

## A. EARTH

### Affected Environment

The University of Washington campus as a whole occupies two distinct geologic settings: the hill and slope of the campus west of Montlake Blvd. and the 'flats' east of Montlake Blvd. The Central Campus is located on the south slope of a hill that rises approximately 250 feet above the shores of Union and Portage Bays. This topography is typical in the system of gently sloping, elongated hills that dominate the land forms of the southern Puget Sound area. Soils in most of the campus area are primarily composed of glacial till.

The 'flats' of the East Campus were originally made up of stream and lake deposits. After construction of the Hiram M. Chittenden Locks and Lake Washington Ship Canal was completed in 1916, the level of Lake Washington was lowered by approximately 8 feet (at high water), and much of the delta area became marsh. In 1926, the City of Seattle began to use this area as a landfill. Filling spread onto the marsh, reaching its greatest extent in 1964. Major filling operations ceased in the mid-1960s, but a series of surface covering, grading and seeding operations altered the landscape until 1971, when all but minimal maintenance activities ended. Today, the delta is mantled almost entirely with construction fill, rubble, and solid waste. Because of differential subsidence and settlement problems, much of the East Campus is not suitable for building construction and is becoming a significant wetland.

Since its origin, the campus has been little modified by soil deposition. However, streams, small-scale slumping and small creeping landslides have had minor effects on the steeper northeast and east-central slopes of campus. Steep slopes generally occur between the Nuclear Physics Lab and NE 45<sup>th</sup> Street and Whitman Court/Stevens Way and the Burke-Gilman trail on the Central Campus, and along the Lake Washington Ship Canal in the South/Southwest and East Campus areas. Debris from hillside erosion has been deposited along the base of these slopes. Refer to *Section III C.* of this Final EIS (Water).

### Impacts of the Proposed Action

Under the proposed *Master Plan Seattle Campus*, approximately 3 million sq.ft. of building area would be developed. Depending on the building sites, this level of development could require the excavation of up to approximately 750,000 cubic yards of earth over the planning period<sup>1</sup>. A portion of the excavated material (approximately 20 percent) could be reused on campus as backfill (on individual project sites). It is anticipated that the remaining approximately 70 to 80 percent would be transported to an undetermined, legally-approved off-campus disposal site. In addition, fill material for site preparation and landscaping could be imported to the campus during development of the proposed sites. Indirect, construction-related earth impacts could include short-term, localized traffic congestion, noise and increased street maintenance requirements associated with the removal of dirt tracked onto campus streets.

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<sup>1</sup> Estimated excavation volumes were determined based on average cubic yards excavated per square foot included in the GPDP (UW, 1992); average was 0.25 cy/sq.ft.

## Impacts of the Alternatives

### *No Action Alternative*

Under the *No Action Alternative*, earth-related impacts would be expected as development under the existing GPDP occurs. The amount of excavation, and subsequently earth impacts, would be significantly less than under the proposed *Master Plan Seattle Campus*. Potential impacts were analyzed as part of the GPDP EIS process and subsequent environmental review.

### *Decentralized/Open Space Alternative*

This alternative would include less on-campus development than under the *Proposed Action* (approximately 50 percent less development). Consequently, in comparison with the proposed *Master Plan Seattle Campus*, the amount of new impervious surfaces would be reduced and about half the amount of cut and fill volumes would be required on campus. More open space would be retained. Overall, on-campus earth-related impacts would be reduced under this alternative. However, decentralization could lead to an increase in off-campus development activity and, consequently, an increase in off-campus earth-related impacts.

### *No Street and Alley Vacations Alternative*

In comparison to the proposed *Master Plan Seattle Campus*, a reduced amount of new impervious surfaces would be developed. Fewer street and alley vacations, as proposed under this alternative, would slightly reduce cut and fill volumes.

### *Lifting of Lease Limit*

Removal of the existing limitation on leasing by the University of Washington would allow the University to lease additional building space within the University District. The University would not be limited in their ability to lease building space from private developers or under public/private partnerships and the pace of development activity in the University District could increase. Any new buildings developed in the University District would be built consistent with the goals of the *University Community Urban Center Plan* (UCUC Plan)<sup>2</sup> and applicable City of Seattle zoning and development regulations. New buildings would require associated grading and excavation approvals by the City prior to construction. Conditions in the University District as a result of earthwork during construction would be as described in the UCUC Plan Environmental Checklist<sup>3</sup> and would include increased localized dust, potential erosion and development-related truck trips.

## Possible Mitigation Measures

Possible earth mitigation measures include the following.

- Excavated areas and stockpiled materials could be managed, through methods such as soil nailing, to prevent wall failure and sloughing.

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<sup>2</sup> Seattle, 1998b

<sup>3</sup> Seattle, 1998a

- Soldier piles and/or other slope stability techniques could be used as necessary in areas of unstable soils. Most development could be located in glacially consolidated soils.
- Structures could be designed with a structural system capable of supporting code-required floor loading and resisting lateral forces generated by earthquake and wind.
- Excavated earth could be disposed of at authorized disposal sites or reused on campus.
- To prevent an accumulation of dust and/or mud on campus during construction activities, the tires of construction equipment and trucks could be washed before they leave construction sites and streets could be swept as necessary.
- Whenever possible, construction could be scheduled to minimize overlapping of excavation periods for projects planned for construction in the same biennium.
- Temporary erosion and sedimentation controls could be implemented during excavation and construction activities to prevent impacts to water quality and wildlife habitat (see Section III C. of this Final EIS [Water] for further discussion).

### Unavoidable Adverse Impacts

None.