent necessary, additional topsoil can be recovered from the embankment construction area prior to filling and imported to the borrow areas for reuse.

3.2.3 Permanent Setbacks and Sight Screens

The Port will maintain existing vegetation as visual barriers or sight screens along the perimeter of the borrow sites. Surrounding residential areas are situated on

terraces to the west of the borrow sites, which tends to obstruct a direct view of borrow activities.

The conceptual borrow development plan includes use of a 50-foot reclamation setback surrounding material extraction activities as indicated on Drawing Nos. 13, 14, and 15. To the extent feasible, natural trees and vegetation within the setback will be preserved to maintain or enhance perimeter sightcreens. In the absence of existing trees, an earthen berm may be constructed as a noise and visual barrier within portions of the reclamation buffer near each of the active borrow extraction areas.

3.2.4 Borrow Material Development, Extraction, Loading, and Haul Methods

Operation of the borrow areas is constrained by the moisture-sensitive nature of the materials to be excavated in Borrow Areas 3 and 4. The entire borrow material development and reclamation process is expected to last two construction seasons, with excavation and hauling limited to the fair weather construction period of about mid-May to early October of each year. Winter shutdown would follow the cessation of first-year extraction activities, followed by temporary reclamation and revegetation, winter-season stormwater enhancements, and general site monitoring where necessary.

Initial excavation is planned to be in Borrow Area 4, and fill material would be developed by a series of benched cuts to the ultimate elevations indicated on Drawing No. 13. The Port expects glacial till and outwash deposits to be ripped by dozer and loaded by a wheeled bucket loader to facilitate a high production rate, but other types of equipment (e.g., a tracked excavator) could be used. Actual mining equipment selection will be left up to the General Contractor.

No screening or washing activities will be used; the excavated soil material will be developed as "pit-run" embankment fill. Borrow Area 4 is expected to produce approximately 1.5 million BCY of fill material in the first year. Borrow Area 3 would provide another 1.0 million BCY of embankment fill during the second construction season.

As the first construction season draws to a close, TESC and site clearing preparations would be completed in Borrow Area 3. Regrading, topsoil replacement, revegetation, and landscaping measures will be conducted in Borrow Area 4.

Soil would be excavated and removed from Borrow Area 3 during the second construction season. The wetland swale would be constructed when the

excavation intercepted the perched water zone, maintained during mining, and incorporated into site reclamation activities. As with Borrow Area 4, regrading, constructing the interceptor swale and water diversion system, topsoil replacement, revegetation, and landscaping measures will be conducted at the end of material extraction.

The final shape and grade of the excavations is constrained by a number of factors:

- ▶ Maintaining operations within the defined property limits and haulage corridor;
- ▶ Providing a bench for the interception and conveyance of perched groundwater seepage in the north and west slopes of Area 3;
- ▶ Final grade shall be at least 10 feet in elevation above the Shallow Regional Aquifer;
- ▶ Maintaining a minimum 2 percent drainage grade on benches and the floor of the excavation; and
- ▶ Final excavation slopes shall be no steeper than 2H:1V permanent slopes (“high walls”) within the borrow areas.

Final grades will be accomplished as a part of the borrow excavation process.

Excavated soils would be hauled to the embankment construction site by one of three conceptual haulage mechanisms: conventional or heavy mining truck haulage using a dedicated haul road on Port property; and a material conveyor system aligned along a similar route with a dedicated service road as shown on Drawing Nos. 10 and 13. Use of large mining trucks would require construction of a temporary bridge over South 188th Street immediately west of Runway 34L. Conventional trucking could use existing Port roads and bridge adjacent to the South 188th Street runway crossing.

3.2.5 Erosion and Sediment Control

This subsection discusses concepts the Port will use in its plans: describing how mining practices would be used to control erosion; temporary revegetation measures; and surface water flow control designs and features.

Prior to disturbing the borrow sites, sediment catchment basins and ponds designed for catching and storing sediment from exposed and erodible surfaces

will be built. Appropriate borrow material extraction practices, including back-sloped slope benches and contoured bench drainage, will be implemented to control erosion of exposed topsoils and borrow materials. Further erosion control will be accomplished by diverting existing drainage into engineered channels to control excess surface runoff.

Drainage will be managed within the borrow site or at approved erosion and sediment control points within the permit boundary. Topsoil stockpiles and stormwater detention ponds are initially planned to be located within the footprint of each borrow area, but may be located elsewhere within the project limits (i.e., within the portion of the AVO that is the former Tyee Golf Course).

Drainage from topsoil stockpile runoff will be diverted into engineered runoff conveyance structures and guided (through check dams, hay bales, silt fences, etc.) into sediment catchment ponds to manage erosion of stored materials. All exposed soils and soil stockpiles maintained during the winter shutdown season will be hydroseeded and managed in a manner to reduce or eliminate erosion. Erosion and sediment control and monitoring practices will be conducted in a manner consistent with other applicable STIA permitted stormwater control activities.

Regrading during reclamation will be designed and conducted to minimize the potential for erosion.

3.2.6 Stormwater Management

All TESC and permanent, post-reclamation stormwater measures will be consistent with the General Permit, applicable portions of the King County Surface Water Design Manual (King County, 1998), and other applicable permits and approvals.

Stormwater management will be implemented as a staged approach under the General Permit. The first phase will implement Temporary Erosion and Sedimentation Control Best Management Practices (TESC BMPs) to remove sediment from work area stormwater runoff. These BMPs will reduce borrow site erosion and reduce the sediment in the stormwater runoff from the work areas.

Prior to disturbing the borrow areas, a range of TESCs will be constructed, such as:

- ▶ Silt Fencing installed along the project perimeter;
- ▶ Construction accesses and/or wheel washes;

- ▶ Perimeter ditches to control stormwater runoff;
- ▶ Ditches along the perimeter of the project and inside the silt fencing as necessary to ensure that turbid stormwater runoff is controlled; and
- ▶ Impervious areas will include parallel infiltration trenches.

During the mining of the borrow areas, the appropriate BMPs may be employed to reduce erosion and/or sedimentation and will include:

- ▶ Soil may be temporarily stabilized with such treatments as soil cement or hydroseeding;
- ▶ Mining will staged to reduce exposed soil and minimize erosion; and
- ▶ Stormwater treatment facilities will remove suspended solids in drainage until work areas have been closed and stabilized.

Near the end of each work season stabilization and reclamation efforts will be implemented to minimize the time that these temporary BMPs are necessary. These measures will include:

- ▶ Topsoiling and hydroseeding of exposed soils;
- ▶ Conversion of the sedimentation ponds to detention ponds; and
- ▶ Returning haul roads, construction staging areas, and stockpile areas to pre-construction conditions.

As each borrow site is reclaimed, (concurrent and permanent) temporary or permanent erosion and stormwater control and monitoring measures will be implemented as necessary.

3.2.7 Infrastructure and Utility Construction

Infrastructure and utility construction for development of the borrow areas will consist of:

- ▶ Erosion and sedimentation controls;
- ▶ Stormwater conveyance and pond structures;
- ▶ Interceptor swale system for maintaining wetland hydrology;
- ▶ Traffic control systems;
- ▶ Two borrow excavation areas;
- ▶ A method-dependent haul route; and
- ▶ Topsoil stockpiles.

TESC, stormwater, and topsoil stockpiles are discussed above. As needed for the selected haulage alternative, an "at-grade" or elevated street crossing will be

constructed with appropriate traffic controls near the intersection of 18th Avenue South and South 200th Street, and over South 188th Street, respectively.

Local potable water and electrical systems present in South 200th Street may be extended to support temporary shop and office activities within the borrow sites or the adjacent AVO. Water trucks and portable electrical generators may be used if locally available fixed sources are found to be impractical.

Portable fuel and maintenance trucks, offices, and sanitation facilities will be used to support work crews within the borrow areas. The General Contractor will perform fueling and maintenance activities at a designated area in a manner consistent with the provisions of the Appendix D of the 1997 ILA between the Port and City of SeaTac. The contractor shall handle hazardous materials in accordance with the Hazardous Materials Management Plan and related conditions comparable to those set forth in the Project Manual Specifications for Third Runway Embankment Construction – Phase 3, 2000 (Port, 2000).

3.2.8 Noise Control

The Port presented a thorough analysis of the noise impacts attributable to all Master Plan improvements, including borrow area operations, in the FEIS and SFEIS. Measures governing truck trips, traffic patterns, and hours of operation are addressed in these EIS documents and the 1997 Interlocal Agreement, and will control sources associated with use of Borrow Areas 3 and 4.

Aircraft and other noise mitigation measures have been and will continue to be implemented as needed in areas surrounding the borrow sites as part of the Port's noise reduction program, within the area depicted by the STIA noise remedy area on Drawing No. 4.

4.0 CONCEPTUAL RECLAMATION PLAN

This conceptual reclamation plan describes the general approach the Port and its contractor will take to reclaiming borrow-area-related surface disturbances. The general goal of this reclamation plan is to provide for the continued use of the land for purposes consistent with those set forth in the Master Plan.

The Port will manage borrow activities and reclaim surface disturbances in a manner consistent with the approaches set forth in the Master Plan and supporting EIS documents. All reclamation will meet the intent of the Surface Mining Act of 1993 (RCW 78.44), and rules and guidance adopted thereunder.

4.1 Description of General Parameters and Features

4.1.1 Introduction

This conceptual reclamation plan describes the basic steps the Port will take to protect the environment and surrounding land uses through timely reclamation of site disturbances. The plan is developed for the site-specific nature of the borrow areas and the overall STIA operations. The Port and its contractor will use appropriate reclamation procedures and technologies to reclaim borrow-area-related disturbances to a productive land use that is consistent with the Aviation Commercial and Operations Zones.

4.1.2 Goals and Objectives

Reclamation goals and objectives of this conceptual plan will include:

- ▶ Establishing stable surfaces, topography, drainage, and water quality conditions;
- ▶ Maintaining wetland hydrology to wetlands in Borrow Area 3;
- ▶ Re-establishing suitable soil conditions to support viable populations of vegetation necessary to control erosion and meet STIA landscaping requirements;
- ▶ Revegetation of disturbed areas to prevent erosion in a manner consistent with the Master Plan EIS and applicable landscaping plans;
- ▶ Addressing public safety issues by managing structures, wildlife attractants, landforms, and fill extraction activities to avoid a public hazard; and
- ▶ Revegetation concepts will address STIA's Wildlife Hazard Management Plan (WHMP) goal of creating an airport environment less attractive to wildlife species responsible for aircraft-bird strike hazards.

The Port has considered several objectives when evaluating how the borrow sites would be left upon completion of borrow material excavation. Among the possibilities were: enhancements to vehicular access, pedestrian and bicycle trails, SR 509 realignment, Des Moines Creek natural areas, and redevelopment sites, as discussed in Section 5-4, SFEIS (FAA, 1996).

At the end of the first construction season, mining operations in Borrow Area 4 should be finished and final reclamation of related surface disturbances should

be completed. Mining in Borrow Area 3 should be completed and the area reclaimed at the end of the second construction season.

Seeding and revegetation will be completed in the mid- to late fall period of both the first and second years to take advantage of winter and spring moisture cycles.

4.2 Reclamation Concepts

This section includes the general steps the Port and its contractor would follow in reclaiming each of the disturbance areas. Reclamation measures will meet the requirements of the Surface Mining Act (RCW 78.44) and incorporate measures that will also be consistent with the STIA natural resource mitigation plan (Parametrix, 2000a).

4.2.1 Schedule (Temporary and Permanent Shutdown)

The borrow sites will be operated during the fair weather construction season from about mid-May to early October over a two-year construction period. Reclamation activities will be scheduled to occur as soon as possible after the mining activities in a particular area are completed, thus avoiding or at least minimizing potential erosion and sedimentation.

Temporary shutdown of the borrow sites will occur between the first and second construction year. Measures to reclaim or stabilize the sites, and manage and monitor revegetation, slope stability, and water quality will continue throughout the "inactive" winter period. In the event of unanticipated temporary shutdowns, similar measures will be taken. Revegetation and reclamation, and stormwater monitoring, will proceed for two growing seasons as indicated later in this document.

4.2.2 Vegetation Clearing

Prior to topsoil salvage, the Port will clear the borrow sites and harvest any merchantable timber from the site in accordance with applicable permits. All remaining vegetation will be removed or managed on-site in compost piles (no open burning).

4.2.3 Interceptor Drainage Swale

The proposed drainage swale is designed to collect groundwater seepage from the excavated slope face on the north and west sides of Borrow Area 3 as shown in Drawings No. 12 through 15. The groundwater seepage represents

the natural flow from the perched zone that is intercepted by and discharges at the cut slope face (Hart Crowser 2000a, 2000b). The flow will be collected and conducted southward in a swale that drains into Wetland 29. Grades along the swale are expected to be between about 1 and 2 percent. Modeling shows there could be up to about 2,400 ft³/day of groundwater flow available, compared to the projected maximum loss from Wetland 20 of 400 ft³/day (Hart Crowser 2000a, 2000b).

Construction of the drainage swale will be integrated with the mining and reclamation plan for the excavation of Borrow Area 3 (Hart Crowser 2000b). This will prevent over-mining of the perching layer in close proximity to the final slope contours for the excavation. Mining will progress from the highest area of the site in the northwest part of Borrow Area 3, working down the slope and reclaiming the upper part of the final cut slope as excavation proceeds. The perched zone will be encountered as wet areas at the base of the working slope. Mining will then be continued to allow sufficient bench area to be developed for establishing the drainage swale at the perching layer beneath the perched zone. The bench will be graded so that the swale is cut into the perched zone and underlying perching layer within the bench. Mining will then proceed into the lower part of the slope beneath the drainage swale. The drainage swale will be protected from erosion using erosion control matting and hydroseeding.

4.2.4 Topsoil Replacement

Topsoil replacement will begin as soon as borrow material extraction activities in Borrow Area 4 have advanced sufficiently to prevent reclamation from interfering with active mining, anticipated to be at about the mid-year point in the extraction schedule (Drawing Nos. 13 and 14). At this time, the upper portions of the high wall slopes will be recontoured and prepared for topsoiling. As the slopes are progressively regraded, topsoiling of the upper reaches will extend across the lower bench slopes as material extraction progresses to the ultimate floor of the excavation.

Topsoil will be replaced evenly in a layer measuring 6 inches in thickness, depending on the quality of the topsoil and the available quantity. Some additional topsoil resources may be developed from the embankment construction site for use in re-topsoiling the borrow areas.

Once topsoiling has been completed, amendments or improvements will be made to the surface as needed prior to reseeding. In some cases, fertilization will be used in the revegetation plan to provide an initial source of nutrients for establishment of the plant community. It will also contribute to nutrient cycling and later soil development by natural, self-supporting processes.

Topsoil will be culturally treated to enhance or produce favorable conditions to facilitate plant growth. These treatments include:

- ▶ Stabilizing the soil system;
- ▶ Reducing soil erosion;
- ▶ Maintaining proper soil moisture levels;
- ▶ Soil ripping, tilling, and harrowing; and
- ▶ Slope tracking and raking.

4.2.5 Borrow Area Recontouring

The primary objective of recontouring is to grade each borrow area and the haul route to create safe and stable topographic features. Primary recontouring of the borrow areas with track-mounted dozers will occur during the extraction process to achieve 2H:1V or flatter slopes as represented on Drawing Nos. 13, 14, and 15.

Relatively flat slopes at the base of the excavated areas will maintain a positive drainage surface of at least 2 percent. Benches will be sloped to facilitate drainage and bench widths reduced and rounded to break up the rectangular features where feasible.

The ultimate post-mining contours represented in Drawing Nos. 16 and 17 will be left as the extraction process draws to a close. All surfaces will be ripped or scarified in preparation for topsoiling and revegetation.

4.2.6 Stormwater Control

Stormwater diversion swales and sediment catchment ponds designed for catching and storing sediment from exposed and erodible surfaces will be built prior to excavation and modified or abandoned as appropriate during reclamation. Stormwater catchment ponds will be designed to encourage infiltration to the maximum extent possible.

Drainage channels will be created across the slope face and flat areas where necessary to direct runoff toward managed constructed stormwater control facilities. Each of the borrow areas will be free-draining; excavation benches and floors will be regraded to maintain a positive 2 percent drainage slope. Stormwater and erosion control features will be consistent with those identified in the STIA Comprehensive Stormwater Management Plan and other relevant permits.

4.2.7 Slope Stability

Initial excavation in the upper elevation areas of both Borrow Areas 3 and 4 will create typical bench heights ranging from 20 to 30 feet with a typical working floor ranging from 60 to 80 feet wide to permit safe operation of a wheeled loader and a haul truck.

Typically a track-mounted dozer will push material from above onto the underlying catch bench where loading will take place. As extraction of borrow material reaches full production levels, the typical bench height could reach 40 feet and the typical floor could range up to 120 feet wide to allow for two-sided loading of highway haulers. In each case, the high wall portion of the initial and production level benches will be dozed to a slope equal to or flatter than 2H:1V. Interim and final reclamation slopes will be regraded to slopes equal to or flatter than 2H:1V.

4.3 Description of Reclamation Plan

4.3.1 General Reclamation Procedures

As mentioned above, reclamation procedures for the borrow areas generally start with initial pre-development activities. Initial grading activities will produce topsoil that will be available for use during the reclamation and revegetation of the disturbed areas. Once final slopes have been regraded, topsoiling, soil conditioning, and revegetation efforts will be completed as described above.

4.3.2 Interim Reclamation and Revegetation

Interim reclamation will consist of taking measures to stabilize features on an interim basis, such as temporary road embankments and topsoil stockpiles. Interim reclamation of temporary haul roads and embankments will occur following relocation of borrow area access routes. Revegetation of these slopes and roads will occur as each borrow area reaches the point where it can be decommissioned and permanently regraded. Hydroseeding with a bonded fiber matrix will be used where appropriate as part of topsoil reseeding and revegetation efforts as depicted on Drawing Nos. 16 and 17. Additional plantings as part of reclamation will be compatible with the approved STIA landscaping plan.

4.3.3 Concurrent Reclamation and Revegetation

The process of reclamation in Borrow Area 4 will begin mid-year during the first construction season as soon as the initial upper bench cuts have been stabilized. Once these upper benches have been regraded, and the permanent drainage

structures have been installed, topsoil will be placed and prepared for revegetation. As stated above, concurrent reclamation will occur as Borrow Area 4 slopes are regraded to their final post-mining contour levels shown on Drawing No. 16. Topsoiling of these stabilized slopes would follow completion of extraction and slope regrading activities. Slopes will be revegetated once regrading, topsoiling activities, and soil treatments have been completed.

4.3.4 Final Reclamation of Project Disturbances

While final regrading and revegetation of Borrow Area 4 will have been completed as a form of concurrent or interim reclamation during the first construction season, Borrow Area 3 will be permanently reclaimed at the end of the second season. Bench heights will be limited and regraded to blend into the surrounding contoured slopes to eliminate or reduce any rectilinear features.

All haul routes will be reclaimed in Borrow Areas 3 and 4, and in the former Tye Golf course, at the end of the second year. Hydroseeding with a bonded fiber matrix will be used where appropriate as part of topsoil reseeding and revegetation efforts as shown on Drawing No. 17. Additional plantings as part of reclamation will be compatible with the approved STIA landscaping plan.

5.0 REVEGETATION PLANNING, WEED CONTROL, AND WILDLIFE

Revegetation planning for the borrow sites will consist of incorporating interim measures to control erosion at stockpile locations and exposed slopes into permanent landscaping. Interim and permanent landscaping, revegetation, and weed control measures used on the borrow sites and haul route will comply with the landscaping conditions of the Master Plan EIS documents and the Interim Landscape standards in Attachment A-4 of the ILA. Revegetation concepts will address adjacent land-use issues, especially the need to maintain uses that are consistent with STIA's Wildlife Hazard Management Plan (WHMP) goal of creating an airport environment that is less attractive to wildlife species responsible for aircraft-bird strike hazards.

6.0 RECLAMATION AND REVEGETATION MONITORING PLAN

6.1 Reclamation and Slope Stability Monitoring Program

The effectiveness of reclamation and revegetation of all surface disturbances within the permit boundary will be monitored for a minimum of 2 years to assure stability of all regraded slopes and the viability of all revegetated areas. Should DNR determine that a Surface Mine Reclamation Permit is required for

the borrow sites, the Port would then like to meet with DNR to discuss how the Port would meet applicable reclamation guidance criteria and the need for annual reporting.

6.2 Revegetation and Stormwater Control Monitoring Program

Revegetation monitoring locations will be established within the reclaimed borrow sites and the reclaimed portions of the haul route. Each location will be monitored for the soil conditions, the succession rates for replanted or reseeded species, and the general value to wildlife and other dependent uses created by surrounding land-use activities.

Site reclamation and revegetation practices employed at the reclaimed borrow sites will also function as erosion and sediment control measures. Post-reclamation monitoring of stormwater pollution prevention and site stabilization measures will be employed as deemed necessary under the sand and gravel general stormwater permit.

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REFERENCES

- 1 DNR, 1996. Application for Surface Mining Permit and Standard Reclamation Plan (Forms SM-2 and SM-8A), Washington State Department of Natural Resources.
- 2 FAA and Port of Seattle, 1996. Final Environmental Impact Statement for Proposed Master Plan Update Development Actions at Seattle-Tacoma International Airport.
- 3 FAA and Port of Seattle, 1997. Final Supplemental Impact Statement for the Proposed Master Plan Update Development Actions at Seattle-Tacoma International Airport.
- 4 FAA, 1997. Record of Decision for the Master Plan Update Development Actions, Sea-Tac International Airport. U.S. Department of Transportation Federal Aviation Administration Northwest Mountain Region.
- 5 AGI Technologies, 1995. Borrow Source Study, Proposed New Runway, Seattle-Tacoma International Airport, SeaTac, Washington.
- 6 Hart Crowser, 1998. Draft Resource Evaluation and Conceptual Development for Borrow Areas 3 and 4, Third Runway Project, Seattle-Tacoma International Airport. Prepared for the Port of Seattle, Seattle, Washington.
- 7 Hart Crowser, 1999. Subsurface Conditions Data Report, Borrow Areas 1, 3, 4, Sea-Tac Airport Third Runway. Prepared for the Port of Seattle, Seattle, Washington.
- 8 USDA Soil Conservation Service, 1973. Soil Survey of King County Area, Washington.
- 9 AGI Technologies, 1996. Appendix Q-A, Baseline Groundwater Study, Final Environmental Impact Statement for Proposed Master Plan Update Development Actions at Seattle-Tacoma International Airport, Seattle, Washington.
- 10 Port of Seattle, 1999. Draft Wetlands Re-Evaluation Document, Seattle-Tacoma International Airport Master Plan Update Improvements, Seattle, Washington.
- 11 Parametrix, 1999. Revised Draft Wetland Delineation Report, Master Plan Update Improvements, Seattle-Tacoma International Airport. Prepared by Parametrix for the Port of Seattle. Kirkland, Washington.
- 12 Parametrix, 1999. Revised Draft Wetland Functional Assessment and Impact Analysis, Master Plan Update Improvements, Seattle-Tacoma International Airport. Prepared by Parametrix for the Port of Seattle. Kirkland, Washington.

- 13 Parametrix, 1999. Revised Draft Biological Assessment, Master Plan Update Improvements, Seattle-Tacoma International Airport. Prepared by Parametrix for the Port of Seattle. Kirkland, Washington.
- 14 Port of Seattle and City of SeaTac, 1997. Interlocal Agreement.
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- 16 King County, 1998. Washington Surface Water Design Manual, King County Department of Natural Resources.
- 17 Port of Seattle, 2000. Project Manual Including Specifications for Third Runway Embankment Construction - Phase 3, Seattle, Washington.
- 18 Parametrix, 1999. Revised Draft Natural Resource Mitigation Plan, Master Plan Update Improvements, Seattle-Tacoma International Airport. Prepared by Parametrix for the Port of Seattle. Kirkland, Washington.
- 19 Hart Crowser, 2000a. Evaluation of Perched Zone Interception and Possible Impacts to Wetland Hydrology, Borrow Area 3, Sea-Tac Airport Third Runway. Prepared for HNTB and the Port of Seattle, September 12, 2000
- 20 Hart Crowser, 2000b. Sea-Tac Third Runway Project, Borrow Area 3 - Preservation of wetlands. Unpublished memo by Hart Crowser to Jim Thompson, HNTB, October 20, 2000. Seattle, Washington. 9pp plus attachments.
- 21 Parametrix, 2000a. Natural Resource Mitigation Plan for Seattle-Tacoma International Airport Master Plan Update improvements. Prepared by Parametrix for the Port of Seattle. Kirkland, Washington.
- 22 Parametrix, 2000b. Wetland functional assessment and impact analysis for Seattle-Tacoma International Airport Master Plan Update improvements. Prepared by Parametrix for the Port of Seattle. Kirkland, Washington.
- 23 Parametrix, 2000c. Biological assessment for Seattle-Tacoma International Airport Master Plan Update improvements. Prepared by Parametrix for the Port of Seattle. Kirkland, Washington.

- 24 Parametrix, 2000d. Wetland delineation report for Seattle-Tacoma International Airport Master Plan Update improvements. Prepared by Parametrix for the Port of Seattle. Kirkland, Washington.

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**ATTACHMENT 1
DNR COMMENT LETTER ON FINAL EIS**



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service **11**

Center for Disease Control
and Prevention (CDC)
Attn: (4) 32311-3721
MREB (M/ST)
PLAN, PGM, & CAP BR

Mr. Duane Owsenby
Federal Aviation Administration
Northwest Mountain Region
1641 Lind Avenue, S.W.
Renton, Washington 98055-0536

Dear Mr. Mr. Owsenby:

The job you for sending a copy of the Final Environmental Impact Statement for Proposed Master Plan Update Development Actions at Seattle-Tacoma International Airport. We are responding on behalf of the U.S. Public Health Service (PHS).

The proposed project, as noted in the FEIS, could involve a number of potential adverse impacts upon health and safety. However, we believe the sponsors have done a very good job of addressing each of these potential impacts, and we believe the overall mitigative plans, if adequately implemented, would be for effectiveness, and meet federal and state regulations, will be acceptable. We note that in general, adverse impacts are expected to decrease in the future as improved technology results in lower air, noise, and water pollution emissions.

Because pollutant loading will increase because of greater amounts of storm water runoff, and because of the large number of hazardous substances sites in the project area, the preferred implementation of the "Appl Prevention, Control, and Contingency Plan," and the "Hazardous Substances Management and Contingency Plan," and the remedial action of these plans with existing emergency procedures must be secured to protect ground water impacts, and protect health and safety.

Thank you for adding this address to your mailing list to receive future DEIS's which may include potential public health impacts and are developed under the National Environmental Policy Act (NEPA). On behalf of the Department of Health and Human Services (DHHS), PHS, please use this address rather than Mr. James Dickson, DHHS.

Sincerely yours,

Remond W. Holt

Remond W. Holt, M.D., M.P.H.
Special Programs Group (F-39)
National Center for Environmental Health

Attachment A

1/2

AR 050057



WASHINGTON STATE DEPARTMENT OF
Natural Resources

March 20, 1996

Dennis Owsenby
Environmental Protection Specialist
Northwest Mountain Region
Federal Aviation Administration
US Department of Transportation
1601 Lind Avenue SW
Renton, WA 98055-0536

RE: Final Environmental Impact Statement (FEIS) Seattle/Tacoma International
Airport Master Plan Update

Dear Mr. Owsenby:

I have reviewed the above document and have the following comments:

- The Washington State Surface Mining Act (RCW 70.64) requires a Reclamation permit to be obtained prior to mining when certain thresholds are exceeded. The thresholds are: Three acres disturbed, six to ten acres of 30 feet high with facial and slope steeper than 1:1 (45 degrees). These thresholds would seem to apply for the various "borrow sites" depicted in the FEIS.
- There is an exception which can be applied in this situation. The exception states that a permit is not required for on-site development if the sites are adjacent or contiguous. From the information presented in the document it appears that the borrow sites are not adjacent or contiguous to the proposed fill project. However, the land appears to be under one ownership (part of Seattle) and the argument can be made that although the sites are not adjacent or contiguous, the sole purpose or dedicated use for the entire ownership is for the airport facility.

A Surface Mine Reclamation Permit is NOT required for the borrow sites located within the part of Seattle ownership.

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MARCH 21 1996
MREB (M/ST)

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Dennis Ossenkop
Page 2
March 20, 1996

All other sites where fill materials will be acquired are required to have a reclamation permit in place before the removal of materials can commence if the mining exceeds the thresholds of the Surface Mine Act. If a permit is not in place, that operation is subject to shutdown. The shutdown could stay in effect until the permit is issued.

Thank you for the opportunity to comment.

If you have questions, I can be reached through the South Puget Sound Region Office at (360) 825-1631.

Sincerely,

Bonnie D. Dunning
Region Manager

David S. Pierce

David S. Pierce
Surface Mine Field Inspector

DSP/bh
kds/er

Enclosure

F-15

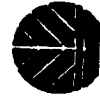
**ATTACHMENT 2
DNR COMMENT LETTER ON FINAL SEIS**

3/31 '97 16:54

10:SPS REGION EMTCLAW WA

FRM:

PAGE 2



WASHINGTON STATE DEPARTMENT OF
Natural Resources

March 31, 1997

Federal Aviation Administration
ANM-611
Dennis Ozonkrop
1801 Lind Avenue SW
Renton, WA. 98055-4056

RE: Supplemental R.I.R. Sea-Tac Expansion - Additional Comments

Dear Mr. Ozonkrop:

I have reviewed the Supplemental Environmental Impact Statement (S.E.I.S.) for the proposed Sea-Tac Airport Expansion and have the following response.

1. A Surface Mine Reclamation Permit will not be required for Borrow Sites 1, 2, 3 and 4 because they fit the encloses in RCW 78.44.31(17).
2. Borrow Sites 5 and 8 will not be mined, therefore a Reclamation Permit will not be required for them either.
3. The proposed wetlands mitigation project located in Auburn is slated to disturb 47 acres. This project will require a Reclamation Permit because it: (a) exceeds the 3 acre threshold for a permit and (b) the material is proposed to be exported from the site.
4. In reviewing the 8019 reclamation plans, it appears reclamation will be accomplished as if it were in accordance with RCW 78.44. The department would be happy to provide limited technical assistance to ensure satisfactory reclamation of these disturbed areas.

1

3/31 '97 16:54

10:SPS REGION EMTCLAW WA

FRM:

PAGE 3



DAVID S. PIERCE
SUPERVISOR

Mr. Ozonkrop
Page 2
March 31, 1997

Thank you for the opportunity to review the proposed project.
If you have questions I can be reached through the South Puget Sound Region Office at
(360) 825-1631.

Sincerely,

Bonnie D. Dunning
Region Manager

Bonnie D. Dunning

David S. Pierce
Surface Mine Field Inspector

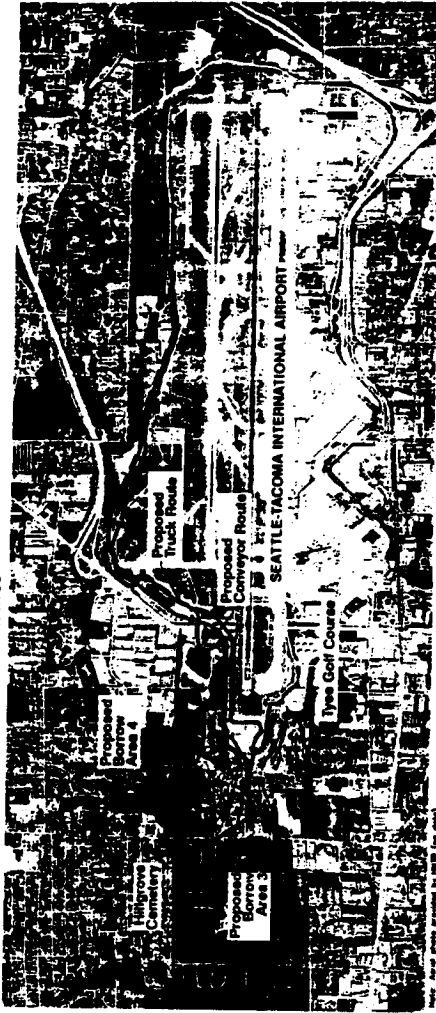
AR 050060

THIRD RUNWAY BORROW AREAS 3 AND 4 CONCEPTUAL PERMIT PACKAGE

Site Access and Location Map



Borrow Area and Layout of Haul Route Alternatives



Proposed Conveyor Route
 Proposed Truck Route
 Former Tees Golf Course
 Boundary (Streets, Area for
 Facilities and Stockpiles)

DRAWING NO	TITLE
1	TITLE SHEET, DRAWING INDEX, SITE ACCESS AND LOCATION MAP, AND BORROW AREA AND HAUL ROUTE LAYOUT
2	APPROXIMATE AERIAL PHOTO OF THE PORT OF SEATTLE LAND OWNERSHIP BORROW SITES & SR 509
3	SOUTH AIRFIELD AND BORROW AREA ZONING MAP
4	SITE EXPLORATION PLAN AND PERCHED WATER-BEARING ZONE ELEVATION CONTOUR MAP
5	SHALLOW REGIONAL AQUIFER ELEVATION CONTOUR MAP BORROW AREA 1
6	HYDROGEOLOGIC CROSS SECTIONS FOR PERCHED WATER-BEARING ZONE AND SHALLOW AQUIFER
7	HYDROGEOLOGIC CROSS SECTIONS FOR PERCHED WATER-BEARING ZONE AND WETLAND DAMAGE SWALE
8	WETLANDS MAP SHOWING PRE-MINING ELEVATION CONTOURS
9	CONCEPTUAL HAUL ROUTE ALTERNATIVES FROM BORROW AREAS TO AIRFIELD
10	CONCEPTUAL DETAILS - HAUL ROUTE CROSSING DES MOINES CREEK
11	PRE-MINING ELEVATION CONTOUR MAP
12	CONCEPTUAL MID-YEAR MINING PLAN
13	CONCEPTUAL MINING PLAN NEAR END OF YEAR
14	CONCEPTUAL MINING PLAN END OF YEAR
15	CONCEPTUAL END OF YEAR RECLAMATION PLAN
16	CONCEPTUAL END OF YEAR RECLAMATION PLAN
17	CONCEPTUAL END OF YEAR RECLAMATION PLAN

HARTROWSER
 ENGINEERS AND ARCHITECTS
 1100 University Street, Suite 1000
 Seattle, WA 98101
 Phone: 206.462.1234
 Fax: 206.462.1235

DRAFT

SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 TITLE SHEET, DRAWING INDEX,
 SITE ACCESS AND LOCATION MAP,
 AND BORROW AREA AND HAUL ROUTE LAYOUT

LEGEND
 013-910-00

- Boring with Observation Well Location and Number
- Proposed Borrow Development Project Boundary
- Part of Seattle Borrow Area Property Boundary
- Cross Section/Profile Location and Description
- Proposed Major Elevation Contour in Feet
- Existing Major Elevation Contour in Feet
- Existing Minor Elevation Contour in Feet
- Proposed Reclamation Setback - No Permanent Excavation within 30 Feet of Property Line
- Borrow Area Disturbance
- Seepage Boundary
- Drainage Swale
- Restrictive Covenant Boundary
- Stormwater Collection and Diversion Line (Conceptual)
- Stormwater Detention and Sediment Pond (Conceptual)
- Temporary Topsoil Stockpile Area (Conceptual)
- Proposed Haul Route
- Wetland (Delineated by Paragraph 2.01) with 50-Foot "No-Excavation" Buffer and Wetland Number
- Regraded, Revegetated, and Topsoiled Areas
- Interim Revegetation
- Seattle-Tacoma International Airport Survey Grid
- Conceptual Truck Haulage Route Alternative Stationing (Typ)
- Conceptual Conveyor Route Alternative Stationing (Typ)
- Route Impacts to Des Moines Creek Wetland Area

- Inferred Contact between Geologic Units
- Contact between Geologic Units
- Aquifer
- Patched Water-Bearing Zone
- Proposed Base of Excavation
- Groundwater Elevation Contour in Feet
- Groundwater Elevation Contour in Feet for Patched Water-Bearing Zone
- Spot Patched Water-Bearing Zone Groundwater Elevation in Feet
- 870
- 878
- 876
- Boring Number
- Boring Location
- Water Level in Patched Water-Bearing Zone
- Perched Layer
- Water Level in Shallow Recharge Aquifer
- Excavation Number
- Offset Distance and Direction
- Excavation Location
- Groundwater Level at Time of Drilling
- Screened Interval

Notes:

- 1) Base maps prepared from drawing provided by HNTB entitled "Borrow Areas 3 & 4 Grading Plan," dated April 13, 1988.
- 2) Wetland delineation prepared from drawing provided by Parametric entitled "022001.dwg," dated February 20, 2001.
- 3) Datum: Seale Old Lib. - Sea-Tac 014
 Vertical - NGVD 1985
- 4) Zoning classifications shown on Sheet 3 prepared from map provided by Part of Seattle entitled, "Seattle-Tacoma International Airport Noise Remedy Programs," dated 12/96.
- 5) Noise Remedy Programs shown on Sheet 3 prepared from map provided by Part of Seattle entitled, "Seattle-Tacoma International Airport Noise Remedy Programs," dated 12/96.
- 6) Runway Protection Zones (RPZ) and Approach Transitional Zones (ATZ) shown on Sheet 3 based on map prepared by General Urban, Inc. entitled, "Seattle-Tacoma International Airport Zoning Map," dated August 4, 1997.
- 7) Additional soil and groundwater information is provided in "Subsurface Condition Data Report, Borrow Areas 1, 3, and 4, Sea-Tac Airport Third Runway," Hart Crosser, September 24, 1998. Also see "Soil and Groundwater Investigation Report, Seattle-Tacoma International Airport, Seattle, Washington," AG Technology, April 3, 1995.

AR 050062

013-910-00
 013-910-00
 013-910-00

City	State	County	Project No.	Sheet No.
Seattle	WA	King	013-910-00	37/37
Project Name	Seattle-Tacoma International Airport Third Runway			
Client	Seattle-Tacoma International Airport Authority			
Design Firm	Hart Crosser & Associates, Inc.			
Scale	As Shown			
Date	1998			

HARTCROSSER
 Hart Crosser & Associates, Inc.
 1980 1st Avenue, Suite 200
 Seattle, WA 98101
 Phone: 206.465.1100
 Fax: 206.465.1101

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SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 ABBREVIATIONS/LEGEND/NOTES



NOT TO SCALE

AR 050063

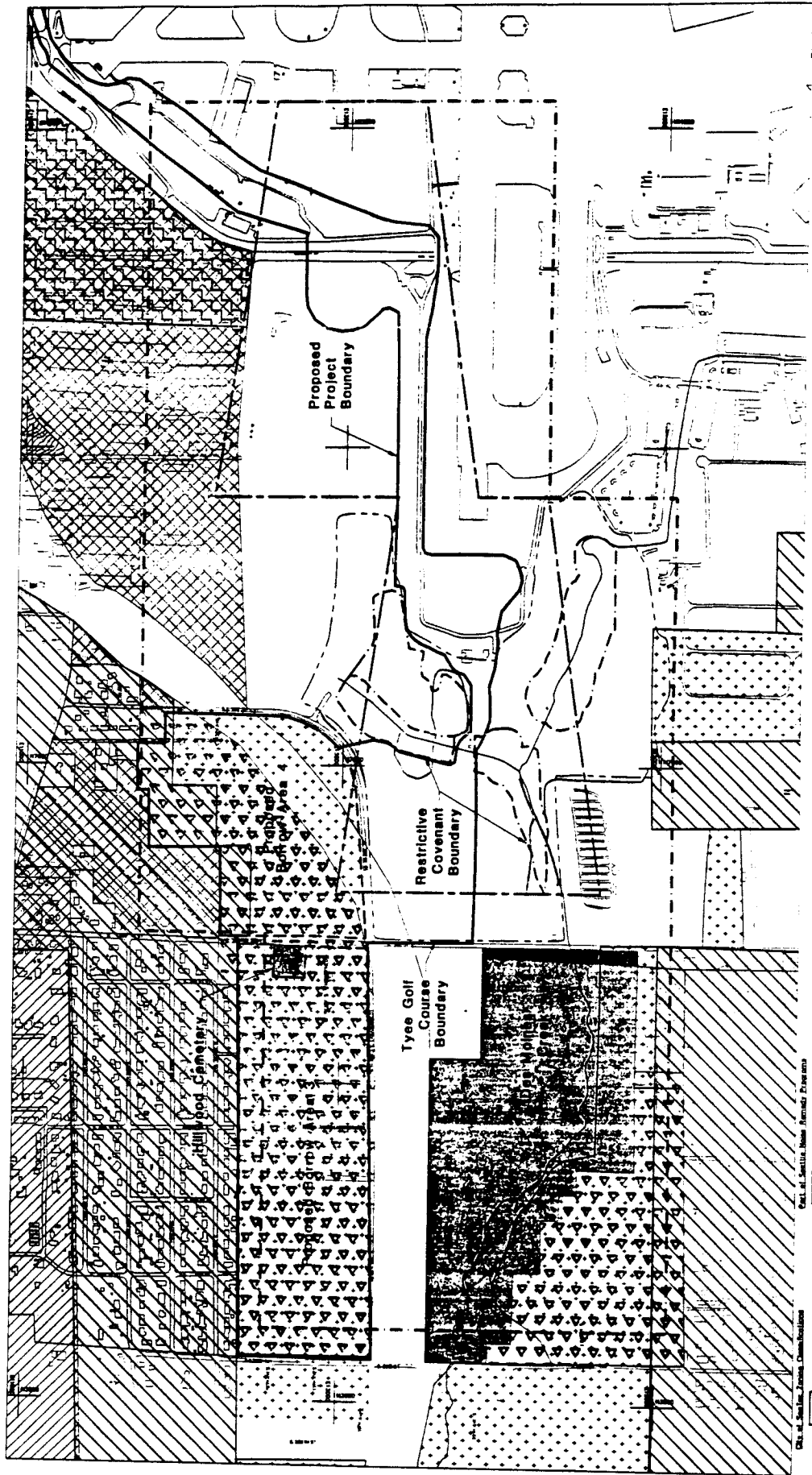
HARTCROWSER
 1800 1st Avenue, Suite 200
 Seattle, WA 98101
 Phone: 206.465.1234
 Fax: 206.465.1235

DESIGNED BY: []
 CHECKED BY: []
 DATE: []

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SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 PORT OF SEATTLE LAND OWNERSHIP
 BORROW AREA SITES AND SR 509

Drawing No.	25334	Project Name	SEA-TAC	Scale	AS SHOWN	Sheet No.	3
Date	10/27/01	Drawn By	DAVE	Checked By	DAVE	Scale	AS SHOWN



SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 SOUTH AIRFIELD AND BORROW AREA
 ZONING MAP

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 1100 1st Avenue, Suite 100
 Seattle, WA 98101
 Phone: 206.461.1100
 Fax: 206.461.1101
 Email: info@hartcrosner.com

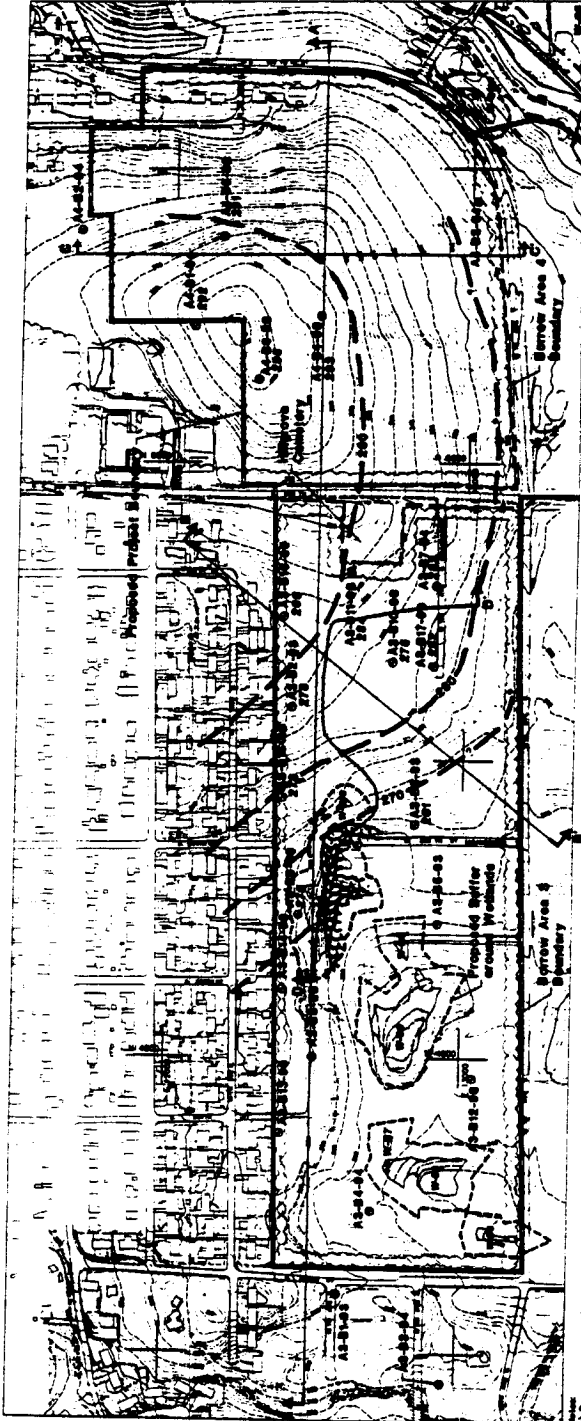
Project No. 2003-0003-0001-0001
 Date: 1/17/03
 Prepared By: J. Baker
 Checked By: J. Baker
 Approved By: J. Baker

Legend

[Symbol]	Residential	[Symbol]	Acquired State Property (Program Completed 1-000 Project)
[Symbol]	Business Park (BP)	[Symbol]	Custom Inclusion (Neighborhood Restructuring Area)
[Symbol]	Community Business (CB)	[Symbol]	Timber Inclusion
[Symbol]	Industrial (I)	[Symbol]	Proposed Acquisition Area
[Symbol]	Medium Commercial (MC)	[Symbol]	Runway Protection Zone (RPZ)
[Symbol]	Aviation Operations (AO)	[Symbol]	Airport Transition Zone (ATZ)
[Symbol]	Park (P)	[Symbol]	See notes on Sheet 3

Other Symbols

- Proposed Project Boundary
- Restrictive Covenant Boundary
- Tye Golf Course Boundary



This map prepared from data supplied by 1975 survey
 and 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984,
 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993,
 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003,
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 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025.

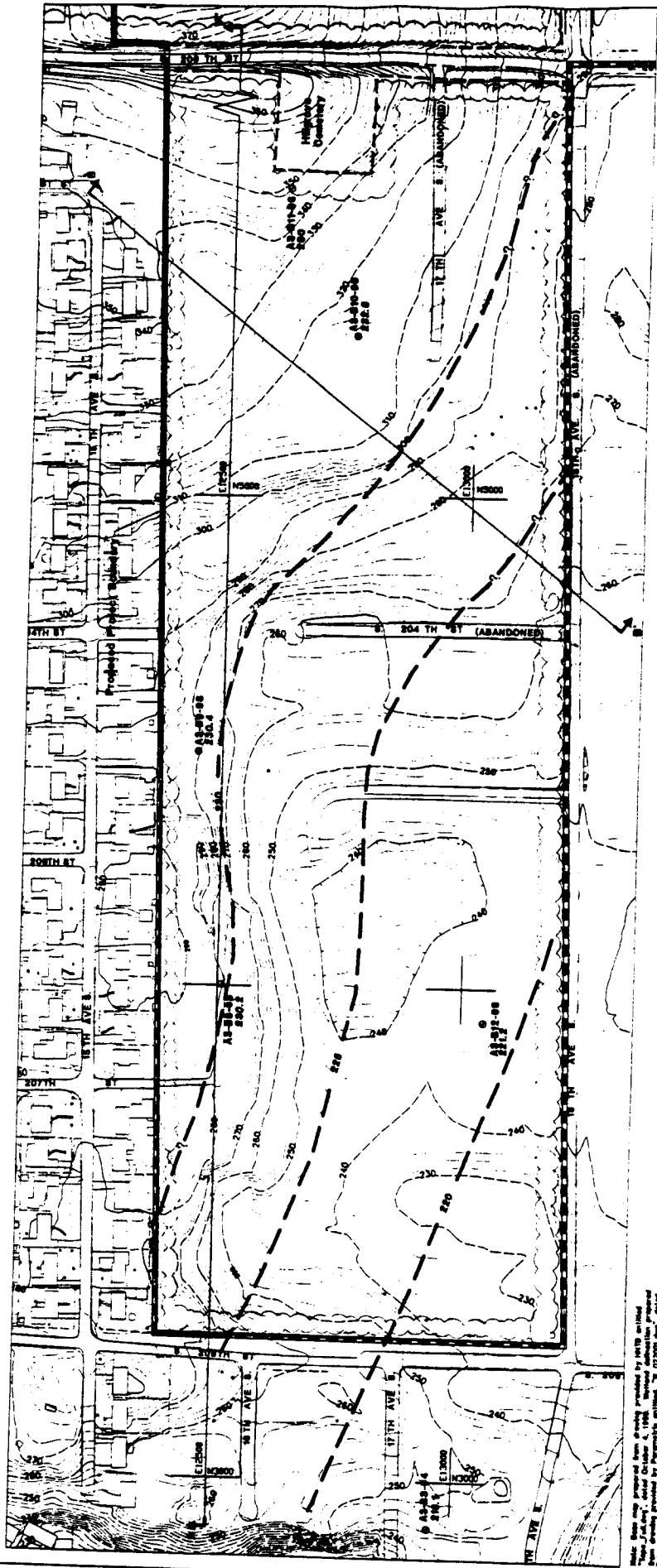
AR 050065

Sheet No.	Date	By	Checked By
1	1/7/70	G. J. MALLI	G. J. MALLI
2			
3			
4			
5			
6			
7			
8			
9			
10			

HARTCROWSER
 INC.
 100 S. W. 12th Ave.
 Miami, Florida 33135
 Phone: 305-375-7474

DRAFT

BEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 SITE EXPLORATION PLAN AND
 PERCHED WATER-BEARING ZONE
 ELEVATION CONTOUR MAP
 Date: 7/2/70
 Scale: 1" = 500'



This map was prepared from data provided by the City of Seattle, Washington, and is not to be used for any other purpose without the express written consent of the City of Seattle, Washington. February 28, 2001

Sheet No.	AR 050066
Project No.	SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
Drawn By	J. M. MULLY
Checked By	J. M. MULLY
Reviewed By	J. M. MULLY
Date	1/17/01

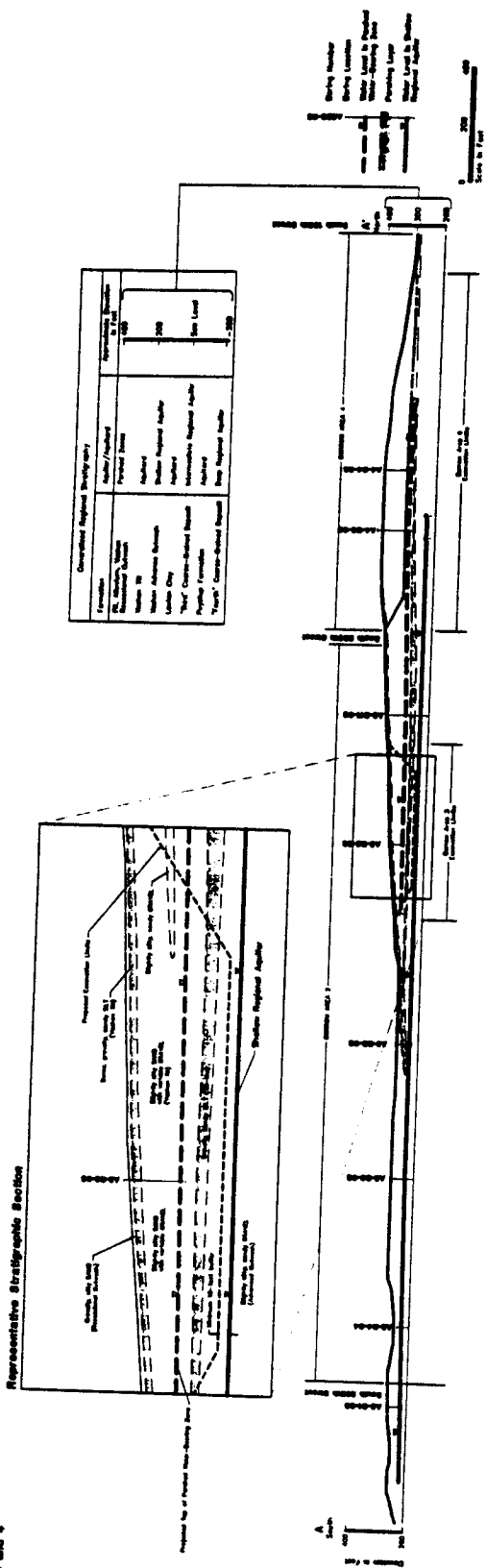
HARTCROWSER
 1800 4th Avenue
 Seattle, WA 98101
 Phone: 206.461.1200
 Fax: 206.461.1201

DRAFT

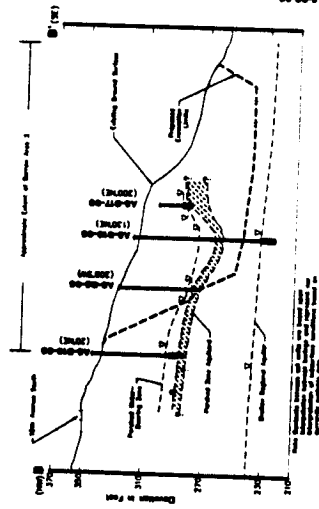
SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 SHALLOW REGIONAL AQUIFER ELEVATION CONTOUR MAP
 BORROW AREA 3

AR 050066

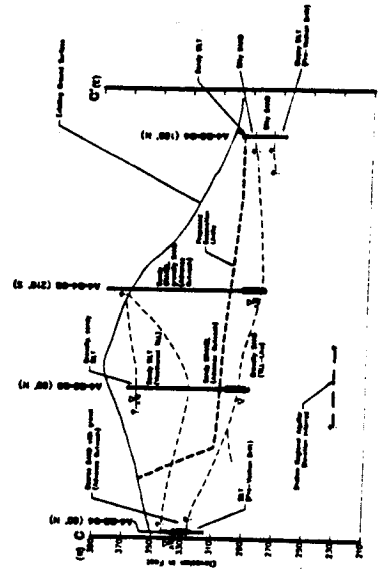
Hydrogeologic Cross Section A-A'
Borrow Area 3 and 4



Perched Water-Bearing Zone Cross Section B-B'
Borrow Area 3



Cross Section C-C'
Borrow Area 4



Vertical Scale in Feet
1" = 20' (Vertical)
1" = 100' (Horizontal)

Exploration Number
Other Distances and Direction
Collection Location
Drainage Level
Streamed Stream

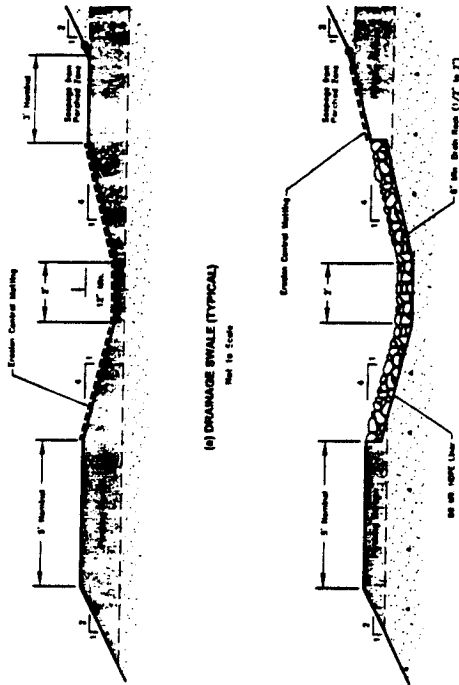
SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
HYDROGEOLOGIC CROSS SECTIONS FOR
PERCHED WATER-BEARING ZONE AND SHALLOW AQUIFER

HARTCROWSER
1908 Commercial Street
Seattle, Washington 98101
206 465 1200

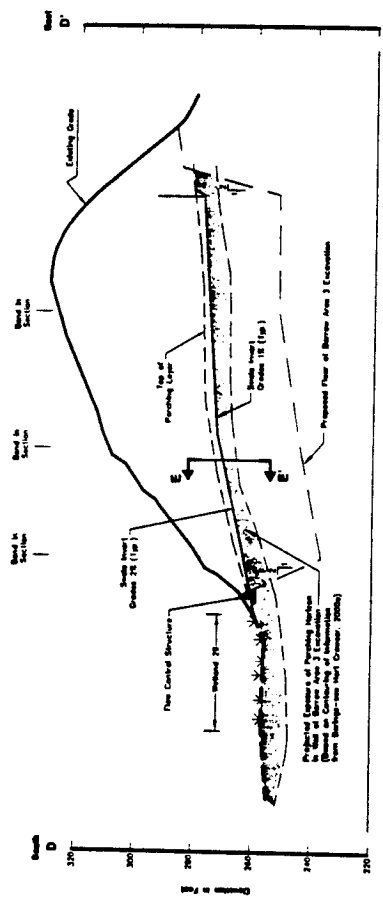
Drawn By	Checked By	Reviewed By	Scale
W. J. MULLY	W. J. MULLY	W. J. MULLY	1/2" = 10'
Date	Date	Date	Date
1/27/81	1/27/81	1/27/81	1/27/81

AR 050067

Typical Swale Cross Sections E-E'
Borrow Area 3 Drainage Swale



Drainage Swale - Profile D-D'
Borrow Area 3



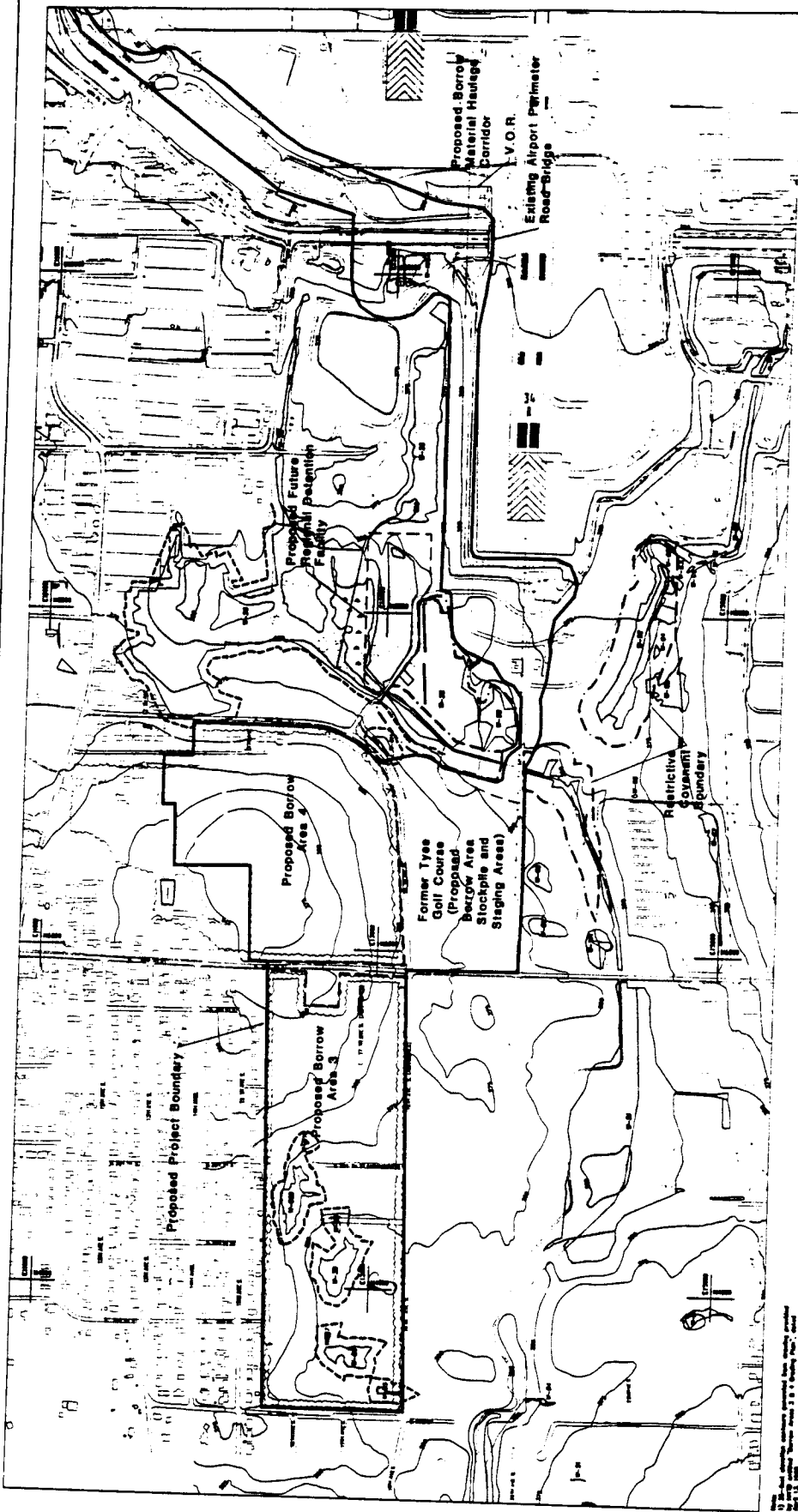
DRAFT

HARTROWSE
 1100 S. W. 11th St., Suite 100
 Fort Lauderdale, FL 33304
 Phone: (954) 333-1100
 Fax: (954) 333-1101

Drawn By:	Checked By:	Reviewed By:	Scale:
J. M. BALLE	J. M. BALLE	J. M. BALLE	1/2" = 1'
Date:	Project No.:	Sheet No.:	Total Sheets:
1/17/01	AR 050068	10	10

SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 HYDROGEOLOGIC PROFILE/CROSS SECTIONS
 OF WETLAND DRAINAGE SWALE

AR 050068



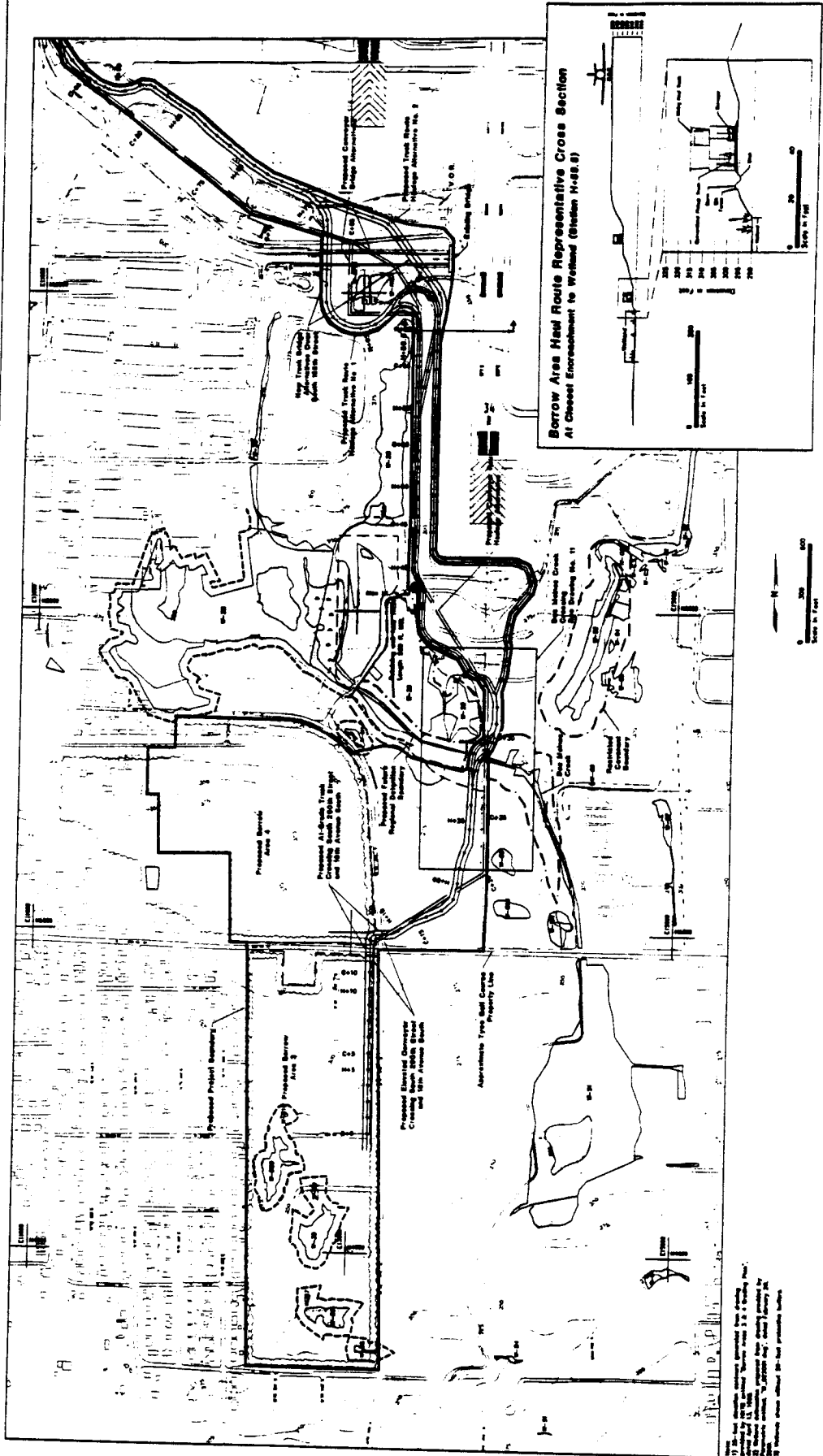
AR 050069

Sheet No.	AR 050069	Scale	1" = 100'
Drawn By	J. M. M. / J. M. M.	Checked By	J. M. M. / J. M. M.
Designed By	J. M. M. / J. M. M.	Approved By	J. M. M. / J. M. M.
Date	1/17/01	Project No.	AR 050069

HARTCROWSER
 100 S. ...
 ...

DRAFT

SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 WETLANDS MAP SHOWING
 PRE-MINING ELEVATION CONTOURS



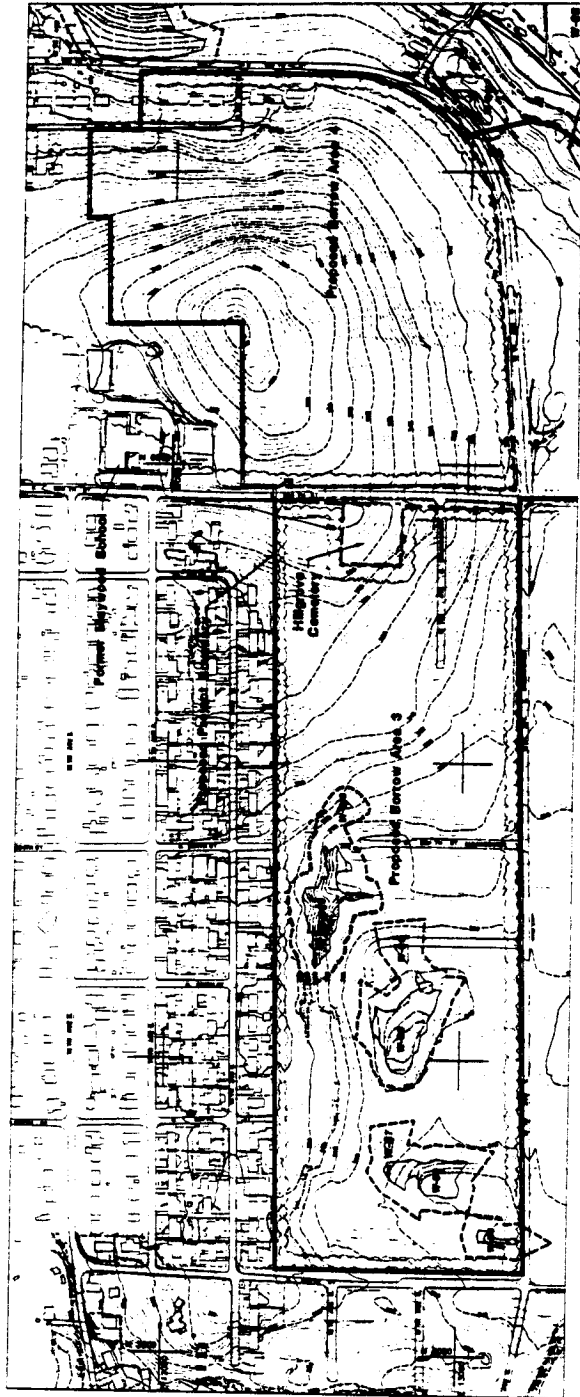
SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 CONCEPTUAL HAUL ROUTE ALTERNATIVES
 FROM BORROW AREAS TO AIRFIELD

DRAFT

HARTCROWSER
 Engineering, Planning, and Construction
 1100 North Main Street, Suite 200
 Seattle, WA 98101
 Phone: 206.461.1000
 Fax: 206.461.1001

Project No.	SEA-TAC 3	Sheet No.	10
Project Name	SEA-TAC Third Runway	Scale	1" = 200'
Client	SEA-TAC	Author	J. B. [unclear]
Design	J. B. [unclear]	Checked	J. B. [unclear]
Drawn	J. B. [unclear]	Date	1/17/01

AR 050070



Scale: 1" = 200'

North Arrow

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BEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 PRE-MINING ELEVATION CONTOUR MAP
 Date: 2/1/70
 Scale: 1" = 200'
 Sheet: 12 of 12

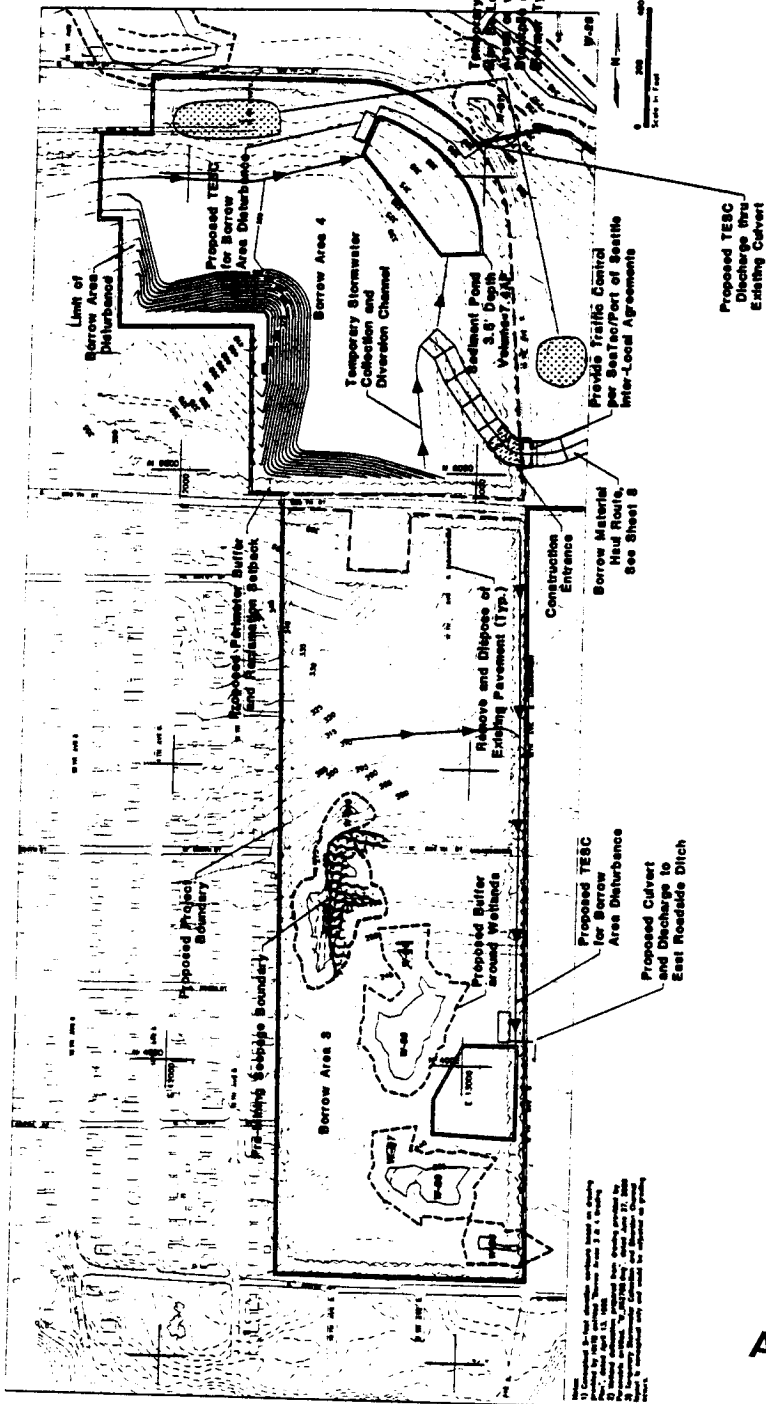
DRAFT

HARTCROWSER
 1118 E. 1st Street
 Vicksburg, Mississippi 39180
 Phone: (601) 791-1118

NO.	DATE	BY	REVISIONS
1	2/1/70	J. J. [unclear]	Initial
2	2/1/70	J. J. [unclear]	Final

AR 050072

- YEAR 1 CONCEPTUAL MID-YEAR ACTIVITIES**
1. Install truck entrance and traffic control systems across public R.O.W.
 2. Install or improve Perimeter Fences as needed.
 3. Construct TESC facilities.
 4. Construct Borrow Material Haul Route.
 5. Remove trees and clear other vegetation except within buffer areas (may be segmented as excavation proceeds).
 6. Pre-strip and stockpile topsoil from Borrow Area 4.
 7. Develop Borrow Area 4 and haul borrow materials.
 8. Stabilize mined area (recontour high wall) and accomplish contemporaneous reclamation in Borrow Area 4.



DRAFT

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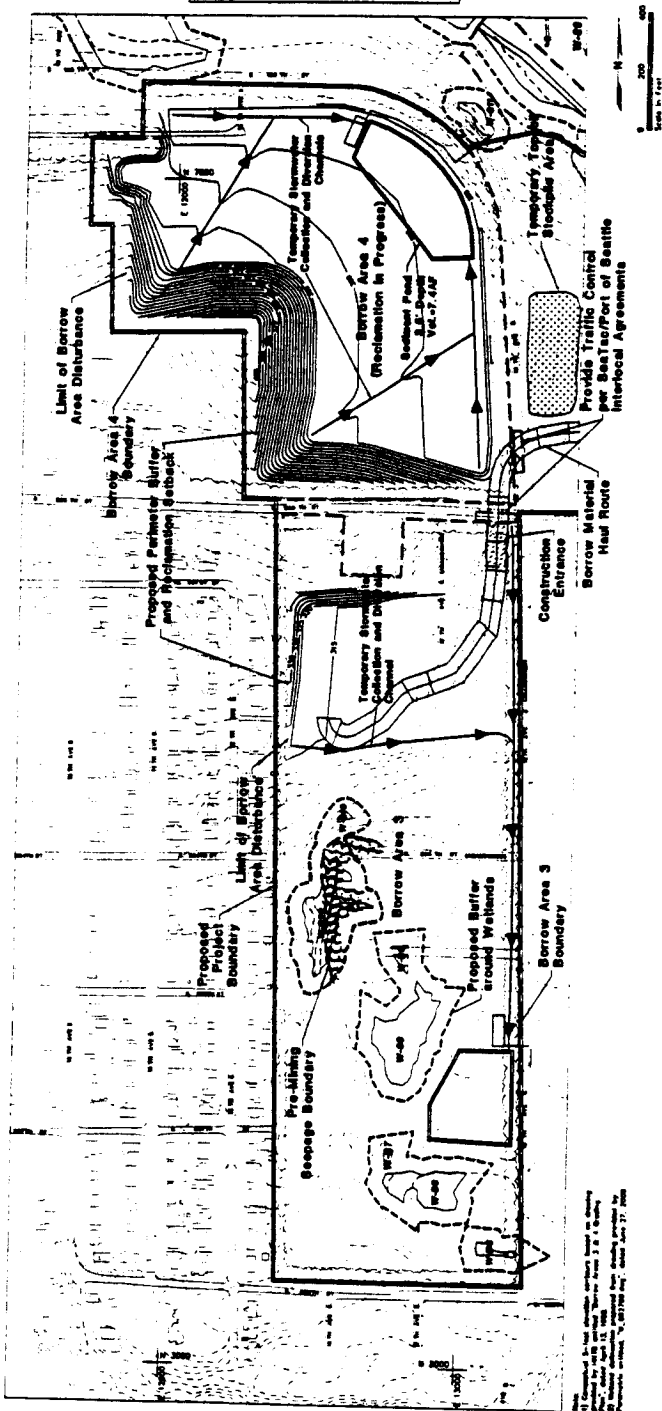
1000 1st Avenue, Suite 1000
Seattle, WA 98101
Tel: 206.461.1111
Fax: 206.461.1110

Project No.	AR 050073
Client	SEA-TAC
Scale	AS SHOWN
Drawn By	J. M. B. / J. M. B.
Checked By	J. M. B. / J. M. B.
Date	10/27/01

SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
YEAR 1 CONCEPTUAL MID-YEAR MINING PLAN

AR 050073

- YEAR 1 CONCEPTUAL ACTIVITIES NEAR END OF YEAR**
1. Extend, maintain, and operate traffic control systems.
 2. Control, maintain, and operate TESC system.
 3. Extend Borrow Area 4 Borrow material development.
 4. Pr-strip and stabilize Head Pile to Borrow Area 3.
 5. Develop and head Borrow Area 3 Borrow material.
 6. Complete slope recontouring and topsoil replacement in Borrow Area 4.
 7. Initiate recontouring of Borrow Area 3 High wall.
 8. Complete permanent revegetation and landscaping in Borrow Area 4.
 9. Install Wetland protection walls when mining reaches perching horizon.
 10. Initiate temporary revegetation in Borrow Area 3 for winter shutdowns.



Drawn by	Checked by	Designed by	Drawn by	Scale
				1" = 100'
Checked by	Designed by	Drawn by	Scale	

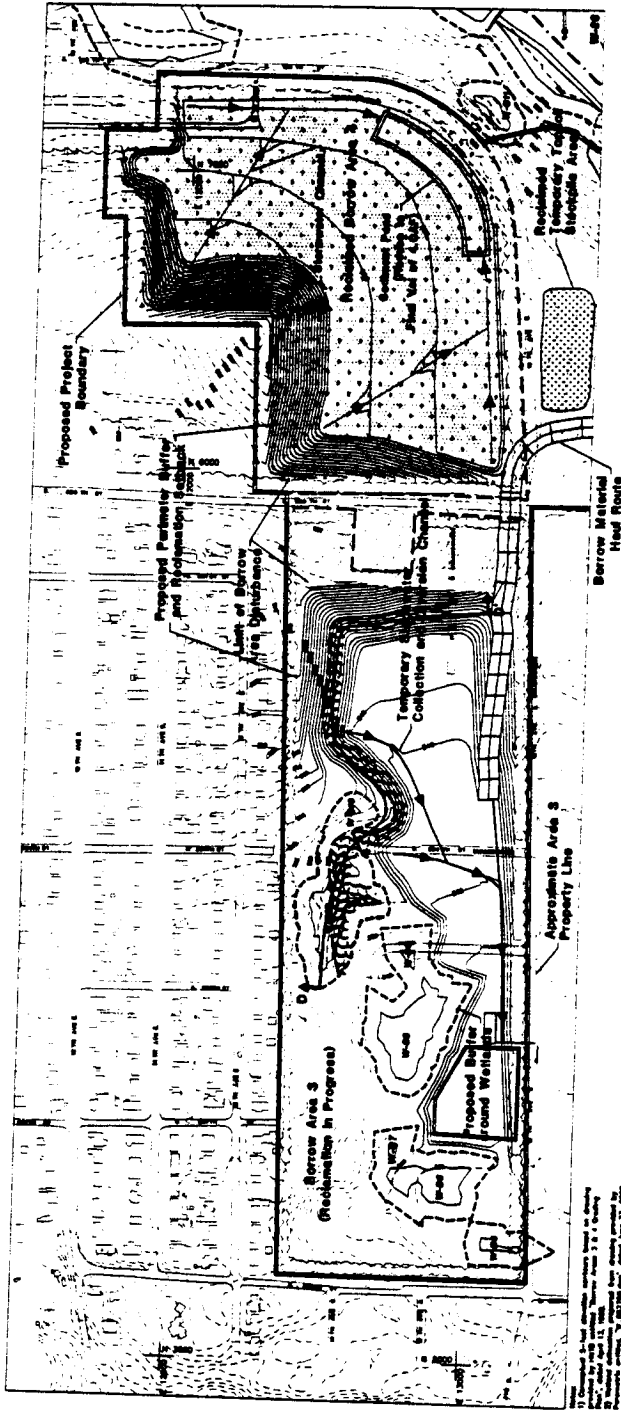
HARTCROWSER

1100 4th Avenue East
Seattle, WA 98102
Tel: 206.328.5500
Fax: 206.328.6916

DRAFT

SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
YEAR 1: CONCEPTUAL MINING PLAN
NEAR END OF YEAR

AR 050074



- YEAR 2 CONCEPTUAL ACTIVITIES NEAR END OF YEAR**
1. Complete drainage works.
 2. Complete Borrow Area 3 borrow material development and haul.
 3. Complete permanent recontouring and topsoil placement in Borrow Area 3.
 4. Complete permanent revegetation and landscaping in Borrow Area 3.
 5. Decommission and reclaim Borrow Material Head Route and Topsoil Stockpile Area.
 6. Decommission traffic control system.
 7. Mobilize and operate TESC systems.
 8. Monitor and maintain revegetation and landscaping.

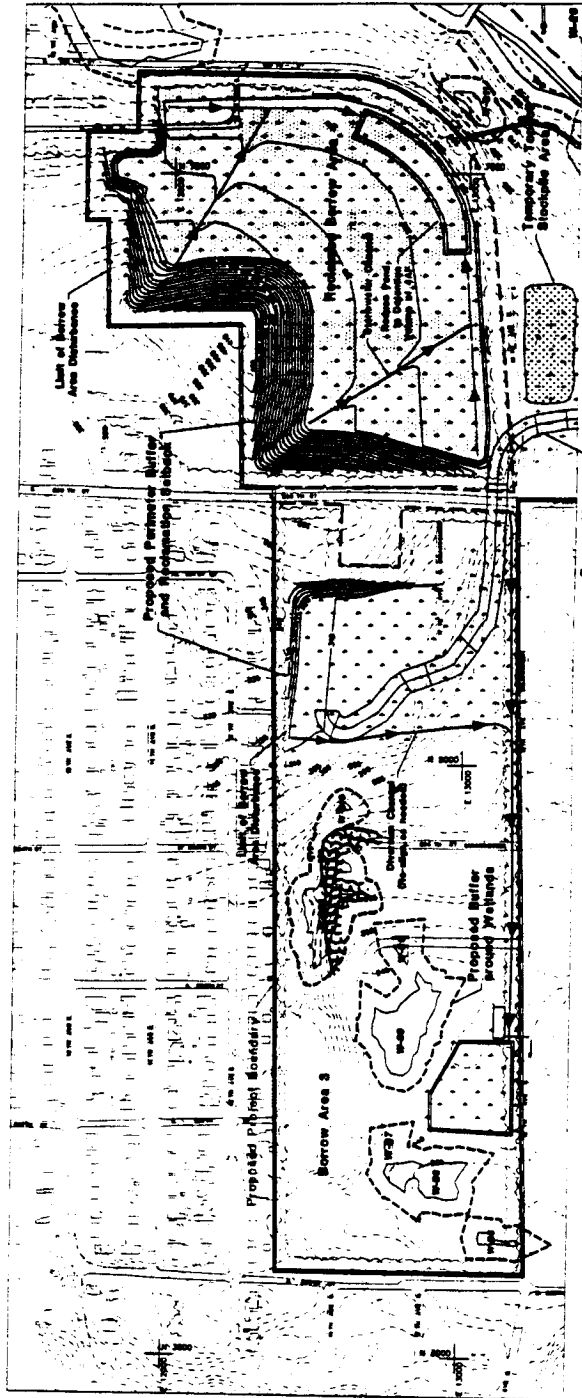
AR 050075

DRAFT

HARTCROWSER
 1710 J Street, Suite 100
 Seattle, WA 98101
 Phone: 206.461.1100
 Fax: 206.461.1105

Rev	By	Date	Description
1	J. M. H.	1/7/09	Initial Issue
2	J. M. H.	1/7/09	Revised
3	J. M. H.	1/7/09	Revised
4	J. M. H.	1/7/09	Revised
5	J. M. H.	1/7/09	Revised
6	J. M. H.	1/7/09	Revised
7	J. M. H.	1/7/09	Revised
8	J. M. H.	1/7/09	Revised
9	J. M. H.	1/7/09	Revised
10	J. M. H.	1/7/09	Revised
11	J. M. H.	1/7/09	Revised
12	J. M. H.	1/7/09	Revised
13	J. M. H.	1/7/09	Revised
14	J. M. H.	1/7/09	Revised
15	J. M. H.	1/7/09	Revised

SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
YEAR 2: CONCEPTUAL MINING PLAN
 NEAR END OF YEAR



1. Contour lines are shown at 5-foot intervals. 2. All borrow areas are shown with a stippled pattern. 3. All proposed areas are shown with a dashed line. 4. All existing areas are shown with a solid line. 5. All proposed pipeline and distribution network are shown with a solid line. 6. All borrow material head route are shown with a solid line.

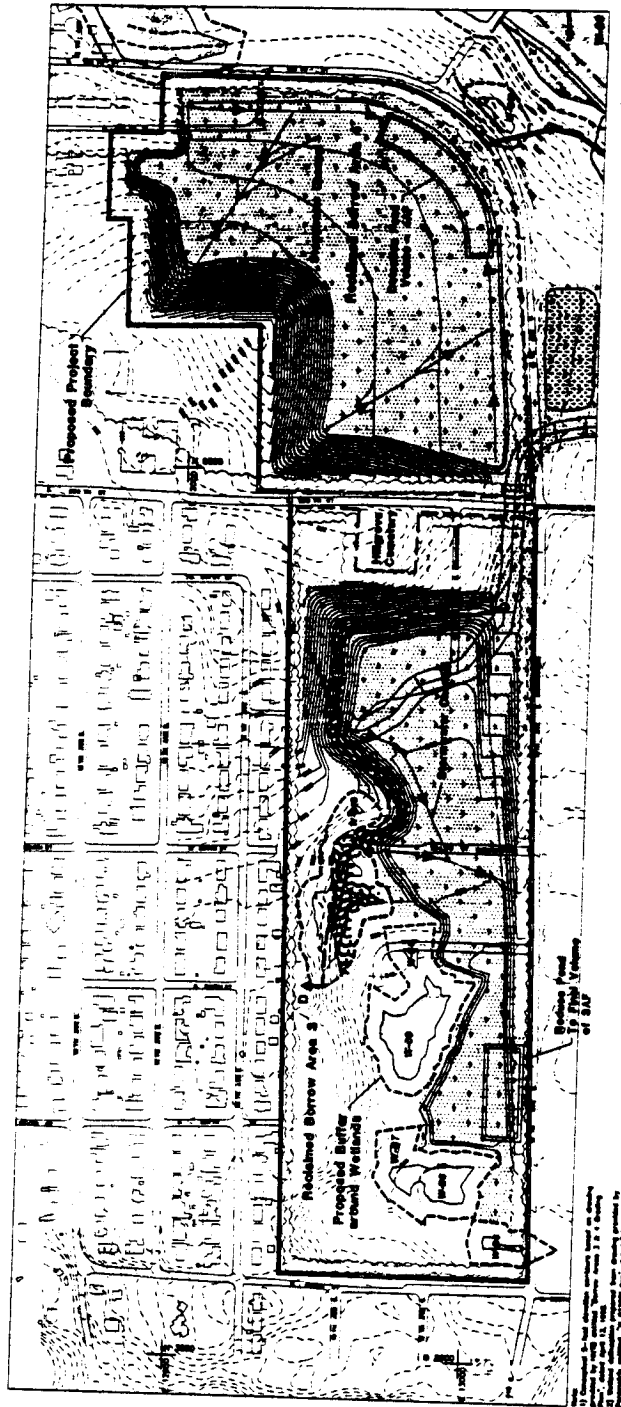
SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 YEAR 1: CONCEPTUAL END OF YEAR
 SEGMENTAL RECLAMATION PLAN

DRAFT

HARTCROWSER

Project No.	SEA-TAC 3
Sheet No.	16
Scale	AS SHOWN
Drawn By	J. HART
Checked By	J. HART
Approved By	J. HART
Date	10/11/00

AR 050076



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AR 050077

NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/20/00	PRELIMINARY	J. HART	J. HART
2	11/15/00	REVISED	J. HART	J. HART
3	12/10/00	REVISED	J. HART	J. HART
4	01/10/01	REVISED	J. HART	J. HART
5	02/10/01	REVISED	J. HART	J. HART
6	03/10/01	REVISED	J. HART	J. HART
7	04/10/01	REVISED	J. HART	J. HART
8	05/10/01	REVISED	J. HART	J. HART
9	06/10/01	REVISED	J. HART	J. HART
10	07/10/01	REVISED	J. HART	J. HART
11	08/10/01	REVISED	J. HART	J. HART
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16	01/10/02	REVISED	J. HART	J. HART
17	02/10/02	REVISED	J. HART	J. HART
18	03/10/02	REVISED	J. HART	J. HART
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20	05/10/02	REVISED	J. HART	J. HART
21	06/10/02	REVISED	J. HART	J. HART
22	07/10/02	REVISED	J. HART	J. HART
23	08/10/02	REVISED	J. HART	J. HART
24	09/10/02	REVISED	J. HART	J. HART
25	10/10/02	REVISED	J. HART	J. HART
26	11/10/02	REVISED	J. HART	J. HART
27	12/10/02	REVISED	J. HART	J. HART
28	01/10/03	REVISED	J. HART	J. HART
29	02/10/03	REVISED	J. HART	J. HART
30	03/10/03	REVISED	J. HART	J. HART
31	04/10/03	REVISED	J. HART	J. HART
32	05/10/03	REVISED	J. HART	J. HART
33	06/10/03	REVISED	J. HART	J. HART
34	07/10/03	REVISED	J. HART	J. HART
35	08/10/03	REVISED	J. HART	J. HART
36	09/10/03	REVISED	J. HART	J. HART
37	10/10/03	REVISED	J. HART	J. HART
38	11/10/03	REVISED	J. HART	J. HART
39	12/10/03	REVISED	J. HART	J. HART
40	01/10/04	REVISED	J. HART	J. HART
41	02/10/04	REVISED	J. HART	J. HART
42	03/10/04	REVISED	J. HART	J. HART
43	04/10/04	REVISED	J. HART	J. HART
44	05/10/04	REVISED	J. HART	J. HART
45	06/10/04	REVISED	J. HART	J. HART
46	07/10/04	REVISED	J. HART	J. HART
47	08/10/04	REVISED	J. HART	J. HART
48	09/10/04	REVISED	J. HART	J. HART
49	10/10/04	REVISED	J. HART	J. HART
50	11/10/04	REVISED	J. HART	J. HART
51	12/10/04	REVISED	J. HART	J. HART
52	01/10/05	REVISED	J. HART	J. HART
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56	05/10/05	REVISED	J. HART	J. HART
57	06/10/05	REVISED	J. HART	J. HART
58	07/10/05	REVISED	J. HART	J. HART
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60	09/10/05	REVISED	J. HART	J. HART
61	10/10/05	REVISED	J. HART	J. HART
62	11/10/05	REVISED	J. HART	J. HART
63	12/10/05	REVISED	J. HART	J. HART
64	01/10/06	REVISED	J. HART	J. HART
65	02/10/06	REVISED	J. HART	J. HART
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72	09/10/06	REVISED	J. HART	J. HART
73	10/10/06	REVISED	J. HART	J. HART
74	11/10/06	REVISED	J. HART	J. HART
75	12/10/06	REVISED	J. HART	J. HART
76	01/10/07	REVISED	J. HART	J. HART
77	02/10/07	REVISED	J. HART	J. HART
78	03/10/07	REVISED	J. HART	J. HART
79	04/10/07	REVISED	J. HART	J. HART
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84	09/10/07	REVISED	J. HART	J. HART
85	10/10/07	REVISED	J. HART	J. HART
86	11/10/07	REVISED	J. HART	J. HART
87	12/10/07	REVISED	J. HART	J. HART
88	01/10/08	REVISED	J. HART	J. HART
89	02/10/08	REVISED	J. HART	J. HART
90	03/10/08	REVISED	J. HART	J. HART
91	04/10/08	REVISED	J. HART	J. HART
92	05/10/08	REVISED	J. HART	J. HART
93	06/10/08	REVISED	J. HART	J. HART
94	07/10/08	REVISED	J. HART	J. HART
95	08/10/08	REVISED	J. HART	J. HART
96	09/10/08	REVISED	J. HART	J. HART
97	10/10/08	REVISED	J. HART	J. HART
98	11/10/08	REVISED	J. HART	J. HART
99	12/10/08	REVISED	J. HART	J. HART
100	01/10/09	REVISED	J. HART	J. HART

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DRAFT

SEA-TAC THIRD RUNWAY BORROW AREAS 3 AND 4
 YEAR 2: CONCEPTUAL END OF YEAR
 RECLAMATION PLAN