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**ORDINANCE NO. 3632**

AN ORDINANCE OF THE CITY OF EDMONDS, WASHINGTON, AMENDING THE EDMONDS COMMUNITY DEVELOPMENT CODE, CHAPTER 19.10 ENTITLED EARTH SUBSIDENCE AND LANDSLIDE HAZARD AREAS, PROVIDING A SAVINGS CLAUSE, AND FIXING A TIME WHEN THE SAME SHALL BECOME EFFECTIVE.

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WHEREAS, the Earth Subsidence and Landslide Hazard Area is an area of Edmonds that has been geologically active for thousands of years, and

WHEREAS, although public improvements have enhanced the overall stability of property in the area, there remains both an underlying risk of deep seated earth movement and a potential for earth movement based on other factors such as inclement weather, steep slopes, seismic events, acts of man, failures of utility lines and many other factors, and

WHEREAS, the City's policy since 1983 has been to permit development of property in the area consistent with the full extent of the property rights and obligations of its citizens, so long as that development shoulders all costs and liabilities, both current and potential, relating to development of the property, including full investigation of site conditions by competent professionals, design for conditions and notification to the City and the Building Department, neighboring property owners and future purchasers of the property of all risks associated with development and the measures taken to mitigate such risks, NOW, THEREFORE,

THE CITY COUNCIL OF THE CITY OF EDMONDS, WASHINGTON, DO  
ORDAIN AS FOLLOWS:

Section 1. Chapter 19.10 Earth Subsidence and Landslide Hazard Areas is hereby repealed, provided, however, that in the event that a court of competent jurisdiction should strike down the enactment of Chapter 19.10 as provided in Section 2 below, or any portion thereof, Chapter 19.10 Earth Subsidence and Landslide Hazard Areas or any part thereof parallel to the portion struck down, shall be and remain in effect to the extent necessary to prevent any gap in regulation.

Section 2. The Edmonds Community Development Code is hereby amended by the addition of a new Chapter 19.10 Earth Subsidence and Landslide Hazard Areas to read as follows:

**Chapter 19.10**

**BUILDING PERMITS - EARTH SUBSIDENCE AND  
LANDSLIDE HAZARD AREAS**

**Sections:**

- 19.10.000** Statement of purpose and application.
- 19.10.010** Section amendments.
- 19.10.020** Definitions.
- 19.10.030** Minimum required application submissions.
- 19.10.040** Site posting notice, disclosures, declarations, covenants and waivers.
- 19.10.050** Site bonds, contractor general public liability insurance.
- 19.10.060** Review to determine compliance with engineering practice and best available science.
- 19.10.070** Issuance and denial of permits.
- 19.10.080** Site access, professional/special inspection monitoring during construction and final geotechnical report.

**19.10.000 Statement of purpose and application.**

A. This chapter has been enacted in order to provide both substantive and procedural provisions relating to the issuance of permits within designated earth subsidence and landslide hazard areas of the city. It shall be the policy of the city that no permit shall be issued for any site which is found to be unsuitable for improvement due to excessively steep slopes, unsatisfactory foundation support, instability or unsuitable topography for the particular permit requested for issuance. When development occurs on an unstable site, an unreasonable risk of danger may exist to the public, to public improvements or to adjacent property owners. If such a site can be stabilized through the construction of on-site improvements, that risk may be reduced.

B. The construction of professionally designed structures addressing the risks of earth movement, and employing feasible attendant measures (including but not limited to: drainage improvements, specially designed foundations, retaining walls, removal of overburden and other improvements designed to minimize the risk of earth movement, prevent avoidable damage to structures, safeguard adjacent properties, limit risk to inhabitants, and to stabilize the structure in the event of movement) may mitigate and reduce the risk of earth movement on individual properties. Nothing herein shall relieve an owner of any obligation imposed by the State Building Code or City ordinance to take all reasonable and practical measures available to reduce or eliminate the risk or hazard.

C. The IRC/IBC, as promulgated by the state of Washington and required to be adopted by the city, does not specify a standard regarding lot stability. Since the city's request for an interpretation of the uniform building code by the state building code council to designate an acceptable level of lot stability was denied, and because the city wishes to comply with state law requiring that the issuance of building permits be a ministerial and not a discretionary act, the provisions of this chapter have been adopted in order to provide reasonable certainty in the permit issuance process. The purpose of these provisions is not to lessen the minimum requirements of the current adopted building code, but rather to define its requirements for city implementation.

D. These provisions have been adopted in order to establish a policy that permits shall not be issued for any site where a substantial risk of earth subsidence and landslide hazard exist unless:

1. The risks can be defined with reasonable scientific certainty and found to be within acceptable limits as determined in accordance with this chapter.

2. Any hazard associated with the site is scientifically ascertained and fully disclosed through the permit process.

3. Notice of any risk is given to future purchasers through the land records of Snohomish County.

4. Any risks associated with construction and habitation are assumed by the builder and future owners of the site.

5. Adequate indemnification is provided by the builder, and the owner of, the site in order that the general public not assume or bear any portion of the costs or liability associated with the builder's investigation, design and construction as well as the continuing maintenance of the site by the property owner.

E. Notwithstanding any contrary provision of this ordinance or the IRC/IBC, all applications for permits received for any site, any portion of which lies within an earth subsidence and landslide hazard area, shall be governed by the provisions of this chapter. In addition to all other requirements of these sections, the restrictions and provisions of this chapter shall apply to all building, grading, fill and excavation permits (herein "permits"). Minor permits such as plumbing, mechanical, re-roof and interior alterations are exempt from the requirements of this chapter.

F. All applications for 19.10 ECDC permits shall disclose within the geotechnical report whether or not any part of the site lies within, or adjacent to an earth subsidence and landslide hazard area or within a critical area as defined by the city's environmentally critical areas title. The building official may require preliminary investigation by a geotechnical engineer for any applicant whose property lies within or lies adjacent to a known earth subsidence landslide hazard area, or within a known hazard area, or areas with steep slopes or unusual topography or which has a history of earth movement in order to assist the building official in determining whether these provisions should be applied.

G. Nothing in this chapter should or shall be interpreted to guarantee issuance of a permit with respect to any property unless the requirements of the IRC/IBC as amended and interpreted by this chapter have been met.

**19.10.010 Section amendments.**

The provisions of this section amend the 2003 edition of the IRC/IBC and all subsequent revisions adopted by RCW 19.27.031 as the state building code as previously amended by Chapter 19.05 ECDC. All prior substantive amendments have received the approval of the state building code council. All provisions of the IRC/IBC which conflict with this chapter shall be deemed amended hereby, and any ambiguity created, shall be resolved in favor of the specific provision or general intent of said chapter. In addition to the amendments of the IRC/IBC by its alteration, improvement and correction to incorporate the chapter, the following specific code provisions are amended and the substantive and procedural requirements of Chapter 19.10 ECDC are amended by the correction and alteration of the following sections of the IRC/IBC:

**A. Chapter 1 Administration.**

1. Section R105.1.1 Permit Review Applicability. Any permit requested for a site lying in whole or in part within an earth subsidence and landslide hazard area as defined by ECDC 19.10.020(F) shall be processed and acted upon in accordance with the provisions of Chapter 19.10 ECDC.
2. Section R105.2 Work exempt from a permit. ECDC 19.00.010 exemptions A, B, D, E, F, G, J, K, M, and P and ECDC 19.05.010 exemptions, A, C, and D shall not apply in any area designated as an earth subsidence and landslide hazard area as defined in ECDC 19.10.020(F).
3. Section R105.3.2 Time limitation of permit application.
  - a. Applications, for which no permit is issued within two (2) year following the date of application, shall expire by limitation, and plans and other data submitted for review may thereafter be returned to the applicant or destroyed by the building official.
  - b. The building official may not extend the time for action by the applicant on an expired application. In order to renew action on an expired application, the applicant shall submit a new application, revised plans based on current adopted codes and pay new plan review fees as well as any outstanding peer review fees incurred to date.
4. Section R105.5 Permit expiration and extension.
  - a. Every permit issued under the provisions and development standards of Chapter 19.10 ECDC shall expire by limitation

two (2) years after issuance, except as provided in ECDC 19.00.005(A)(6)(b).

- b. Prior to expiration of an active permit the applicant may request in writing an extension for a third and final year. If the plans and specifications for the permit extension application are the same as the plans and specifications submitted for the original permit application and provided there has been at least one (1) required progress inspection conducted by the city building inspector prior to the extension, the permit shall be extended. Permit fees shall be charged at a rate of one half the original building permit fee to extend the permit.
  - c. The maximum amount of time any building permit may be extended shall be a total of three (3) years. At the end of any three (3) year period starting from the original date of permit issuance, the permit shall become null and void and a new building permit shall be required, with full fees, in order for the applicant to complete work. The issuance of a new permit shall negate all previous vesting of zoning or building codes. Whenever an appeal is filed and a necessary development approval is stayed in accordance with the Land Use Petition Act, the time limit periods imposed under this section shall also be stayed until final decision.
  - d. The building official shall reject requests for permit extensions if modifications or amendments to the applicable zoning and building codes have occurred since the original issuance of the permit, and modifications or amendments would significantly promote public health and safety if applied to the project through the issuance of a new permit.
5. Section R105.5.1 Recommence work on an expired permit.
- a. In order to recommence work on an expired permit, a new permit application with full fees shall be submitted to the building official.
  - b. New permit applications shall be reviewed under current zoning and building codes in effect at the time of complete application submittal. If a new permit is sought to recommence work on an expired permit, the new permit shall be vested under the codes in effect at the time of complete application for the new permit, not the expired permit. When additional plan review is required, plan review fees shall be charged. When applicable peer review and peer review fees shall be assessed.

6. Section R106.3.3.1 Phased approval.
- a. The building official may require sequencing of construction phases or activities such as the installation of shoring or temporary erosion control remedies and/or drainage systems, well in advance of grading or foundation construction on a time frame consistent with geotechnical recommendations and peer review. As part of the sequencing process, the building official may impose permit conditions that address site work sequencing to include but not limited to: limiting all excavation, drainage systems and foundation installation to the dryer season between May 1<sup>st</sup> and September 30<sup>th</sup>.
  - b. When permit conditions such as groundwork are limited by the building official on a particular project, the applicants' geotechnical engineer may submit a letter detailing geotechnical recommendations that portions of work may progress. The letter shall include a detailed work schedule submitted by the general contractor specifying work to be done, timeline, provisions for monitoring and equipment to be used. Any such recommendation shall be based upon best available science and be consistent with standard geotechnical engineering practice. The building official may require a peer review prior to a decision which provides concurrence regarding at least the following issues:
    - i. duration of work,
    - ii. type of equipment to use,
    - iii. additional temporary erosion and sediment control provisions required, and
    - iv. applicability of special inspections, and similar issues.
  - c. The building official may issue partial permits for phased construction before the entire plans and specifications for the whole building or structure have been approved provided peer review approval has been granted. Phased approval means separate permits for grading, shoring, and foundation may be issued separately, provided concurrent approval is granted by the planning manager, city engineer, and city public works director, when applicable. No phased approval permit shall be issued unless approved civil plans detailing the construction of all site improvements (including, but not limited to: curbs, gutters, sidewalks, paved streets, water lines, sewer lines, and storm drainage) have been signed as approved by the city engineer. With such phased approval, a performance bond shall be posted with the city pursuant to Chapter 17.10

ECDC, to cover the estimated cost of construction to city standards for the improvements.

B. Chapter 2 Definitions.

1. Section R 202 and IBC 202, are hereby amended to include the definitions set forth in ECDC 19.10.020, incorporated by this reference as fully as if herein set forth.

C. Chapter 4 Foundations.

1. Section R 401.1 General Exception 3. Any permit requested for a site lying in whole or in part within an earth subsidence and landslide hazard area shall be processed and acted upon in accordance with the provisions of Chapter 19.10 ECDC.

D. IBC Chapter 16 Structural design.

1. Section IBC 1601.1.1 Scope. Setting forth the requirements of Chapter 19.10 ECDC, incorporated by this reference as fully as if herein set forth.

E. IBC Appendix J Grading.

1. Section IBC Appendix J 101.1.2 Scope. Setting forth the requirements of Chapter 19.10 ECDC, incorporated by this reference as fully as if herein set forth.

**19.10.020 Definitions.**

The following terms, when used within this chapter, shall have the following definitions:

A. "Architect" shall mean a person licensed to practice architecture by the state of Washington.

B. "Best available science" shall be determined in accordance with the criteria established in WAC 365-195-900, et seq.

C. "Bluff" shall mean any slope ten (10) feet in height or greater inclined at greater than 1 unit vertical in 1 unit horizontal or 100% slope.

D. "Building Official" shall mean the building official of the city of Edmonds.

E. "Director" shall mean the director of development services as well as any authorized representative of the director.

F. "Earth Subsidence and Landslide Hazard Area" shall mean any area of the city which, by reason of excessively steep slopes, unsatisfactory foundation support, stability or topography has a risk of earth subsidence and landslide hazard in excess of normal allowances. The earth subsidence and landslide hazard area is a subcategory of landslide hazard area (a geologically hazardous area) as defined in city of Edmonds environmentally critical areas title. The hazard area designated as the North Edmonds Earth Subsidence Landslide Hazard Area in the 2007 report of Landau Associates and as may be amended in future adopted earth subsidence and landslide hazard maps are hereby incorporated by this reference and made a part of this chapter as fully as if herein set forth and may be provided in a summary text form. Future adopted landslide hazard maps shall be incorporated by reference upon adoption by ordinance.

Areas designated on the adopted North Edmonds Earth Subsidence and Landslide Hazard Areas Map, or any future adopted landslide hazard map as having a risk of earth subsidence or landslide hazard, areas with slopes as designated in ECDC 23.80.020, areas which exhibit geologic characteristics of earth movement, or any other area identified as having a history of earth movement shall be presumed to have such risk and shall be considered to be an earth subsidence and landslide hazard area. Applicants for permits in such areas shall submit a geotechnical report and complete plan set submittal as required by this chapter to the building official for review.

The presumption of risk shall be rebuttable and the decision of the director or building official that any area lies within, or adjacent to, such earth subsidence and landslide hazard area shall be appealable as a staff decision to superior court in accordance with the Land Use Petition Act.

Copies of the reports and maps shall be maintained in the offices of the building official and shall be available for inspection during all normal working hours. Individual copies of the reports and map may be obtained by the public upon the payment of the cost of reproduction.

G. "General Contractor" shall mean a bonded, insured and registered contractor in the state of Washington. A general contractor shall maintain state required bonding and shall carry general public liability insurance in the minimum amount of one million dollars. The general contractor shall have a current valid state contractor's license with the state of Washington and a city of

Edmonds resident or non-resident business license, whichever is applicable.

H. "Geologist" means a practicing geologist licensed in the state of Washington with at least four (4) years experience as a licensed geologist in responsible charge, including experience with landslide evaluation.

I. "Geotechnical Engineer" means a practicing, geotechnical/civil engineer licensed as a professional civil engineer in the state of Washington who has at least four (4) years of professional employment as a geotechnical engineer in responsible charge, including experience with landslide evaluation.

J. "Landslide Hazard Area" means areas mapped or otherwise defined by the city of Edmonds as environmental critical areas or geologically hazardous areas.

K. "Land Surveyor" means a person who holds a Washington State land surveyor's license.

L. "Lead Design Professional" means the person designated by the applicant to oversee and coordinate the permit review process on behalf of the applicant.

M. "Plan Set Submittal" means a complete application pursuant to ECDC 19.00.015 including:

1. Vicinity Map.
2. Topography map and survey.
3. Civil plans including; grading, temporary erosion and sediment control, storm drainage, utilities and site improvements.
4. Tree cutting/land clearing plans.
5. Geotechnical report.
6. Architectural and structural plans with design calculations, stamped and signed by licensed design professionals of the state of Washington.

N. "Site" means the entire area within the boundaries, as described in a legal description, of the property that is to be developed under the permit for which the applicant has applied.

O. "Stable" shall mean that the risk of damage to the proposed development, or to adjacent properties, from soil instability is minimal subject to the conditions set forth in the reports developed under the requirements of ECDC 19.10.030 and the proposed development will not increase the potential for soil movement.

In the event that any site has an underlying risk of movement based upon deep-seated earth movement or large-scale earth failure which is not susceptible of correction by on-site improvements, such hazard shall not render a site proposed for single-family residences to be presumed unstable for the purpose of this provision if the geotechnical engineer of record and recommendation of any peer reviewer confirm the risk of probability of earth movement is thirty (30) percent or less within a twenty-five (25) year period.

In order to meet the definition of stable the geotechnical report shall include identified hazards for the property and the mitigation measures proposed to reduce or correct the hazards along with measures taken to mitigate potential impacts from the remaining hazards, including, all on and off site measures taken to correct or reduce the risk. These shall be fully disclosed to the applicant and future owners, heirs and assigns in the covenant required to be executed in accordance with provisions of this chapter, in which case the defined risk may be approved as an acceptable condition.

P. "Steep Slope" shall be defined and calculated pursuant to Chapter 23.80 ECDC.

Q. "Storm Event" means one (1) inch or greater precipitation in a twenty-four (24) hour period as reported by the National Oceanic and Atmospheric Administration (NOAA).

R. "Structural Engineer" means a person licensed to practice structural engineering by the state of Washington.

S. "Structural Fill" shall mean any fill placed below structures, including slabs, where the fill soils are intended to support loads without unacceptable deflections or shearing. Structural fill should be clean and free draining and should be placed above unyielding native site soils compacted in accordance with an approved geotechnical report prepared utilizing best engineering science.

**19.10.030 Minimum required application submittals.**

A. The applicant shall submit a complete plan set submittal and permit application and specifications for the proposed development as defined in ECDC 19.10.020(M) and this chapter.

B. An Earth Subsidence and Landslide Hazard area permit submittal checklist shall be adopted at the direction of the director and shall be provided to all persons inquiring regarding building permit applications or development permits in the designated earth subsidence and landslide hazard area of North Edmonds. The submittal checklist shall include but not be limited to the requirements contained in city public handouts, written policies, adopted maps, reference maps, summary reports, minimum geotechnical report guidelines, and the following:

1. North Edmonds Earth Subsidence and Landslide Hazard map.
2. Vicinity map.
3. Topographic map and survey.
4. Civil plans (i.e., grading, temporary erosion and sediment control, storm drainage, utilities and site improvements).
5. Tree cutting/land clearing plan.
6. Geotechnical report.
7. Owner and professional declarations.
8. Detailed architectural and structural plans with structural calculations and specifications.
9. Bonds, covenants and contractor public liability insurance in accordance with the detailed requirements stated below.

If any item in the checklist is inapplicable to a particular project, a letter or a report shall be provided to the director stamped by the appropriate licensed design professional, with sufficient information or data to demonstrate why the item is inapplicable. The director may utilize appropriate licensed consultants to determine if generally accepted engineering practice requires submission of an application requirement. When consultants are used to determine if generally accepted engineering practice requires submission of an application requirement the cost of review shall be paid by the applicant.

C. A copy of the North Edmonds Earth Subsidence and Landslide Hazard map shall be included in the submittal checklist materials.

D. The vicinity map shall be suitable for locating the site and include information related to existing conditions on or near the site, based on the topographic map and survey and shall designate

all known landslide masses, or debris flows or mud flows on or near the site which could threaten proposed structures within 100 feet, as referenced, noted, described or discussed in the geotechnical report.

E. The applicant shall submit a topographic map and survey prepared and stamped by a licensed land surveyor, prior to studies and evaluations by the geotechnical engineer, and shall show:

1. Map scale, north arrow, legal description, tax account parcel numbers, easements, lot property lines.
2. Existing grade contour lines, at two (2) foot intervals.
3. All distances between existing structures on the site and approximate distances of existing habitable structures on adjacent sites within 50 feet of property lines (all adjacent sites which could affect or be affected by the proposed development shall be shown).
4. Lowest footing or basement slab elevation of existing and proposed structures on the property and on adjacent properties to the extent that such information is reasonably available and, proposed finish floor elevations.
5. The location of existing sanitary sewers, storm water drainage facilities, septic tanks, drain fields, wells, piezometers, private drainage systems, underground storage tanks, subsurface drains, and other sewer/drainage facility components on, and adjacent to, the site to the extent such information is reasonably available.
6. The location of all existing underground utilities on, and adjacent to, the site including, but not limited to; telephone, cable television, gas, electric and water utilities, vaults, fire hydrants and other cables, wires, meters and drainage pipes to the extent that such information is available.
7. A separate topographical drawing shall be submitted showing proposed grade contours at two (2) foot intervals. This drawing shall include bottom of proposed footing elevations including all stepped footing elevations.

F. Civil engineered plans shall be prepared and stamped by a state of Washington licensed civil engineer pursuant to the provisions of Chapter 18.30 ECDC and current adopted City Stormwater Manual. Geotechnical report recommendations affecting civil plans shall be incorporated into the design and detailed on the plans and shall include:

1. Storm drainage plan with storm drainage calculations.
2. Provisions for building pad and foundation drainage.
3. Temporary erosion and sediment control with drainage and maintenance provisions, and/or other sediment control assemblies.
4. Permanent erosion control with drainage and maintenance provisions.
5. Fill/soil stockpile limitation provisions, specific location, height, protection and maintenance.
6. Slope protection plans, rockeries, retaining walls, ecology blocks, keystone block walls, soldier pile walls, and soil nail walls.
7. Utilities and site improvements.
8. Grading plans, temporary and permanent shoring plans, top and toe of slope setbacks, driveway slope.

G. In lieu of the procedural requirements of Chapter 18.45 ECDC a tree cutting/land clearing plan shall be submitted when significant trees are proposed to be removed. A significant tree is a tree with a trunk diameter of six inches or greater measured 4 feet from the ground. No significant tree shall be removed until the permit is approved.

A detailed landscape plan may also be required in order for the city to evaluate long-term erosion control measures. The plan shall comply with all requirements of the ECDC relating to tree clearing and critical areas review, if applicable. The director may require the project geotechnical engineer's concurrence regarding an approval of a tree cutting/land clearing plan when slope stability is at issue.

H. Included in the permit submittal checklist shall be general and specific soils and geotechnical information, details or analysis required pursuant to IBC 1802. The applicant shall retain a geotechnical engineer to prepare a report and evaluation of the subsurface soil conditions on the site to include:

1. The geotechnical report shall be prepared in accordance with generally accepted geotechnical engineering practices, under the supervision of, and signed and stamped by, the geotechnical engineer. A geologist may be required to be part of the geotechnical consulting staff. The report shall reference the Landau Associates Summary Report (2007) as a technical

document reviewed as part of the geologic analysis for the project and discuss all items listed in the permit submittal checklist and shall make specific recommendations concerning development of the site.

2. The opinions and recommendations contained in the geotechnical report shall be supported by field observations and, where appropriate or applicable, by literature review, conducted by the geotechnical engineer. The report shall be based on best available science.

3. The report shall include an analysis of material gathered through appropriate explorations, such as borings or test pits to a minimum depth of 6 feet below the proposed lowest footing or pile, an analysis of soil characteristics conducted by or under the supervision of, the engineer in accordance with the standards adopted by the American Society of Testing and Materials (ASTM) or other applicable standards. The report must provide subsurface data to support the engineer's conclusions regarding slope stability.

4. If the evaluation involves geologic evaluations or interpretations, the report shall be reviewed and approved by a geologist. It shall be the responsibility of the geotechnical engineer to assure that the geologist meets the qualifications listed in the definition section. A letter of concurrence from the geologist shall be included in the report.

5. Based upon the North Edmonds Landslide Area Geology and Slide Mechanisms map and table found in the Landau Associates Summary Report (2007), any lot which contains any portion of any hazard zone or is adjacent thereto, (regardless of whether the proposed building pad is located within any hazard area) shall specifically consider within the geotechnical report, the following types of typical hazard zones and shall specifically note if the hazard is, or is not, present on the site. The report shall address hazards from encroaching landslide materials, hazards from ground failure in material that has not previously failed, and hazards from ground failure in previously failed material. For each landslide hazard identified on a property, the geotechnical engineer shall identify the types of specific processes associated with the hazard and include design features to reduce such hazards and mitigate impacts.

6. For properties containing or adjacent to bluffs, the geotechnical engineer shall, as a part of the building permit process provide analysis of the rate of retreat of the bluff prepared by a geologist

and estimate the bluff retreat amount and regression rate for periods of twenty-five (25) and 125 years. The geotechnical engineer shall address the effects of bluff retreat on the stability of structures and/or improvements. A structure is defined as:

- a. A building intended for human habitation,
- b. A building, structure or other improvement, whose stress or weight, collapse or movement would endanger public safety in the event of slope failure and,
- c. Any improvement on the site which is necessary to mitigate danger to public safety or provide stability.

If the bluff retreat rate analysis shows that the rate of retreat of the bluff is such that any structure or improvement constructed pursuant to the building permit would be unreasonably endangered or reasonably could be anticipated to be endangered by landslide or earth subsidence during its normal useful life, the application shall be denied.

7. Geotechnical letter addressing the provisions of Chapter 23.80 ECDC.

I. The applicant shall submit, consistent with the findings of the geotechnical report, detailed structural plans with corresponding calculations prepared and stamped by the structural engineer of record. When architectural plans incorporate such structural details said plans shall be stamped and signed by the structural engineer of record. All other architectural plans may be prepared by an architect, designer, builder or lay person.

J. The applicant shall submit documentation of required bonds, frozen funds or adequate instrument of credit. The applicants shall submit a copy of the contractor's general public liability insurance pursuant to ECDC 19.10.050.

K. The applicant shall submit declarations, disclosures, covenants and waivers as required by ECDC 19.10.040.

**19.10.040 Site posting notice, disclosures, declarations, covenants and waivers.**

A. Notices of permit submittal application with the city shall be posted pursuant to ECDC 20.91.010B(b). Such notices shall be conspicuously posted and maintained at each street frontage at the applicant's expense and direction. Notice of permit issuance or denial shall be conspicuously posted as required above. Upon each posting a ten (10) day appeal period shall commence. Appeals shall be heard at Snohomish County Superior Court in accordance

with the Land Use Petition Act, and no other appeal shall be permitted.

B. At permit application submittal, the applicant shall submit a written declaration with the permit application that includes the statement that the accuracy of all information is warranted by the owner/applicant in a form which relieves the city and its staff from any liability associated with reliance on such submittals.

The declaration shall also state that the owner/applicant understands and accepts the risk of developing in an area with potential unstable soils and that the owner/applicant will advise in writing any prospective purchasers of the site, or any prospective purchasers or residential lessees of structures or portions of a structure on the site of the slide potential of the area.

The owner applicant shall also acknowledge that he, she or they understand and accept the need for future monitoring and maintenance of the property as described in the final geotechnical report when future monitoring and maintenance may affect slope stability over time. While an application may reference the reports of prior public consultants to the city, all conclusions shall be those of the owner/applicant and his or her professionals.

C. The plan set submittal shall include a disclosure letter from the geotechnical engineer and civil engineer who prepared the geotechnical report and civil plans, stating that in his or her judgment the plans and specifications submitted for the project conform to the recommendations in the geotechnical report, and that the risk of damage to the proposed development, or to adjacent properties, from soil instability will be minimized subject to the conditions set forth in the report; and the proposed development will not increase the potential for soil movement.

Minimized shall mean that the applicant has utilized best available science and commonly accepted engineering and architectural practice to minimize, to the extent possible, the risks associated with development of the property.

The geotechnical engineer shall review the erosion and sediment control plan and provide a statement about the adequacy of the plan with respect to site conditions and report findings. The geotechnical engineer's statement shall also include an identification of landslide hazards applicable to the site, the on-site measures taken to correct or reduce the hazards, as applicable, and measures taken to mitigate potential impacts from the remaining hazards.

For sites where the hazards are not mitigated or where the risks from deep-seated or large-scale earth movement cannot be practically reduced by individual lot owners, the geotechnical engineer shall prepare a statement identifying what design measures will be taken to mitigate the risk to structures, adjacent properties, and inhabitants in the event of deep-seated or large-scale movement. The statement shall specify any risks from earth movement that are not fully mitigated by design measures and render an opinion as to whether the site will be stable within the meaning of the ordinance following installation of all proposed improvements. The statement will clarify to current and future owners what measures were installed to reduce risks and what hazards could not be addressed by individual lot development.

D. Further recommendations signed and sealed by the geotechnical engineer shall be provided should there be additions or exceptions to the original recommendations based on the plans, site conditions or other supporting data. If the geotechnical engineer who reviews the plans and specifications is not the same engineer who prepared the geotechnical report, the new engineer shall, in a letter to the director accompanying the plans and specifications, express agreement or disagreement with the recommendations in the geotechnical report and state that the revised plans and specifications conform to the new recommendations.

E. The plan set submittal shall include a disclosure letter or notation on the design drawings by the structural engineer of record stating that; he has reviewed the geotechnical report(s), that he understands its recommendations, has explained or has had explained to the owner/applicant, the risk of loss due to slides on the site, and that he has incorporated into the design the recommendations of the report and established measures to reduce the potential risk of injury or damage that might be caused by any risk of earth movement referenced in the report. The statement shall note any risks, hazards, potential problems from earth movement that are not fully mitigated by design measures.

F. The owner shall execute a covenant, (in a form provided by the city) to be submitted with the application (with necessary fee) to be filed with the Snohomish County Auditor. The director shall cause such completed covenant to be so filed. A copy of the recorded covenant shall be forwarded to the owner. This covenant shall be a covenant running with the land, which shall at a minimum include:

1. A legal description of the property.

2. A statement explaining that the site is in a potential earth subsidence and landslide hazard area, that the risk associated with the development of the site is set forth in permit file No. \_\_\_\_\_ with the city of Edmonds building department, that conditions or prohibitions on development may have been imposed by the city in the course of permit issuance, and referencing any features in the design which will require maintenance or modification to address anticipated soil changes. The covenant may incorporate by reference the statements and conditions to be observed in the form proposed by the owner/applicant's geotechnical engineer, geologist, architect and/or structural engineer as approved after the review set forth in ECDC 19.10.060.

3. A statement waiving and promising to indemnify and hold harmless the city of Edmonds, its officers and employees from any claims the owner/applicant and his/her successors or assigns may have for any loss or damage to people or property either on or off the site resulting from soil movement and arising from or out of the issuances of any permit(s) authorizing development on the site, as well as due to any act or failure to act by the indemnitor, its agents or successors, in interest under or following issuance of the permit.

4. The date of permit issuance and permit number authorizing the development.

**19.10.050 Site bonds and contractor general public liability insurance.**

**A. Site bonding requirements.**

1. A surety bond, in an amount to be determined by the director, executed by a surety company authorized to do business in the state of Washington shall be posted by the owner/applicant or general contractor to assure the restoration of any areas on the site, or in the surrounding area, disturbed or damaged by slides during construction, and to ensure completion of the work authorized by the permit, or, if the work is not completed, to assure that the site will be restored to a safe and stable condition at least equal to the safety and stability of the site prior to commencement of work under the permit. The bond will be exonerated upon occupancy approval of the building permit by the building official.

2. In lieu of the surety bond, the owner/applicant or general contractor may propose to file a cash deposit or an instrument of credit with the director in an amount equal to that which would be required in the surety bond, and similarly conditioned.

B. Public liability insurance. The general contractor of record shall carry general public liability insurance effective through final occupancy in the minimum amount of one million dollars, and which shall name the city as an additional named insured, against the injury, death, property damage and/or loss arising from or out of the city's involvement in the permitting process for the project.

C. Homeowner insurance. The city strongly recommends that each property owner maintain policies of liability insurance, adequate to provide sufficient funds, to indemnify and hold harmless third parties in the event of earth subsidence or landslides emanating from or across the owner's property.

**19.10.060      Review to determine compliance with engineering practice and best available science.**

A. The city shall require professional peer review of the plan set submittals accompanying the permit application by a civil engineer, geotechnical engineer, geologist, and/or structural engineer as may be necessary and determined by the building official or director, in order to determine whether the plan set submittals were prepared in accordance with generally accepted engineering practice or the practice of the particular engineering or design specialty and are based upon best available science. The full cost of such peer review shall be paid in full by the owner/applicant within thirty (30) days of billing by the city. Failure to make timely payments shall result in a stay of city plan review services on the application.

B. This requirement may be selectively waived at the discretion of the director provided the applicable project geotechnical engineer, civil engineer or structural engineer provides written concurrence, determination, details, facts and/or data that individual site conditions warrant an exemption from outside peer review. Once waived, the building official shall not be required to inquire further into the adequacy of any report, plans, or data, but rather may rely upon the submittals as warranted by the owner/applicant as reviewed by the city's consultant. Nothing herein shall relieve the owner/applicant of the obligation to submit a complete application fulfilling all the requirements of this chapter and the IRC/IBC.

C. The final recommendation of the peer review regarding whether a submittal complies with generally accepted practice and/or is based on best available science shall be binding upon the building official. Such recommendation may be appealed to Superior Court under the Land Use Petition Act.

**19.10.070 Issuance and denial of permits.**

A. Permit Issuance. The following requirements must be satisfied before a permit will be issued:

1. An approved geotechnical report has been submitted and approved.
2. Plans and specifications have been submitted incorporating the recommendations of the geotechnical report and said plans have been approved.
3. The required declarations, disclosures, covenants and waivers have been submitted and approved.
4. Required bonds, cash deposits and public liability insurance have been posted with the city.
5. When peer review has been required, all submittals have been determined to have been prepared in accordance with generally accepted engineering practice.
6. Peer review concurrence for permit issuance has been received by the building official.
7. All other provisions of ECDC Titles 16, 18 & 20 have been reviewed and approved by the appropriate city official.

B. Permit denial. The following criteria shall result in the denial of issuance of permit:

1. Building, grading and excavation permits for construction on land which the director finds to be unsuitable for improvement due to excessively steep slopes, unsatisfactory foundation support, instability or unsuitable topography, or
2. The resulting development would increase the potential of soil movement resulting in an unacceptable risk of damage to adjacent properties or an unreasonable risk of damage to the proposed development, or
3. Excessive flooding, seepage, high water table, or inadequate drainage, or
4. If the bluff retreat rate analysis shows that the rate retreat of the bluff is such that any structure or improvement would be unreasonably endangered or reasonably could be anticipated to be

endangered by landslide or earth subsidence during its normal useful life, the application shall be denied. A structure is defined as:

- a. A building intended for human habitation,
- b. A building, structure or other improvement, whose stress or weight, collapse or movement would endanger public safety in the event of slope failure and,
- c. Any improvement on the site which is necessary to mitigate danger to public safety or provide stability, or

5. Other hazardous conditions posing an unreasonable risk to public health, safety, or welfare, or

6. Where the noted site dangers or geologic hazards are not minimized to the extent possible by the use of best available science and generally accepted engineering and architectural practice, or

7. If the applicant's geotechnical engineer determines that there is a greater chance than thirty (30) percent in a 25 year period that landslide damage on site will occur.

C. In making a determination of permit denial, the director shall consider not only the land which is the subject of the application, but in addition, the surrounding area which would be adversely affected if the permit were granted. Permit denial shall be made in writing to the owner/applicant when the site cannot be rendered stable as defined in ECDC 19.10.020(O). This decision and other preliminary determinations as referenced herein shall be appealable to Snohomish County Superior Court in accordance with the Land Use Petition Act. No other appeal shall be permitted. The appeal period shall commence upon the date of mailing of any preliminary or final decision, or upon posting, if posting is the only notice a party with standing receives under the terms of this chapter.

D. Prohibitions. Because of the relationship of groundwater to stability, the discharge of collected surface water or storm water to the ground surface or subsurface is prohibited on sites within the earth subsidence and landslide hazard area. In addition, the following construction, buildings, or improvements are hereby prohibited within the earth subsidence and landslide hazard area:

1. Swimming pools or hot tubs.
2. Ponds or other artificial impoundments of water.
3. Watering or irrigation systems.

4. Temporary or permanent stockpile of fill on top or bottom of slopes.

5. Rockeries.

E. Waiver. The prohibitions established in paragraph D above shall apply unless the property owner requests a waiver based upon the written analysis of a geotechnical engineer which clearly establishes that the proposed improvement will have no reasonable likelihood of triggering or otherwise contributing to any landslide hazard or earth subsidence risk either on the site or in the neighboring earth subsidence or landslide hazard area.

In any review or appeal of the director's or building official's denial of a waiver to construct an otherwise prohibited improvement, the burden of proof shall always be upon the applicant to establish by a clear preponderance of the evidence, that no such risk will be created by the improvement. Any geotechnical engineering report provided in any review shall consider not only the risk incurred due to or during construction of the otherwise prohibited improvement, but also the potential impacts due to failure to maintain the improvement, damage through reasonably foreseeable events such as earthquakes or other acts of God, or the reasonably foreseeable negligence of the owner or future owners. The director may utilize peer review consultants.

**19.10.080 Site access, professional/special inspection monitoring during construction and final geotechnical report.**

A. Site clearing and grading. The owner/applicant or contractor shall secure the building official's approval before entering an earth subsidence and landslide hazard area site with excavating or other grading and clearing equipment to clear, remove trees or grade for any purpose including the creation of access to the site.

The building official may condition such access approval if site conditions are warranted and when discretionary approval permits are required. As part of the approval process the building official may impose conditions that address site work issues; such measures could include but are not limited to limiting all excavation and drainage installation to the dryer season between May and the end of September, or sequencing activities such as the installation of drainage systems well in advance of construction.

Requests for early site access in advance of building permit approval or in the time period between October 1<sup>st</sup> and April 30<sup>th</sup>

for any purpose shall be submitted to the building official accompanied by written concurrence of the owner/applicant's geotechnical engineer of record.

The building official may utilize peer review consultants to determine whether the request is based on generally accepted engineering practice and is reasonable with regard to time-frame to complete the work, types of equipment proposed to perform the work, length of exposure of slopes, and adequacy of site monitoring and temporary erosion control measures. When such peer review is utilized the applicant is responsible for the peer review fee.

B. Reporting authority. The owner/applicant shall retain a geotechnical engineer to monitor the site during construction. The owner/applicant shall preferably retain the geotechnical engineer who prepared the final geotechnical report in the plan set submittal and who has reviewed the approved plans and specifications.

If a different geotechnical engineering consultant is retained by the owner/applicant, the new geotechnical engineer shall submit a letter to the director stating that he or she has read all reports and recommendations and reviews to date and state whether or not he or she agrees with the opinions and recommendations of the original geotechnical report and peer review comments. Further recommendations, signed and sealed by the new geotechnical engineer, and supporting data, shall be provided should there be exceptions or changes to the original recommendations that would effect the approved plans.

C. Construction monitoring, special inspections.

1. Inspection requirements. During the period from October 1<sup>st</sup> to April 30<sup>th</sup>, when on site, the owner/applicant or designated erosion sedimentation control (ESC) site supervisor shall perform erosion and sedimentation control inspections. Records of installed ESC facilities shall be maintained by the erosion and sedimentation control supervisor and copies of all ESC records shall be provided to City inspectors upon request.

ESC facilities on inactive sites (sites where no work will be performed for more than three (3) consecutive days) shall be inspected weekly by the erosion and sedimentation control supervisor. During all other times of the year, weekly inspections by the ESC site supervisor are required and shall be recorded.

2. Weekly field reports. The geotechnical engineer shall monitor, during construction, compliance with the recommendations in the geotechnical report including; site excavation, shoring, temporary erosion control, soil support for foundation, piles, sub drainage installation, soil compaction and other geotechnical aspects of the construction. Unless otherwise approved by the director, the specific recommendations contained in the geotechnical report shall be implemented by the owner/applicant. Omissions or deviations from the approved geotechnical report and civil plans shall be highlighted to the city in a separate report. All reports shall be submitted to the city on a weekly basis for review. Failure to submit required reports may result in the issuance of a stop work order.

3. Storm events. During all work periods, special inspections shall be performed after storm events as defined in ECDC 19.10.020(Q). The storm event report shall be provided within one week of the event.

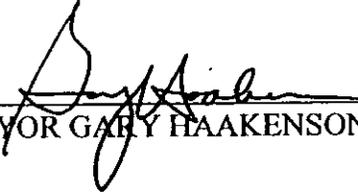
D. Final construction report. The geotechnical engineer of record shall prepare a final written report to be submitted to the building official, stating that based upon his or her professional opinion, site observations and final site grading that the completed development substantially complies with the recommendations of the geotechnical report and with all geotechnical related permit requirements as shown on the approved plans.

Substantially complies means that the completed development offers at least the level of stability and safety, on and off site, as was afforded by the original recommendations and report. Recommendations to the owner/applicant shall be included in the report for future monitoring and maintenance of the property including drainage, tightlines, catch basins, berms, retaining wall drainage, hazard mitigation improvements, slopes, bluffs, vegetation, and permanent erosion control that effect slope stability over time. Occupancy of the residence shall not be granted until the report has been reviewed and accepted by the building official.

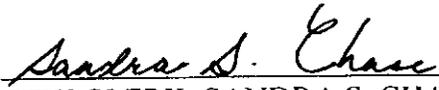
Section 3. Severability. If any section, sentence, clause or phrase of this ordinance should be held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other section, sentence, clause or phrase of this ordinance.

Section 4. Effective Date. This ordinance, being an exercise of a power specifically delegated to the City legislative body, is not subject to referendum, and shall take effect five (5) days after passage and publication of an approved summary thereof consisting of the title.

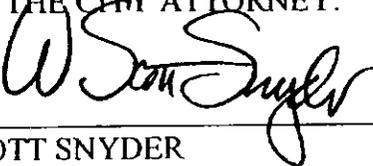
APPROVED:

  
\_\_\_\_\_  
MAYOR GARY HAAKENSON

ATTEST/AUTHENTICATED:

  
\_\_\_\_\_  
CITY CLERK, SANDRA S. CHASE

APPROVED AS TO FORM:  
OFFICE OF THE CITY ATTORNEY:

BY   
\_\_\_\_\_  
W. SCOTT SNYDER

FILED WITH THE CITY CLERK:	03/16/2007
PASSED BY THE CITY COUNCIL:	03/20/2007
PUBLISHED:	03/28/2007
EFFECTIVE DATE:	04/02/2007
ORDINANCE NO. <u>3632</u>	

**SUMMARY OF ORDINANCE NO. 3632**

of the City of Edmonds, Washington

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On the 20th day of March, 2007, the City Council of the City of Edmonds, passed Ordinance No. 3632. A summary of the content of said ordinance, consisting of the title, provides as follows:

AN ORDINANCE OF THE CITY OF EDMONDS, WASHINGTON, AMENDING THE EDMONDS COMMUNITY DEVELOPMENT CODE, REPEALING CHAPTER 19.05 EARTH SUBSIDENCE AND LANDSLIDE HAZARD AREAS, AND ENACTING IN ITS PLACE CHAPTER 19.10 EARTH SUBSIDENCE AND LANDSLIDE HAZARD AREAS, PROVIDING A SAVINGS CLAUSE, AND FIXING A TIME WHEN THE SAME SHALL BECOME EFFECTIVE.

The full text of this Ordinance will be mailed upon request.

DATED this 21st day of March, 2007.

  
\_\_\_\_\_  
CITY CLERK, SANDRA S. CHASE

# **North Edmonds Earth Subsidence and Landslide Hazard Area Summary Report Edmonds, Washington**

March 14, 2007

Prepared for

**City of Edmonds  
Community Services Department  
Edmonds, Washington**

 **LANDAU  
ASSOCIATES**  
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Edmonds, WA 98020  
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## **PURPOSE**

The purpose of this document is to provide a summary of key reports and information that are pertinent to permit applicants and their design team for property development within or adjacent to the North Edmonds Earth Subsidence and Landslide Hazard Area, as defined by Edmonds Community Development Code (ECDC) Chapter 19.10. This document does not summarize individual plat or property consultant reports; these consultant reports are available for review in the City of Edmonds (City) Development Services office. This document provides applicants and their design team with technical information and identifies issues that should be considered and addressed related to landslide hazards and landslide processes in the North Edmonds Earth Subsidence and Landslide Hazard Area.

## **BACKGROUND**

The North Edmonds area includes a large historic/prehistoric landslide often called the Meadowdale Landslide in previous documents. The landslide includes a massive downset block of land that extends from the steep bluffs along the east edge of the slide to Puget Sound. In this summary report, the downset block is referred to as the "landslide mass." The identification of the landslide mass will change over time. Some areas currently outside of the landslide mass may become part of the mass as slopes regress from natural or other erosional processes.

The landslide mass is defined as the area that has previously moved in historic or prehistoric times and is referred to as the North Edmonds Earth Subsidence and Landslide Hazard Area (North Edmonds ESLHA). This area is subject to the terms of the City's original "Meadowdale Ordinance" (Ordinance #2661) and subsequent revisions and updates enacted by the City of Edmonds. The requirements of the most recent ordinance revisions are contained in ECDC Chapter 19.10. Development in Landslide Hazard Areas, including areas both within and outside of the North Edmonds ESLHA, is also controlled by the provisions of ECDC 23.80, Geologically Hazardous Areas.

## **NORTH EDMONDS LANDSLIDE ORDINANCE**

The North Edmonds (Meadowdale) landslide hazards and risks have been known for a number of years, and the landslide has been the subject of many previous geologic and geotechnical studies. Large scale landsliding of the area was described in newspapers in 1947 and damaging slides have been historically recorded in many years since that time. In the past, development in the area was limited because of landslide hazards. In 1984, Local Improvement District (LID) No. 210 was passed for the Meadowdale area (which included the landslide mass as well as properties east of the slide). In 1984, a public sanitary sewer, limited storm sewers, and other drainage components were installed under this

LID. The installation of these various LID improvements generally lowered groundwater levels within the slide and lowered the risk to new development.

Since 1988, residential development has been allowed in the landslide area under specific conditions and requirements prescribed under City Ordinance 2661. The ordinance included development guidelines and requirements to limit risks for a property owner and risk of impacts to adjacent properties. Development within the landslide area under Ordinance 2661 has occurred assuming that an acceptable risk of landsliding for a property is less than 30 percent in 25 years. Under those conditions, property development was only allowed if a property owner and their consultant provided an estimated landslide risk for the property, based on sound scientific and engineering principles, that was less than 30 percent in 25 years.

Substantial risks due to landslide hazards exist within the North Edmonds ESLHA. These risks are estimated to range from less than 10 percent probability of occurrence in 25 years to about 30 percent probability of occurrence in 25 years (GeoEngineers 1985). The actual landslide hazard risk depends on both regional and site-specific conditions, including topography, geology, surface water, groundwater, and vegetation conditions. In many cases, the landslide hazard risk can be reduced and impacts mitigated through appropriate siting, land development, and design features. It is the responsibility of the applicant and their design team to:

- Clearly identify landslide hazards that affect or are affected by property development, and
- Provide measures to reduce hazards and mitigate impacts.

## **KEY NORTH EDMONDS AREA GEOTECHNICAL STUDIES**

The current understanding of the North Edmonds ESLHA has been developed from geologic and geotechnical studies that began in the 1960s and have continued through the present time. Most of these reports are available for viewing at the City's Development Services office. Key area-wide technical reports are summarized below. The following key reports have formed the historic basis of the North Edmonds ESLHA and the related ordinances enacted by the City.

- Dames & Moore. 1968. This report evaluated the overall stability of the Meadowdale area from a geologic standpoint and identified soil and groundwater conditions, described slide history of the area, and provided a map showing geologic contacts, the ancient slide scarp, and areas of 1947 and 1955-56 movement. This report concluded that it was feasible to install sanitary sewers and that installation would benefit the stability of the area. This report also suggested that new residential development in much of the Meadowdale area should be prohibited unless some measures are made to control groundwater and surface water.
- Roger Lowe Associates, Inc. 1979. This report provided a summary of the Meadowdale area landslide history, geology, and hydrology. This report provided a landslide hazard map that enumerated the probability of landslide hazards in the Meadowdale slide area at the time the

report was prepared (prior to LID sewer and drainage improvements). The probabilities of landslide movement ranged from 2 to 90 percent over a 25-year period and much of the landslide mass area had probabilities greater than 30 percent. The probabilities presented in the report were based on a 30- to 40-year historical record and site observations of landslide feature ages and activity. The report identified that the stability of the Meadowdale Landslide is very sensitive to groundwater levels. The report also identified land use and risk reduction measures, including the installation of sanitary sewers, storm drainage, and interceptor drains. The report provided a summary of the results of stability analyses with respect to possible improvements in factors of safety and potential lowered groundwater levels.

- GeoEngineers, Inc. 1985. This report provided a summary of predicted improvements in stability due to the LID measures implemented in 1984. GeoEngineers' evaluation was based on comparing 4 years of groundwater data prior to the LID construction with 3 months of data following LID construction. The report concluded that an average 3-ft decline in groundwater levels was observed in the Meadowdale Landslide mass. The decline in groundwater levels was tied to an increase in factor of safety and a decrease in landslide hazard risk. A map showing this decreased landslide risk, modified from the original 1979 mapping, was provided in this report. The probabilities shown on the revised map range from 2 to 30 percent over a 25-year period. The reduction in probabilities presented in the report was based on subjective evaluations that related change in factor of safety from lower groundwater levels to reduction in risk. The intent of the report was to help identify and approximately quantify the relative degree of risk for various broad areas within the overall landslide mass so that this information could be used for planning and communication of the relative landslide hazards to the public. The information was not intended to provide a detailed assessment of lot-specific landslide hazards or a precise estimate of landslide probabilities at a particular location.
- Landau Associates. 2007. Previous mapping of the landslide hazard area boundary was based on hand-drawn lines on older USGS base maps. Various inaccuracies became evident in the base map over time. In addition, the landslide boundary included areas that had previously failed as a result of landslide movement, as well as some adjacent areas that could be hazardous, but had not yet failed. The definition of what was inside or outside the boundary line was not always consistent and subject to interpretation. To address these issues, the City had LiDAR (light detection and ranging) mapping flown of the entire city in 2005. The topographic and imaging data from the LiDAR survey provided current, high quality base mapping that formed the basis for the development of landslide hazard mapping for the entire city. Particular emphasis was placed on the North Edmonds ESLHA. Topographic data, LiDAR imaging, previous geologic studies, geotechnical reports prepared for individual properties, and geologic mapping was reviewed to develop the boundary of the North Edmonds ESLHA. It was decided that the boundary of the North Edmonds ESLHA should be set at the interpreted boundary of the landslide mass (i.e., the interpreted top of the landslide scarp surrounding the North Edmonds landslide). The results of the mapping and evaluation process are summarized in a Landau Associates report and the North Edmonds ESLHA boundary line is incorporated in the City's Landslide Hazard Area maps. It should be noted that setting the boundary line at the interpreted top of the landslide scarp defines the intended extent of the requirements of ECDC 19.10 for the North Edmonds ESLHA and is not meant to imply that landslide hazards are not present beyond that line. However, requirements for considering and addressing landslide hazard areas defined on the basis of slope steepness and requirements for addressing areas adjacent to landslide hazard areas are already addressed in ECDC 23.80, Geologically Hazardous Areas.

## **NORTH EDMONDS AREA LANDSLIDE SETTING AND HISTORY**

An understanding of the landslide setting, conditions, and history will help the applicant and their design team to better address issues in site development.

### **LANDSLIDE GEOLOGY AND SETTING**

The soils in the North Edmonds area include soils from glacial and interglacial periods and disturbed soils from post-glacial landslide processes. Outside of the landslide area (east of the landslide), the uppermost soil in many areas is glacial till—an unsorted and consolidated mixture of sand, silt, and gravel that has been glacially consolidated and is very dense. Directly beneath this unit (or at the surface if till is not present), is a glacial outwash deposit of sand and sandy gravel. The bottom of the outwash deposit often includes transitional interbeds of silty sand and silt. The glacial outwash unit is present along the steep slopes that form the eastern edge of the landslide. Both the glacial till and the outwash are considered to be from the most recent glacial period, termed the Vashon age. An older-age sequence of silt and clay, often termed the Whidbey Formation, underlies the outwash deposit. Within the landslide mass, the outwash sands and underlying silt and clay have been disturbed from sliding and form landslide deposits. In some cases, the landslide movement has completely mixed up these soils so no soil structure can be seen. In other cases, landslide failure occurred as large blocks of soil that stayed intact, so bedding may be visible.

Landsliding in the area is caused by a combination of topography, geology, and groundwater. The slopes throughout the area are steeper than the strength of soils will support. Within the landslide complex, soils strengths in disturbed soils are very low, so slopes may be unstable at 3H:1V (horizontal:vertical) or 4H:1V and flatter. On the outer edge of the landslide complex, undisturbed soils have higher strengths, but existing slopes are also steeper; many areas are steeper than 1H:1V, and slopes are potentially unstable. In both conditions, groundwater or seepage is typically a triggering factor acting to reduce soil strength and cause erosion. The subsurface conditions present on the east edge of the landslide complex are similar to other landslide areas in the Puget Sound region; permeable sands are eroded by groundwater that lies above relatively impermeable silts and clays causing a zone of frequent and active ground movement.

### **LANDSLIDE HISTORY**

Landsliding in the area, and throughout the Puget Sound region, probably began thousands of years ago as glaciers retreated. The landsliding activity reflects a process of steep slopes attempting to reach geologic equilibrium. The North Edmonds landslide is not yet in equilibrium, so continued ground

movements should be expected to occur for an extended period of at least hundreds and possibly thousands of years into the future.

Several very large landslide events have been documented in the area in the 1940s and 1950s (information prior to the 1940s has not been identified). In 1947 an area south of the wharf was involved in a large landslide event that had been identified variously as between about 800 ft long (Dames & Moore 1968) to greater than 2,400 ft long (Seattle Post-Intelligencer February 23, 1947), with impacts that extended up to about 1,000 ft eastward from the shoreline. As part of this landslide event, which apparently continued over some period of time, four homes were reportedly wrecked and 20 to 40 homes threatened or endangered. In 1955-56, another large slide is documented (Dames & Moore 1968) that destroyed at least 2 homes and damaged many other homes. It is appropriate to note that the density of development in this area in the 1940s and 1950s was significantly less than present day conditions. A large-scale landslide similar to these earlier landslides could be expected to involve many more structures if it were to occur today.

Since the 1950s, large-scale movements of the landslide mass have not been documented. Generalized movement does occur in the landslide area as evidenced by roadway cracking and localized, small-scale slope failures. The risk of large-scale landsliding has been substantially reduced by the LID improvements that were installed in 1984. However, extreme climatic conditions have the potential to affect groundwater sufficiently to reactivate the overall landslide mass. For instance, the 'rain-on-snow' event of late 1996 and early 1997 caused several slides in the North Edmonds area and throughout the Puget Sound region. In particular, large-scale landslides that caused significant damage occurred along the bluffs in the town of Woodway and in the Perkins Lane area of Magnolia Hill in Seattle. Smaller scale landsliding, such as sloughs or debris flow on the east edge (scarp) of the landslide complex and movements of benches within the landslide mass continue to occur indicating that the North Edmonds landslide area is still active.

## **LANDSLIDING – LOCATIONS, HAZARDS, AND PROCESSES**

Previous geologic reports for the area considered landslide locations, hazards, and processes known at the time the reports were completed. Although the specific boundaries of areas with certain hazards may have changed over time, the concept of identifying landslide hazards and processes is still directly applicable to development within the North Edmonds ESLHA. The previous reports did not provide detail about the expected severity of landsliding with respect to property damage or potential loss of life. It should be noted that most previous reports were completed before substantial development of the area within and directly adjacent to the landslide area. Some small landslides (such as from bluffs along the east side of the landslide complex), may be happening more frequently over time (or they may

now be reported more often as development has increased on properties near the bluff). The type and frequency of landsliding should be expected to change over time—factors that need to be considered for development.

The location of landslides, the types of hazards, and the landslide process affect the development of properties in the North Edmonds ESLHA. Table 1 summarizes relationships between location, type of landslide hazard, landslide processes, and recommended geotechnical report requirements and issues to be considered in the design of property improvements within or adjacent to the North Edmonds ESLHA. Specific requirements for development are provided in the City of Edmonds North Edmonds ESLHA Checklist for Permit Submittal and the Geotechnical Report Guidelines.

### **POTENTIAL LANDSLIDING LOCATIONS**

In and adjacent to the North Edmonds ESLHA, various types of landslide hazards and processes may occur at different locations. For a common understanding of landslide issues, the North Edmonds landslide area has been divided into five zones, A through E. These zones are schematically shown on Figure 1.

- Zone A. This zone includes the lowermost (west) parts of the landslide. Slide movement from the large-scale slide complex and smaller slides within the complex can both affect this zone. Impacts from sliding in this zone have the potential to affect the nearby Burlington Northern Santa Fe (BNSF) railroad.
- Zone B. This zone includes the majority of the landslide mass or complex. Soils in this area are typically disturbed, although blocks of intact soil may be found within this zone. Localized small-scale failures occur in this zone from weak soils and localized groundwater conditions. Large-scale sliding of the slide complex has the potential to affect this zone.
- Zone C. This zone lies near the edge of the landslide complex. This zone is most affected by landslide hazards due to slides that initiate on the steep slopes on the east side of this zone. Small-scale failures within this zone are also possible. This zone has the highest risk to public safety.
- Zone D. This zone encompasses the active scarp of the landslide and incorporates ground that is outside the currently active landslide area. The west part of this zone includes parts of the slope that are actively failing as shallow debris slides. This zone also includes areas that can potentially fail as large block failures. The eastern part of this zone includes currently stable ground that has not yet failed behind the present top of the landslide scarp. This area could be subject to failure from a large block-type landslide failure or a series of shallower debris slides occurring on the face of the bluff and the resultant bluff retreat over a period of years. Any development near a designated landslide hazard zone will require consideration of the landslide hazard, potential bluff retreat, and buffers (designated as a distance of 50 ft or the height of the steep slope back from the top of the slope, whichever is greater, per the requirements of ECDC 23.80).

- Zone E. This zone lies outside of the active landslide area and the area that may be involved in long-term slope retreat. However, development in this zone has the potential to contribute to surface water or groundwater conditions that affect hazards within Zones A through D. Locally steep slopes may also be present in this area that are unrelated to the North Edmonds ESLHA, but that could be considered a landslide hazard area as defined by ECDC 23.80.

It is important to understand that it is possible to have features, hazards, and processes common to one zone present in another zone. As part of development permitting, the applicant and their design team will need to identify specific hazards and processes that apply to the property.

## **LANDSLIDE HAZARDS**

Four different types of landslide hazards were identified by Roger Lowe Associates (1979) and GeoEngineers (1985) on their maps. These hazards consist of:

- No hazard identified
- Encroaching landslide debris originating upslope
- Hazards from landslides in ground that has not previously failed
- Hazards from reactivating landslide debris causing ground failure and movement.

More than one type of hazard can occur at any given location. Due to impacts from landsliding adjacent to an area, hazards can occur in areas that have previously been stable and have not previously failed. The landslide hazards identifiers also recognize that landsliding and related hazards can occur in areas that are now stable, but that have the potential to become unstable at some time in the future. The applicant and their design team must identify all landslide hazards that currently exist on the property, as well as those likely to exist in the future, and determine if those hazards have the potential to affect human safety or cause property damage.

## **LANDSLIDE PROCESSES**

The Landslide Hazard Map, initially developed by Roger Lowe Associates (1979) and also used by GeoEngineers (1985) identified four landslide processes that commonly occur in the area:

- Slumps
- Debris Slides
- Debris Avalanches
- Debris Flows.

Multiple hazards and multiple processes can be present at any location. For each hazard identified on a property, the applicant and their design team shall identify the types of processes associated with the hazard. The site design should include features to reduce hazards, mitigate impacts from site hazards, and cause no additional impacts to other property owners in the area.

### **SEVERITY OF LANDSLIDING**

Previous maps of the North Edmonds landslide area did not distinguish between size or severity of landslide hazards. As part of the development permit process, applicants and their design team should assess the size of possible landslide impacts and present design features to mitigate impacts. All impacts that could affect public safety must be mitigated. It may not be possible to fully mitigate property damage impacts from very large-scale landsliding. In this case, the applicant's geotechnical report should clearly identify the steps taken to reduce the impacts and the possible impacts that are not fully mitigated by design. For instance, the designer's report should note that significant structural damage should be expected if large-scale reactivation of the North Edmonds landslide should occur.

### **CHANGES OVER TIME**

The risk of landslide hazards in the area will remain substantial for hundreds to thousands of years. Landslide processes and susceptible locations will change over time. Some changes may be due to human influences; other changes are part of natural geologic processes. The assessment of landslide hazards and processes on a parcel should consider changes that may occur over time. For all zones, development shall not increase the likelihood, extent, or severity of hazard for the applicant's property or other properties. For lots in Zones C and D, slope retreat processes must be explicitly considered in the applicant's technical documentation. For these zones, applicants should evaluate the effect of slope retreat processes over a minimum 120-year period. The 120-year period has been chosen as the normal useful life of residential structures under normal upkeep and maintenance conditions. For some site improvements, an alternate 'normal useful life' may be appropriate and can be proposed by the applicant.

Groundwater levels in and near the North Edmonds area will affect the stability in all zones. Groundwater levels are affected by a wide range of factors, both natural and human caused. Changing climatic conditions could lead to increased groundwater levels in the future. Municipal sewers and storm sewers and drains remove some surface water before it can re-infiltrate back into the landslide mass. However, watering associated with gardens and lawns introduces water back into the landslide area and into the groundwater and removal of trees and vegetation also increases the amount of precipitation that is available to infiltrate to the groundwater. Thus, the net effect from human factors is not known.

## **RISK REDUCTION AND MITIGATION MEASURES**

The applicant and their design team need to evaluate the landslide hazards in relationship to the proposed development and incorporate means to reduce the risk related to potential landsliding and to develop measures to mitigate the potential remaining hazards.

Mitigation measures may take a variety of forms, depending on the specific site conditions and details of the design. For example, some structures within the North Edmonds ESLHA have been supported on pile foundations extending down through the landslide debris and founded on underlying undisturbed materials. Other projects have been designed with a shallow foundation consisting of a relatively rigid structural foundation mat or grid that is designed to span over areas of underlying vertical or horizontal soil movement. In essence, the structure is designed to stay intact even if soil support under a portion of the structure is lost due to landsliding.

Structures located near the base of the steep bluff have been designed considering the potential for landslide debris flow originating from upslope areas. Mitigation measures for structures near the base of the steep slope that could be impacted by debris flows have included debris deflection or catchment walls above the structure, reinforced shear walls within the structure, minimal door or window openings on the uphill side of the structure, and placement of the main living and sleeping areas away from the upslope side of the house.

## **CONCLUSIONS**

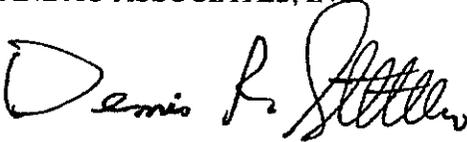
The 1984 LID activities, a combination of sanitary sewers (with associated removal of septic systems) and limited storm drainage improvements, have, on the average, lowered groundwater levels and improved the stability of areas within the landslide mass. The storm drainage portions of the LID were installed primarily to protect City-owned property such as the new sanitary sewer line. The LID improvements were not intended to address groundwater levels outside the landslide mass, and thus have not changed stability in these areas. The improvement in stability from lower groundwater levels could change in the future, and activities associated with the development of the North Edmonds ESLHA and surrounding areas can affect stability in both positive and negative ways. The North Edmonds ESLHA Ordinance and associated requirements contained in ECDC 19.10 allows development if landslide risks can be reduced and impacts can be shown to be mitigated by appropriate design. Nonetheless, it is imperative that applicants and homeowners understand that living in a known landslide area presents a real and substantial risk to both public safety and private/public property. Residents in and immediately adjacent to the North Edmonds ESLHA should be prepared to accept that risk.

## USE OF THIS REPORT

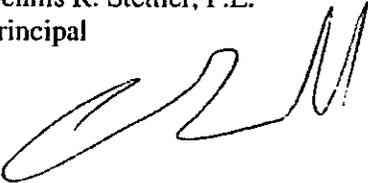
This report was prepared for the use of the City to summarize geotechnical and geologic information related to the North Edmonds ESLHA. The information in this summary report is general in nature and could be used as background information, but should not be used as a basis for design and development of individual lots. Within the limitations of scope, schedule, and budget, our services have been conducted in accordance with generally accepted geotechnical engineering and geologic practices. No other warranty, express or implied, is made as to the professional advice included in this report.

We appreciate the opportunity to provide geotechnical services to the City. If you have any questions regarding the information contained in this report, or if we may be of further service, please call.

LANDAU ASSOCIATES, INC

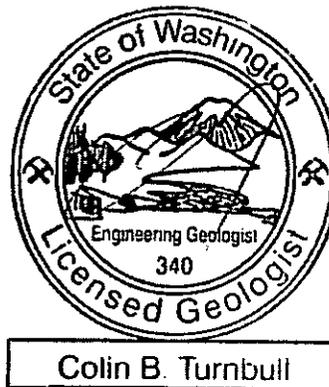


Dennis R. Stettler, P.E.  
Principal



Colin B. Turnbull, L.E.G.  
Senior Engineering Geologist

DRS:CBT/rgm



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Dames & Moore. 1968. *Report of Geologic Evaluation, Meadowdale Area, Edmonds, Washington*. Prepared for the City of Edmonds. September 23.

GeoEngineers, Inc. 1985. *Report of Geotechnical; Consultation Property Value Appraisals and Assessments Meadowdale Landslide Area, Edmonds, Washington*. Prepared for the City of Edmonds. February 28.

Landau Associates. 2007. *Technical Memorandum. Summary of LiDAR Processing and Evaluation Methods, LiDAR Mapping Evaluation Project, Edmonds, Washington*. Prepared for the City of Edmonds. March.

Roger Lowe Associates, Inc. 1979. *Final Report, Landslide Hazards Investigation, Meadowdale Area, Edmonds, Washington*. Prepared for the City of Edmonds. October 16.



<ul style="list-style-type: none"> <li>Subsurface exploration must be at least 6 ft deeper than lowest elevation of the proposed foundation</li> <li>Subsurface exploration required for retaining structures</li> <li>Subsurface exploration must include measurement or estimate of high seasonal groundwater conditions</li> <li>Provide estimated vertical and horizontal differential movement for appropriate foundation design</li> <li>Provide criteria for minimum span distance between foundation support due to potential loss of soil support</li> <li>Provide information about the potential size and mass of landslide debris originating upslope</li> <li>Provide required foundation and wall loading conditions based on impact forces from landslide debris originating upslope if determined to be a risk</li> <li>Establish Steep Slope Buffer width based on rate of slope retreat or stable slope angle over 120-year period</li> <li>Include a minimum 15 ft setback from Steep Slope Buffer for all site development</li> <li>Provide recommendations for suitable vegetation; in most cases, buffer shall be maintained in undisturbed, natural condition</li> <li>Determine if activities on property, particularly drainage features, are expected to impact the Landslide Hazard Area</li> <li>Full Geotechnical Report may not be required if outside of the North Edmonds Earth Subsidence and Landslide Hazard Area and other designated Landslide Hazard Areas</li> </ul>	<ul style="list-style-type: none"> <li>Temporary and permanent fills may be restricted</li> <li>Roof drains and impervious surface runoff should be tightlined to drain lines</li> <li>Stormwater infiltration typically prohibited in hazard area</li> <li>Permanent irrigation systems prohibited in Zones A, B, C, D; min</li> <li>Select native, drought-tolerant vegetation (dense, low-lying, and</li> <li>Outdoor swimming pools prohibited in Zones A, B, C, D</li> <li>If permitted, hot tubs should include special design features so th approved discharge point</li> <li>Foundations should withstand high lateral forces from upslope ar</li> <li>Foundations should be designed to withstand loss of soil beneath</li> <li>Structures should be designed to accommodate a certain level of large-scale landsliding</li> <li>Depending on location, may need to consider features for deflection walls, reinforced shear walls; appropriate home layout</li> <li>Reinforced shear walls; appropriate door and window placement</li> <li>Appropriate location of main living and sleeping areas</li> <li>No yard waste, debris or fill may be placed within Steep Slope Bi</li> <li>No permanent irrigation in buffer or setback</li> <li>No water discharged or infiltrated in landslide, buffer or setback</li> </ul>	<ul style="list-style-type: none"> <li>Subsurface exploration must be at least 6 ft deeper than lowest elevation of the proposed foundation</li> <li>Subsurface exploration required for retaining structures</li> <li>Subsurface exploration must include measurement or estimate of high seasonal groundwater conditions</li> <li>Provide estimated vertical and horizontal differential movement for appropriate foundation design</li> <li>Provide criteria for minimum span distance between foundation elements</li> </ul>
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Specific Key Design Features

Specific Report Requirements

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<p>monds Earth Subsidence and other properties by underwater conditions</p> <p>Hazard Area due to steep</p>	<p><u>Specific Report Requirements</u></p> <ul style="list-style-type: none"> <li>Subsurface exploration must be at least 6 ft deeper than lowest elevation of the proposed foundation</li> <li>Subsurface exploration required for retaining structures</li> <li>Subsurface exploration must include measurement or estimate of high seasonal groundwater conditions</li> <li>Determine if activities on property, particularly drainage features, are expected to impact the Landslide Hazard Area</li> <li>Full Geotechnical Report may not be required</li> </ul>	<p><u>Specific Key Design Features</u></p> <ul style="list-style-type: none"> <li>Temporary and permanent fills may be restricted</li> <li>Roof drains and impervious surface runoff should be tightened to drain lines</li> <li>Stormwater infiltration typically prohibited in hazard area</li> <li>Select native, drought-tolerant vegetation (dense, low-lying, and Hot tubs should include special design features so that tub water</li> </ul>



# North Edmonds Earth Subsidence and Landslide Hazard Areas Map

North Edmonds Earth Subsidence and Landslide Hazard Area  
See ECDC 23.80.020 B.1 and ECDC 19.10)  
Note: Boundaries are the approximate extent of previous landsliding; hazards are present adjacent to the landslide boundaries)

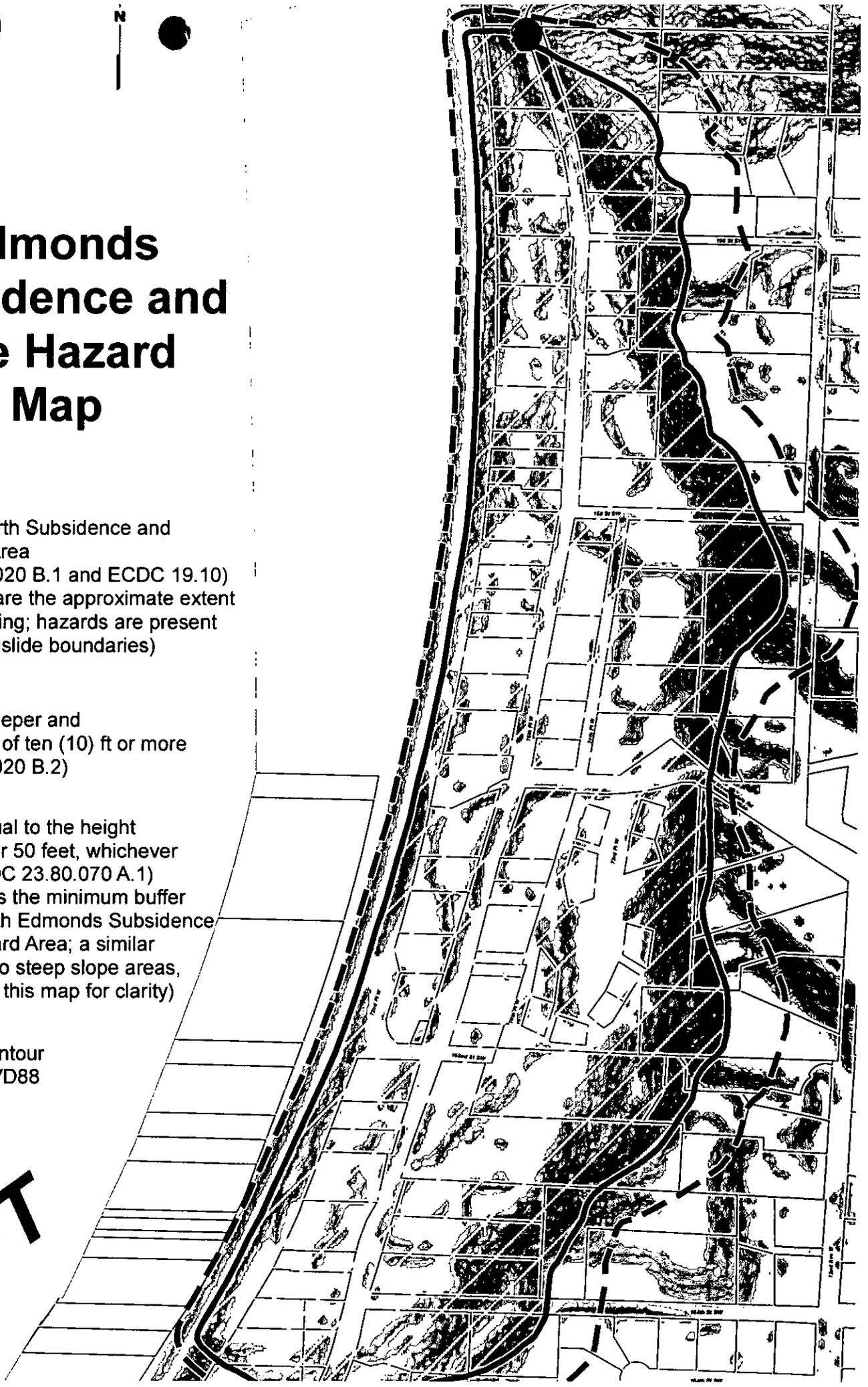
Steep Slope Areas:  
Slope of 40% or steeper and with a vertical relief of ten (10) ft or more  
See ECDC 23.80.020 B.2)

Minimum buffer equal to the height of the steep slope or 50 feet, whichever is greater (see ECDC 23.80.070 A.1)  
The buffer shown is the minimum buffer adjacent to the North Edmonds Subsidence and Landslide Hazard Area; a similar buffer would apply to steep slope areas, but is not shown on this map for clarity)

10 ft Topographic Contour  
Vertical datum: NAVD88

Parcel

**DRAFT**



Councilmember Plunkett agreed navigating the intersection of 88<sup>th</sup> & 196<sup>th</sup> was difficult, recalling his high school class lost two members as a result of an accident at that intersection. He suggested increasing the funds for a study in 2013 and to move that project forward.

**COUNCILMEMBER PLUNKETT MOVED, SECONDED BY COUNCILMEMBER MOORE, TO TAKE \$20,000 FROM ENDING CASH BALANCE AND MOVE THE STUDY OF THE INTERSECTION OF 88TH & 196TH INTO 2007 TO BEGIN THAT WORK. AMENDMENT CARRIED UNANIMOUSLY.**

**MAIN MOTION AS AMENDED CARRIED UNANIMOUSLY.**

Earth  
Subsidence  
Landslide  
Hazard Area

6. **PUBLIC HEARING ON THE PROPOSED AMENDMENTS TO EDMONDS COMMUNITY DEVELOPMENT CODE CHAPTER 19.10 DEALING WITH DEVELOPMENT PERMIT REQUIREMENTS FOR THE EARTH SUBSIDENCE LANDSLIDE HAZARD AREA OF NORTH EDMONDS. THE PROPOSAL INCLUDES AN UPDATED LANDSLIDE HAZARD AREA MAP.**

Development Services Director Duane Bowman relayed staff and the Mayor's recommendation to adopt the proposed ordinance which amends Chapter 19.10 of the ECDC and adopts a new landslide hazard map. He referred to the steps in the process that culminated in the October 9, 2006 meeting staff held with the community to provide an update on the Lidar mapping and introduce the new landslide hazard map. At that meeting several citizens commented on excessive peer review times and fees. After reviewing the existing policies that allow a range of different peer review consultants with Building Official Jeannine Graf and Mayor Haakenson, he recommended a new policy that allows for one peer review consultant, and defines peer reviews timelines, costs, initial completeness review and times for response. This would provide more predictability to the process and to the timelines. He noted face-to-face meetings between the applicant and the peer review consultant would be paid for by the consultant.

He displayed the updated North Edmonds Earth Subsidence Hazard Area Map prepared by Landau Associates, explaining the previous map was hand-drawn, making it difficult to determine whether properties were inside or outside the landslide hazard area. This map was prepared using Lidar technology and analysis by Landau Associates to clearly define the Earth subsidence Landslide Hazard Area. He pointed out the critical area buffer of the landslide hazard area.

**Dennis Stettler, Landau Associates**, provided background on the landslide hazard area, explaining in 2004 the City updated the Critical Areas Ordinance defining landslide hazards. He explained landslide hazards were in two categories, 1) North Edmonds Earth Subsidence Hazard Area, and 2) any steep slope with a 40% of greater slope with a height of 10 feet or more. The second category applied anywhere in the City; the North Edmonds Earth Subsidence Hazard Area was unique to that area. He explained this analysis began due to concerns with the base mapping and the technical basis for the landslide hazard area and associated buffers.

He explained the North Edmonds Earth Subsidence Hazard Area was a unique area, a large ancient landslide with some similarity to the Perkins Lane slide area in Seattle where landslide activity has occurred. Commonalities between these areas include a sand layer over a clay layer with groundwater between that given the right conditions can result in landslides. He explained the first landslides occurred in the area 12,000 years ago. The North Edmonds Earth Subsidence Hazard Area is 3,300 feet long parallel to the shoreline and 600-900 feet wide. He provided a history of landslide events including an 800 foot wide landslide in 1947 that destroyed four homes and damaged several others. There were also landslides in the winters of 1953-1954, 1955-1956, during the early 1960s, and in 1971 as well as numerous smaller landslides.

Mr. Stettler explained in 1979 the City imposed a moratorium on any building in this area. A study commissioned in 1979 to consider the landslide hazard concluded the risk of landslide in some areas was as high as 90% probability in a 25-year period as a result of groundwater instability. In 1984 the City implemented a Local Improvement District that installed sewers and drainage improvements that had the benefit of lowering the ground water table and improving the overall stability of the area. Another study commissioned in 1985 concluded the risk of landslide in some areas was as high as 30% probability in a 25-year period. A definition of stable was developed that stated for purposes of development in that area stable would be 30% probability or less of a landslide in a 25-year period. The moratorium was lifted in 1988 via an ordinance enacting Chapter 19.10 that detailed the process to address development in the landslide hazard area, identify the risk, required appropriate development measures be taken and ensure all parties were informed of the risk.

He described concerns with the previous map including that the base map was not very accurate, it was difficult to identify existing features, and the inclusion of areas that had already failed as well as an interpretation of areas that had not failed yet but could in the future. He noted upon further analysis, there were areas inside that boundary with lower risk and areas outside the boundary with a higher risk.

To address those issues, Mr. Stettler explained the City had Lidar imaging flown in 2005. He described the Lidar mapping process. The City then hired Landau Associates to utilize the Lidar information and further apply it to landslide and slope stability assessments. He described the accuracy of Lidar mapping, development of contour internals for the entire City and further processing with the steep slope criteria. He displayed and reviewed a map of the City illustrating steep slope areas. He clarified this was intended as a screening tool and not to take the place of a ground survey. He described ground checks of the areas identified as steep slopes.

Mr. Stettler explained the same process was used to analyze slopes in the North Edmonds Earth Subsidence Hazard Area. Using Lidar information, aerial photographs and studies conducted in the past, a boundary was selected as the area that had previously failed, explaining the area that had previously failed was clearly defensible and not subject to interpretation. With regard to adjacent areas, he acknowledged they posed some risk but were already covered by the landslide hazard provisions in the Critical Areas Ordinance. Each steep slope area, including the North Edmonds Earth Subsidence Hazard Area, had a 50-foot buffer. He clarified development was not prohibited in the buffer, geotechnical evaluation was required.

Mr. Stettler summarized the landslide hazard area map was developed for the entire city and specifically the North Edmonds Earth Subsidence Hazard Area using Best Available Science (BAS) and incorporating technology as well as historical information. The areas adjacent to the North Edmonds Earth Subsidence Hazard Area were addressed by the Critical Areas Ordinance. He suggested the geotechnical summary of the North Edmonds Area be available to property owners and developers as a reference document.

Building Official Jeannine Graf reviewed proposed administrative changes to the Earth Subsidence Landslide Hazard provisions of ECDC 19.10:

- Eliminate the architect stamp on building plans.
- Extend application and permit timelines, currently 180 days. Due to limitations on ground work between October and April, staff proposes to extend applications for an additional seven months and extend building permits from one year to two years upon issuance.
- Require the vicinity map show greater detail of adjacent hazards within 100 feet.
- During October 1 – April 30, require contractors report temporary erosion control inspections, require after-storm event inspections (following a storm of 1 inch of rain in a 24-hour period, the applicant's geotechnical engineer must make a site visit within 48 hours and recommend any site

stabilization and confirm erosion control and provide a report within one week of the event), and create provisions for seasonal groundwork extensions.

- Eliminate mapped percentages from map and adopt the hazard zone approach for mitigation that requires the geotechnical engineer of record to analyze site-specific hazards and design to reduce the hazard and mitigate the impact.
- Restrict rockeries, swimming poles, hot tubs, ponds, watering or irrigation systems and stockpile fill on the top and bottom of slopes. Establish a procedure for property owners to request a waiver upon written analysis by a geotechnical engineer that proposed rockery, etc. would have no reasonable likelihood of contributing to any landslide threat.

Ms. Graf provided responses to questions posed in a letter from Lin Hillman prior to the November 2006 Community/Development Services Committee meeting:

Why require the adopted map to be submitted with the permit application?	To ensure the project site is notated on the adopted Landslide Hazard Map to provide future owners easy access to the map that delineates the site of the known landslide hazard area.
Why is the applicant required to have a topographic survey completed prior to studies and evaluations by the geotechnical engineer?	To ensure the geotechnical engineer has real data to study.
When are architectural plans required to be stamped?	Architectural plans would only be required to be stamped if they contained structural details.
Why is peer review required of non-technical issues?	Since 1988 it has been the City's policy to have a professional engineering firm review plans for coordination between the geotechnical report and the foundation as well as all structural loads.
Recommendation to change the process to allow geotechnical peer review approval prior to design of foundation systems and ahead of permit submittal to the City.	This process did not prove successful when used for critical area determination as submittal information was too general and preliminary and not enough specific details or investigation was performed.

Councilmember Plunkett asked why the North Edmonds Earth Subsidence Hazard Area was different. Mr. Stettler the size of this area as well as significant movement in recent times made it different from other steep slope areas in the City.

Councilmember Plunkett referred to Section 19.10.060 regarding peer review, noting in addition to a geotechnical engineer, review by an architect and structural engineer may be required. Ms. Graf agreed "architect" should be deleted from that section; however, reference to the structural engineer peer review should be retained.

Councilmember Plunkett referred to the suggestion for the applicant to do peer review upfront and asked why that option was not appropriate. Mr. Graf answered the Planning Division tried that process in the past with pre-2005 critical area studies and determinations and found there was not enough detail provided to warrant a good decision. Councilmember Plunkett suggested the applicant be informed of the required information. Ms. Graf agreed that would be possible, explaining it was unlikely to save an applicant time. She explained the peer review time would be shortened due to the Development Director's policy for a 30 day initial review which was only 10 days longer than was quoted for a single family home citywide. City Attorney Scott Snyder pointed out the difficulty was these were custom homes on difficult sites and few proceeded through the process without any changes.

Mayor Haakenson opened the public participation portion of the public hearing.

**Alice Oates, Edmonds**, asked whether the extension of the building permit was for the plan check review fee and the building permit fee. Ms. Graf explained the proposal was that a building permit would be good for two years upon issuance; if it needed to be renewed for a third year, the cost was half the permit fee. Ms. Oates explained they were in the plan review phase and need to have all the documentation submitted for review. They went through peer review and were currently on their third submittal. When they paid their plan fee, they did not realize their plan review was only good for one year as staff informed them the average process time to obtain permits in the landslide hazard area was 18+ months, yet the permit was only good for one year. She advised their first submittal took 45 days, they encountered problems with their peer review, requiring a second 45 day peer review and now when they received comments for the third time they would be ten months into the process. In addition, Engineering informed them they would be required to do a SEPA review which is at least a two month process. She recommended the plan review time period also be extended.

Ms. Graf explained staff's proposal was to allow applications to be extended an additional seven months if the issuance of the permit was hampered by the winter season. She agreed in the past the City quoted 12-18 months for a landslide hazard permit. That timeframe included the City's processing time and the average time for the applicant to respond. As a result of public comments, the Director changed the policy to only quote City time – 65 days for initial City review, 30 days for the second review and 20 days for the third review. She acknowledged that did not reflect the true time for an applicant to obtain a permit but staff only tracked the City time. Ms. Graf clarified under the current ordinance, the Oates' application was good for 180 days; they could make a written request to extend for an additional 180 days. At the end of one year, the application would expire. In order to file a new application, they would be required to pay all new plan review fees.

**Al Rutledge, Edmonds**, recalled difficulties the Hearing Examiner experienced with the existing landslide hazard map in determining whether properties were within the landslide hazard area. He referred to legislative bills regarding GMA, commenting the City may qualify for grants for landslide hazard areas. He expressed concern with the amount of time the process took.

**Roger Hertrich, Edmonds**, commented the Lidar map identified every drop-off in the City. He feared identification of a slope on a Lidar map would require extra regulation even if it was outside the landslide hazard area. He referred to Ms. Oates' experience with the City process, commenting the difficulty was different staff members had different perspectives and opinions. He stated the changes proposed by staff were extensive and warranted additional study. He suggested contractors/builders/architects be provided an opportunity to provide input regarding the proposed regulations. He objected to the requirement for a geotechnical site visit following a 1-inch rainstorm, commenting if drainage systems were appropriately designed and inspected, there would not be landslide hazards. He concluded the proposed ordinance was a good effort but required further study and consideration of the impacts on the development community.

**Lin Hillman, Edmonds**, commented this process was a good opportunity for public input. She recalled being in a similar position to the Oates when they built their home. She found many of the proposed changes were significant improvements over the existing regulations as well as over the last draft. She suggested upfront peer review as an option. She agreed with the proposal for a single peer review consultant. She summarized if the initial submittal included peer review approval, a project in any area could be reviewed within normal permit times.

Hearing no further public comment, Mayor Haakenson closed the public hearing.

**COUNCILMEMBER MARIN MOVED, SECONDED BY COUNCILMEMBER PLUNKETT, MOVED TO EXTEND DISCUSSION OF THIS ITEM FOR 15 MINUTES. MOTION CARRIED UNANIMOUSLY.**

Councilmember Moore observed the ordinance could be amended in the future. She suggested a staff report and public feedback in a year regarding how the process was working.

In response to Mr. Hertrich, Mr. Snyder explained the regulations that were being amended had been in place for 20 years. The proposed changes which have been under review since 2004 were intended to ease the process for the applicant, reduce the cost, reduce the time and were in a large part based on public feedback and BAS. He noted BAS was a moving target and staff would respond with changes as information was received.

In response to Ms. Oates, Mr. Bowman suggested the plan review time be changed from 180 days to one year with the right to request a written extension with no fee. He agreed the ordinance could be changed at any time and staff could report to the Council in a year with regard to how the process worked. He offered to give further consideration to Ms. Hillman's suggestion for upfront peer review.

Councilmember Plunkett commented if there was an option for upfront peer review, the applicant would be taking the risk of additional peer review. Mr. Bowman answered this was a sensitive area and there were numerous issues to be considered during plan review including the geological conditions, structure design, etc. He offered to consider Ms. Hillman's suggestion for upfront peer review but could not at this point promise it would work.

Councilmember Plunkett asked who would be burdened by upfront peer review. Mr. Bowman answered if insufficient information were provided, the applicant could pay twice. The burden on the City was the potential of a double review.

Ord# 3632 -  
ECDC  
Chapter 19.10  
Earth  
Subsidence  
Landslide  
Hazard Area

**COUNCILMEMBER MARIN MOVED, SECONDED BY COUNCIL PRESIDENT OLSON, FOR APPROVAL OF ORDINANCE NO. 3632.**

Councilmember Marin commented during his tenure on the Sound Transit Board, he had opportunity to talk with numerous Civil and Geotechnical Engineers, noting there was potential for a great deal of risk with development in landslide hazard areas. He advised the proposed changes would address health, safety and welfare as well as life and property safety issues.

It was the consensus of the Council to include extending plan review from 180 days to one year and remove "architect" from Section 19.10.060.

Council President Olson spoke in favor of the ordinance, finding it a great improvement.

**MOTION CARRIED UNANIMOUSLY.**

Mayor Haakenson declared a brief recess.

Ratify  
Interlocal  
Agreements -  
Old Woodway  
Elementary  
Site

7. **RATIFY INTERLOCAL COOPERATION AGREEMENT BETWEEN SNOHOMISH COUNTY, CITY OF EDMONDS, AND EDMONDS SCHOOL DISTRICT #15 REGARDING TERMINATION OF PREVIOUSLY EXECUTED INTERLOCAL AGREEMENT, AND RATIFY INTERLOCAL COOPERATION AGREEMENT BETWEEN SNOHOMISH COUNTY AND THE CITY OF EDMONDS FOR ASSISTANCE IN THE ACQUISITION OF ALL OR PART OF THE OLD WOODWAY ELEMENTARY SITE.**

Mayor Haakenson explained he took the Council's will to purchase 5.5 acres at the old Woodway Elementary School site as his authorization to release the Interlocal Agreement with Snohomish County and sign an Interlocal Agreement with Snohomish County which provides for Snohomish County to

**AM-886****7.****Public Hearing on ECDC Amendments to Chapter 19.10  
Edmonds City Council Meeting****Date:** 03/20/2007**Submitted By:** Duane Bowman, Development Services**Time:** 45 Minutes**Department:** Development Services**Type:****Review****Committee:****Action:**

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**Agenda Memo****Subject Title**

**Public Hearing on the proposed amendments to Edmonds Community Development Code Chapter 19.10 dealing with development permit requirements for the Earth Subsidence Landslide Hazard Area of North Edmonds. The proposal includes an updated Landslide Hazard Area Map.**

**Recommendation from Mayor and Staff**

Adopt the proposed ordinance amending Chapter 19.10 of the Edmonds Community Development Code.

**Previous Council Action**

The process of updating Chapter 19.10 of the Edmonds Community Development Code (ECDC) started back in 2004. The goal was to clean-up the regulations and adopt a better map for use in the Earth Subsidence Landslide Area in north Edmonds. A series of action took place in 2004 including:

March 23, 2004 Council Work Session

April 20, 2004 Public Hearing

May 19, 2004 Community Meeting at the Meadowdale Clubhouse

July 27, 2004 Council Work Session (power-point presentation)

September 13, 2004 CS/DS Committee meeting to review draft Ordinance

September 21, 2004 Public Hearing on draft ordinance.

Because the City was undertaking new LIDAR aerial mapping for the entire city, the project was delayed to allow more accurate data to be collected. Landau and Associates was hired to study the new data and prepare a new map based upon the more accurate information.

On October 9, 2006, staff conducted a community meeting at the Meadowdale Clubhouse to discuss LIDAR Findings and introduce the new draft Landslide Hazard Map.

**Narrative**

At the September 21, 2004 Council Meeting, staff was directed to utilize best available science to produce a more accurate Earth Subsidence and Landslide Hazard Area Map. The City's consultant, Landau & Associates, utilized LIDAR based technology to prepare a much more accurate map of the boundaries of the landslide hazard area of North Edmonds.

The purpose of this public hearing is to take public testimony on the proposed ordinance changes, including adoption of a new Earth Subsidence and Landslide Hazard Area Map. Dennis Stettler, from Landau & Associates, will make a presentation and be available for questions at the hearing.

Proposed Administrative Changes to the Earth Subsidence Landslide Hazard Provisions of ECDC 19.10 include:

- Eliminate the need for an Architect Stamp on Building Plans
- Application and Permit Timeline Extensions
- Vicinity Map with greater detail of Adjacent Hazards within 100 feet
- Summary Report Created from Roger Lowe and GeoEngineer's Reports
- TEC (Temporary Erosion Control) Requirements Increased, After Storm Inspections Required and Create Provisions for Seasonal Ground Work Extensions
- Eliminate Mapped Percentages from Map & Adopt the Hazard Zone Approach for Mitigation
- Restrict Rockeries, Swimming Pools, Hot Tubs, Ponds, Watering or Irrigation Systems and Stockpile Fill

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**Revenue & Expenditures  
Fiscal Impact**

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**Attachments**

**Link: Exhibit 1 - Draft Ordinance 19.10 Amendments**

**Link: Exhibit 2 - Landau North Edmonds ESLHA Report**

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**Form Routing/Status**

**Route Seq Inbox Approved By Date**

**Status**

**Form Started By:** Duane Bowman **Started On:** 03/14/2007 03:37 PM

**Final Approval Date:**

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\*Significant changes are underlined.

ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE OF THE CITY OF EDMONDS,  
WASHINGTON, AMENDING THE EDMONDS COMMUNITY  
DEVELOPMENT CODE, CHAPTER 19.10 ENTITLED EARTH  
SUBSIDENCE AND LANDSLIDE HAZARD AREAS,  
PROVIDING A SAVINGS CLAUSE, AND FIXING A TIME  
WHEN THE SAME SHALL BECOME EFFECTIVE.

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WHEREAS, the Earth Subsidence and Landslide Hazard Area is an area of Edmonds that has been geologically active for thousands of years, and

WHEREAS, although public improvements have enhanced the overall stability of property in the area, there remains both an underlying risk of deep seated earth movement and a potential for earth movement based on other factors such as inclement weather, steep slopes, seismic events, acts of man, failures of utility lines and many other factors, and

WHEREAS, the City's policy since 1983 has been to permit development of property in the area consistent with the full extent of the property rights and obligations of its citizens, so long as that development shoulders all costs and liabilities, both current and potential, relating to development of the property, including full investigation of site conditions by competent professionals, design for conditions and notification to the City and the Building Department, neighboring property owners and future purchasers of the property of all risks associated with development and the measures taken to mitigate such risks, NOW, THEREFORE,

THE CITY COUNCIL OF THE CITY OF EDMONDS, WASHINGTON, DO  
ORDAIN AS FOLLOWS:

Section 1. Chapter 19.05 Earth Subsidence and Landslide Hazard Areas is hereby repealed, provided, however, that in the event that a court of competent jurisdiction should strike down the enactment of Chapter 19.10 as provided in Section 2 below, or any portion thereof, Chapter 19.05 Earth Subsidence and Landslide Hazard Areas or any part thereof parallel to the portion struck down, shall be and remain in effect to the extent necessary to prevent any gap in regulation.

Section 2. The Edmonds Community Development Code is hereby amended by the addition of a new Chapter 19.10 Earth Subsidence and Landslide Hazard Areas to read as follows:

**Chapter 19.10**

**BUILDING PERMITS - EARTH SUBSIDENCE AND  
LANDSLIDE HAZARD AREAS**

**Sections:**

- 19.10.000** Statement of purpose and application.
- 19.10.010** Section amendments.
- 19.10.020** Definitions.
- 19.10.030** Minimum required application submissions.
- 19.10.040** Site posting notice, disclosures, declarations, covenants and waivers.
- 19.10.050** Site bonds, contractor general public liability insurance.
- 19.10.060** Review to determine compliance with engineering practice and best available science.
- 19.10.070** Issuance and denial of permits.
- 19.10.080** Site access, professional/special inspection monitoring during construction and final geotechnical report.

**19.10.000 Statement of purpose and application.**

A. This chapter has been enacted in order to provide both substantive and procedural provisions relating to the issuance of permits within designated earth subsidence and landslide hazard areas of the city. It shall be the policy of the city that no permit shall be issued for any site which is found to be unsuitable for improvement due to excessively steep slopes, unsatisfactory foundation support, instability or unsuitable topography for the particular permit requested for issuance. When development occurs on an unstable site, an unreasonable risk of danger may exist to the public, to public improvements or to adjacent property owners. If such a site can be stabilized through the construction of on-site improvements, that risk may be reduced.

B. The construction of professionally designed structures addressing the risks of earth movement, and employing feasible attendant measures (including but not limited to: drainage improvements, specially designed foundations, retaining walls, removal of overburden and other improvements designed to minimize the risk of earth movement, prevent avoidable damage to structures, safeguard adjacent properties, limit risk to inhabitants, and to stabilize the structure in the event of movement) may mitigate and reduce the risk of earth movement on individual properties. Nothing herein shall relieve an owner of any obligation imposed by the State Building Code or City ordinance to take all reasonable and practical measures available to reduce or eliminate the risk or hazard.

C. The IRC/IBC, as promulgated by the state of Washington and required to be adopted by the city, does not specify a standard regarding lot stability. Since the city's request for an interpretation of the uniform building code by the state building code council to designate an acceptable level of lot stability was denied, and because the city wishes to comply with state law requiring that the issuance of building permits be a ministerial and not a discretionary act, the provisions of this chapter have been adopted in order to provide reasonable certainty in the permit issuance process. The purpose of these provisions is not to lessen the minimum requirements of the current adopted building code, but rather to define its requirements for city implementation.

D. These provisions have been adopted in order to establish a policy that permits shall not be issued for any site where a substantial risk of earth subsidence and landslide hazard exist unless:

1. The risks can be defined with reasonable scientific certainty and found to be within acceptable limits as determined in accordance with this chapter.

2. Any hazard associated with the site is scientifically ascertained and fully disclosed through the permit process.

3. Notice of any risk is given to future purchasers through the land records of Snohomish County.

4. Any risks associated with construction and habitation are assumed by the builder and future owners of the site.

5. Adequate indemnification is provided by the builder, and the owner of, the site in order that the general public not assume or bear any portion of the costs or liability associated with the builder's investigation, design and construction, as well as the continuing maintenance of the site by the property owner.

E. Notwithstanding any contrary provision of this ordinance or the IRC/IBC, all applications for permits received for any site, any portion of which lies within an earth subsidence and landslide hazard area, shall be governed by the provisions of this chapter. In addition to all other requirements of these sections, the restrictions and provisions of this chapter shall apply to all building, grading, fill and excavation permits (herein "permits"). Minor permits such as plumbing, mechanical, re-roof and interior alterations are exempt from the requirements of this chapter.

F. All applications for 1910-ECDC permits shall disclose within the geotechnical report whether or not any part of the site lies within, or adjacent to an earth subsidence and landslide hazard area or within a critical area as defined by the city's environmentally critical areas title. The building official may require preliminary investigation by a geotechnical engineer for any applicant whose property lies within or lies adjacent to a known earth subsidence landslide hazard area, or within a known hazard area, or areas with steep slopes or unusual topography or which has a history of earth movement in order to assist the building official in determining whether these provisions should be applied.

G. Nothing in this chapter should or shall be interpreted to guarantee issuance of a permit with respect to any property unless the requirements of the IRC/IBC as amended and interpreted by this chapter have been met.

### 19.10.010 Section amendments.

The provisions of this section amend the 2003 edition of the IRC/IBC and all subsequent revisions adopted by RCW 19.27.031 as the state building code as previously amended by Chapter 19.05 ECDC. All prior substantive amendments have received the approval of the state building code council. All provisions of the IRC/IBC which conflict with this chapter shall be deemed amended hereby, and any ambiguity created, shall be resolved in favor of the specific provision or general intent of said chapter. In addition to the amendments of the IRC/IBC by its alteration, improvement and correction to incorporate the chapter, the following specific code provisions are amended and the substantive and procedural requirements of Chapter 19.10 ECDC are amended by the correction and alteration of the following sections of the IRC/IBC:

#### A. Chapter 1 Administration.

1. Section R105.1.1 Permit Review Applicability. Any permit requested for a site lying in whole or in part within an earth subsidence and landslide hazard area as defined by ECDC 19.10.020(F) shall be processed and acted upon in accordance with the provisions of Chapter 19.10 ECDC.

2. Section R105.2 Work exempt from a permit. ECDC 19.00.010 exemptions A, B, D, E, F, G, J, K, M, and P and ECDC 19.05.010 exemptions A, C, and D shall not apply in any area designated as an earth subsidence and landslide hazard area as defined in ECDC 19.10.020(F).

3. Section R105.3.2 Time limitation of permit application.

- a. Applications, for which no permit is issued within one (1) year following the date of application, shall expire by limitation, and plans and other data submitted for review may thereafter be returned to the applicant or destroyed by the building official. Prior to expiration, the applicant may request a seven (7) month application extension if the approval of the application is affected by the wet weather season from October 1<sup>st</sup> to April 30<sup>th</sup>. The application may only be extended once.
- b. The building official may not extend the time for action by the applicant on an expired application. In order to renew action on an expired application, the applicant shall submit a new application, revised plans based on current adopted codes and pay new plan review fees as well as any outstanding peer review fees incurred to date.

4. Section R105.5 Permit expiration and extension.
  - a. Every permit issued under the provisions and development standards of Chapter 19.10 ECDC shall expire by limitation two (2) years after issuance, except as provided in ECDC 19.00.005(A)(6)(b).
  - b. Prior to expiration of an active permit the applicant may request in writing an extension for a third and final year. If the plans and specifications for the permit extension application are the same as the plans and specifications submitted for the original permit application and provided there has been at least one (1) required progress inspection conducted by the city building inspector prior to the extension, the permit shall be extended. Permit fees shall be charged at a rate of one half the original building permit fee to extend the permit.
  - c. The maximum amount of time any building permit may be extended shall be a total of three (3) years. At the end of any three (3) year period starting from the original date of permit issuance, the permit shall become null and void and a new building permit shall be required, with full fees, in order for the applicant to complete work. The issuance of a new permit shall negate all previous vesting of zoning or building codes. Whenever an appeal is filed and a necessary development approval is stayed in accordance with the Land Use Petition Act, the time limit periods imposed under this section shall also be stayed until final decision.
  - d. The building official shall reject requests for permit extensions if modifications or amendments to the applicable zoning and building codes have occurred since the original issuance of the permit, and modifications or amendments would significantly promote public health and safety if applied to the project through the issuance of a new permit.
5. Section R105.5.1 Recommence work on an expired permit.
  - a. In order to recommence work on an expired permit, a new permit application with full fees shall be submitted to the building official.
  - b. New permit applications shall be reviewed under current zoning and building codes in effect at the time of complete application submittal. If a new permit is sought to recommence work on an expired permit, the new permit shall be vested under the codes in effect at the time of complete application for the new permit, not the expired permit. When additional plan review is required, plan

review fees shall be charged. When applicable peer review and peer review fees shall be assessed.

6. Section R106.3.3.1 Phased approval.

a. The building official may require sequencing of construction phases or activities such as the installation of shoring or temporary erosion control remedies and/or drainage systems, well in advance of grading or foundation construction on a time frame consistent with geotechnical recommendations and peer review. As part of the sequencing process, the building official may impose permit conditions that address site work sequencing to include but not limited to: limiting all excavation, drainage systems and foundation installation to the dryer season between May 1<sup>st</sup> and September 30<sup>th</sup>.

b. When permit conditions such as groundwork are limited by the building official on a particular project, the applicants' geotechnical engineer may submit a letter detailing geotechnical recommendations that portions of work may progress. The letter shall include a detailed work schedule submitted by the general contractor specifying work to be done, timeline, provisions for monitoring and equipment to be used. Any such recommendation shall be based upon best available science and be consistent with standard geotechnical engineering practice. The building official may require a peer review prior to a decision which provides concurrence regarding at least the following issues:

- i. duration of work,
- ii. type of equipment to use,
- iii. additional temporary erosion and sediment control provisions required, and
- iv. applicability of special inspections, and similar issues.

The building official may issue partial permits for phased construction before the entire plans and specifications for the whole building or structure have been approved provided peer review approval has been granted. Phased approval means separate permits for grading, shoring, and foundation may be issued separately, provided concurrent approval is granted by the planning manager, city engineer, and city public works director, when applicable. No phased approval permit shall be issued unless approved civil plans detailing the construction of all site improvements (including, but not limited to: curbs, gutters, sidewalks, paved streets, water lines, sewer lines, and storm drainage) have been signed as approved by the city

engineer. With such phased approval, a performance bond shall be posted with the city pursuant to Chapter 17.10 ECDC, to cover the estimated cost of construction to city standards for the improvements.

B. Chapter 2 Definitions.

1. Section R 202 and IBC 202, are hereby amended to include the definitions set forth in ECDC 19.10.020, incorporated by this reference as fully as if herein set forth.

C. Chapter 4 Foundations.

1. Section R 401.1 General Exception 3. Any permit requested for a site lying in whole or in part within an earth subsidence and landslide hazard area shall be processed and acted upon in accordance with the provisions of Chapter 19.10 ECDC.

D. IBC Chapter 16 Structural design.

1. Section IBC 1601.1.1 Scope. Setting forth the requirements of Chapter 19.10 ECDC, incorporated by this reference as fully as if herein set forth.

E. IBC Appendix J Grading.

1. Section IBC Appendix J 101.2 Scope. Setting forth the requirements of Chapter 19.10 ECDC, incorporated by this reference as fully as if herein set forth.

**19:10.020 Definitions.**

The following terms, when used within this chapter, shall have the following definitions:

A. "Architect" shall mean a person licensed to practice architecture by the state of Washington.

B. "Best available science" shall be determined in accordance with the criteria established in WAC 365-195-900, et seq.

C. "Bluff" shall mean any slope ten (10) feet in height or greater inclined at greater than 1 unit vertical in 1 unit horizontal or 100% slope.

D. "Building Official" shall mean the building official of the city of Edmonds.

E. "Director" shall mean the director of development services as well as any authorized representative of the director.

F. "Earth Subsidence and Landslide Hazard Area" shall mean any area of the city which, by reason of excessively steep slopes, unsatisfactory foundation support, stability or topography has a risk of earth subsidence and landslide hazard in excess of normal allowances. The earth subsidence and landslide hazard area is a subcategory of landslide hazard area (a geologically hazardous area) as defined in city of Edmonds environmentally critical areas title. The hazard area designated as the North Edmonds Earth Subsidence Landslide Hazard Area in the 2007 report of Landau Associates and as may be amended in future adopted earth subsidence and landslide hazard maps are hereby incorporated by this reference and made a part of this chapter as fully as if herein set forth and may be provided in a summary text form. Future adopted landslide hazard maps shall be incorporated by reference upon adoption by ordinance.

Areas designated on the adopted North Edmonds Earth Subsidence and Landslide Hazard Areas Map, or any future adopted landslide hazard map as having a risk of earth subsidence or landslide hazard, areas with slopes as designated in ECDC 25.80.020, areas which exhibit geologic characteristics of earth movement, or any other area identified as having a history of earth movement shall be presumed to have such risk and shall be considered to be an earth subsidence and landslide hazard area. Applicants for permits in such areas shall submit a geotechnical report and complete plan set submittal as required by this chapter to the building official for review.

The presumption of risk shall be rebuttable and the decision of the director or building official that any area lies within, or adjacent to, such earth subsidence and landslide hazard area shall be appealable as a staff decision to superior court in accordance with the Land Use Petition Act.

Copies of the reports and maps shall be maintained in the offices of the building official and shall be available for inspection during all normal working hours. Individual copies of the reports and map may be obtained by the public upon the payment of the cost of reproduction.

G. "General Contractor" shall mean a bonded, insured and registered contractor in the state of Washington. A general contractor shall maintain state required bonding and shall carry general public liability insurance in the minimum amount of one

million dollars. The general contractor shall have a current valid state contractor's license with the state of Washington and a city of Edmonds resident or non-resident business license, whichever is applicable.

H. "Geologist" means a practicing geologist licensed in the state of Washington with at least four (4) years experience as a licensed geologist in responsible charge, including experience with landslide evaluation.

I. "Geotechnical Engineer" means a practicing, geotechnical/civil engineer licensed as a professional civil engineer in the state of Washington who has at least four (4) years of professional employment as a geotechnical engineer in responsible charge, including experience with landslide evaluation.

J. "Landslide Hazard Area" means areas mapped or otherwise defined by the city of Edmonds as environmental critical areas or geologically hazardous areas.

K. "Land Surveyor" means a person who holds a Washington State land surveyor's license.

L. "Lead Design Professional" means the person designated by the applicant to oversee and coordinate the permit review process on behalf of the applicant.

M. "Plan Set Submittal" means a complete application pursuant to ECDC 19.00.015 including:

1. Vicinity Map.
2. Topography map and survey.
3. Civil plans including; grading, temporary erosion and sediment control, storm drainage, utilities and site improvements.
4. Tree cutting/land clearing plans.
5. Geotechnical report.
6. Architectural and structural plans with design calculations, stamped and signed by licensed design professionals of the state of Washington.

N. "Site" means the entire area within the boundaries, as described in a legal description, of the property that is to be developed under the permit for which the applicant has applied.

O. "Stable" shall mean that the risk of damage to the proposed development, or to adjacent properties, from soil instability is minimal subject to the conditions set forth in the reports developed under the requirements of ECDC 19.10.030 and the proposed development will not increase the potential for soil movement.

In the event that any site has an underlying risk of movement based upon deep-seated earth movement or large-scale earth failure which is not susceptible of correction by on-site improvements, such hazard shall not render a site proposed for single-family residences to be presumed unstable for the purpose of this provision if the geotechnical engineer of record and recommendation of any peer reviewer confirm the risk of probability of earth movement is thirty (30) percent or less within a twenty-five (25) year period.

In order to meet the definition of stable the geotechnical report shall include identified hazards for the property and the mitigation measures proposed to reduce or correct the hazards along with measures taken to mitigate potential impacts from the remaining hazards, including all on and off site measures taken to correct or reduce the risk. These shall be fully disclosed to the applicant and future owners, heirs and assigns in the covenant required to be executed in accordance with provisions of this chapter, in which case the defined risk may be approved as an acceptable condition.

P. "Steep Slope" shall be defined and calculated pursuant to Chapter 23.80 ECDC.

Q. "Storm Event" means one (1) inch or greater precipitation in a twenty-four (24) hour period as reported by the National Oceanic and Atmospheric Administration (NOAA).

R. "Structural Engineer" means a person licensed to practice structural engineering by the state of Washington.

S. "Structural Fill" shall mean any fill placed below structures, including slabs, where the fill soils are intended to support loads without unacceptable deflections or shearing. Structural fill should be clean and free draining and should be placed above unyielding native site soils compacted in accordance with an approved geotechnical report prepared utilizing best engineering science.

**19.10.030 Minimum required application submittals.**

A. The applicant shall submit a complete plan set submittal and permit application and specifications for the proposed development as defined in ECDC 19.10.020(M) and this chapter.

B. An Earth Subsidence and Landslide Hazard area permit submittal checklist shall be adopted at the direction of the director and shall be provided to all persons inquiring regarding building permit applications or development permits in the designated earth subsidence and landslide hazard area of North Edmonds. The submittal checklist shall include but not be limited to the requirements contained in city public handouts, written policies, adopted maps, reference maps, summary reports, minimum geotechnical report guidelines, and the following:

1. North Edmonds Earth Subsidence and Landslide Hazard map.
2. Vicinity map.
3. Topographic map and survey.
4. Civil plans (i.e., grading, temporary erosion and sediment control, storm drainage, utilities and site improvements)
5. Tree cutting/land clearing plan.
6. Geotechnical report.
7. Owner and professional declarations.
8. Detailed architectural and structural plans with structural calculations and specifications.
9. Bonds, covenants and contractor public liability insurance in accordance with the detailed requirements stated below.

If any item in the checklist is inapplicable to a particular project, a letter or a report shall be provided to the director stamped by the appropriate licensed design professional, with sufficient information or data to demonstrate why the item is inapplicable. The director may utilize appropriate licensed consultants to determine if generally accepted engineering practice requires submission of an application requirement. When consultants are used to determine if generally accepted engineering practice requires submission of an application requirement the cost of review shall be paid by the applicant.

C. A copy of the North Edmonds Earth Subsidence and Landslide Hazard map shall be included in the submittal checklist materials.

D. The vicinity map shall be suitable for locating the site and include information related to existing conditions on or near the site, based on the topographic map and survey and shall designate all known landslide masses, or debris flows or mud flows on or near the site which could threaten proposed structures within 100 feet, as referenced, noted, described or discussed, in the geotechnical report.

E. The applicant shall submit a topographic map and survey prepared and stamped by a licensed land surveyor, prior to studies and evaluations by the geotechnical engineer, and shall show:

1. Map scale, north arrow, legal description, tax account parcel numbers, easements, lot property lines.

2. Existing grade contour lines, at two (2) foot intervals.

3. All distances between existing structures on the site and approximate distances of existing habitable structures on adjacent sites within 50 feet of property lines (all adjacent sites which could affect or be affected by the proposed development shall be shown).

4. Lowest footing or basement slab elevation of existing and proposed structures on the property and on adjacent properties to the extent that such information is reasonably available and, proposed finish floor elevations.

5. The location of existing sanitary sewers, storm water drainage facilities, septic tanks, drain fields, wells, piezometers, private drainage systems, underground storage tanks, subsurface drains, and other sewer/drainage facility components on, and adjacent to, the site to the extent such information is reasonably available.

6. The location of all existing underground utilities on, and adjacent to, the site including, but not limited to; telephone, cable television, gas, electric and water utilities, vaults, fire hydrants and other cables, wires, meters and drainage pipes to the extent that such information is available.

7. A separate topographical drawing shall be submitted showing proposed grade contours at two (2) foot intervals. This drawing shall include bottom of proposed footing elevations including all stepped footing elevations.

F. Civil engineered plans shall be prepared and stamped by a state of Washington licensed civil engineer pursuant to the provisions of Chapter 18.30 ECDC and current adopted City Stormwater Manual. Geotechnical report recommendations affecting civil plans shall be incorporated into the design and detailed on the plans and shall include:

1. Storm drainage plan with storm drainage calculations.
2. Provisions for building pad and foundation drainage.
3. Temporary erosion and sediment control with drainage and maintenance provisions, and/or other sediment control assemblies.
4. Permanent erosion control with drainage and maintenance provisions.
5. Fill/soil stockpile limitation provisions, specific location, height, protection and maintenance.
6. Slope protection plans, rockeries, retaining walls, ecology blocks, keystone block walls, soldier pile walls, and soil nail walls.
7. Utilities and site improvements.
8. Grading plans, temporary and permanent shoring plans, top and toe of slope setbacks, driveway slope.

G. In lieu of the procedural requirements of Chapter 18.45 ECDC a tree cutting/land clearing plan shall be submitted when significant trees are proposed to be removed. A significant tree is a tree with a trunk diameter of six inches or greater measured 4 feet from the ground. No significant tree shall be removed until the permit is approved.

A detailed landscape plan may also be required in order for the city to evaluate long-term erosion control measures. The plan shall comply with all requirements of the ECDC relating to tree clearing and critical areas review, if applicable. The director may require the project geotechnical engineer's concurrence regarding an approval of a tree cutting/land clearing plan when slope stability is at issue.

H. Included in the permit submittal checklist shall be general and specific soils and geotechnical information, details or analysis required pursuant to IBC 1802. The applicant shall retain a geotechnical engineer to prepare a report and evaluation of the subsurface soil conditions on the site to include:

1. The geotechnical report shall be prepared in accordance with generally accepted geotechnical engineering practices, under the supervision of, and signed and stamped by, the geotechnical engineer. A geologist may be required to be part of the geotechnical consulting staff. The report shall reference the Landau Associates Summary Report (2007) as a technical document reviewed as part of the geologic analysis for the project and discuss all items listed in the permit submittal checklist and shall make specific recommendations concerning development of the site.

2. The opinions and recommendations contained in the geotechnical report shall be supported by field observations and, where appropriate or applicable, by literature review, conducted by the geotechnical engineer. The report shall be based on best available science.

3. The report shall include an analysis of material gathered through appropriate explorations, such as borings or test pits to a minimum depth of 6 feet below the proposed lowest footing or pile, an analysis of soil characteristics conducted by or under the supervision of, the engineer in accordance with the standards adopted by the American Society of Testing and Materials (ASTM) or other applicable standards. The report must provide subsurface data to support the engineer's conclusions regarding slope stability.

4. If the evaluation involves geologic evaluations or interpretations, the report shall be reviewed and approved by a geologist. It shall be the responsibility of the geotechnical engineer to assure that the geologist meets the qualifications listed in the definition section. A letter of concurrence from the geologist shall be included in the report.

5. Based upon the North Edmonds Landslide Area Geology and Slide Mechanisms map and table found in the Landau Associates Summary Report (2007), any lot which contains any portion of any hazard zone or is adjacent thereto, (regardless of whether the proposed building pad is located within any hazard area) shall specifically consider within the geotechnical report, the following types of typical hazard zones and shall specifically note if the hazard is, or is not, present on the site. The report shall address hazards from encroaching landslide materials, hazards from ground failure in material that has not previously failed, and hazards from ground failure in previously failed material. For each landslide hazard identified on a property, the geotechnical engineer shall identify the types of specific processes associated with the hazard

and include design features to reduce such hazards and mitigate impacts.

6. For properties containing or adjacent to bluffs, the geotechnical engineer shall, as a part of the building permit process provide analysis of the rate of retreat of the bluff prepared by a geologist and estimate the bluff retreat amount and regression rate for periods of twenty-five (25) and 125 years. The geotechnical engineer shall address the effects of bluff retreat on the stability of structures and/or improvements. A structure is defined as:

- a. A building intended for human habitation.
- b. A building, structure or other improvement, whose stress or weight, collapse or movement would endanger public safety in the event of slope failure and.
- c. Any improvement on the site which is necessary to mitigate danger to public safety or provide stability.

If the bluff retreat rate analysis shows that the rate of retreat of the bluff is such that any structure or improvement constructed pursuant to the building permit would be unreasonably endangered or reasonably could be anticipated to be endangered by landslide or earth subsidence during its normal useful life, the application shall be denied.

7. Geotechnical letter addressing the provisions of Chapter 23.80 ECDC.

I. The applicant shall submit, consistent with the findings of the geotechnical report, detailed structural plans with corresponding calculations prepared and stamped by the structural engineer of record. When architectural plans incorporate such structural details said plans shall be stamped and signed by the structural engineer of record. All other architectural plans may be prepared by an architect, designer, builder or lay person.

J. The applicant shall submit documentation of required bonds, frozen funds or adequate instrument of credit. The applicants shall submit a copy of the contractor's general public liability insurance pursuant to ECDC 19.10.050.

K. The applicant shall submit declarations, disclosures, covenants and waivers as required by ECDC 19.10.040.

**19.10.040 Site posting notice, disclosures, declarations, covenants and waivers.**

A. Notices of permit submittal application with the city shall be posted pursuant to ECDC 20.91.010B(b). Such notices shall be conspicuously posted and maintained at each street frontage at the applicant's expense and direction. Notice of permit issuance or denial shall be conspicuously posted as required above. Upon each posting a ten (10) day appeal period shall commence. Appeals shall be heard at Snohomish County Superior Court in accordance with the Land Use Petition Act, and no other appeal shall be permitted.

B. At permit application submittal, the applicant shall submit a written declaration with the permit application that includes the statement that the accuracy of all information is warranted by the owner/applicant in a form which relieves the city and its staff from any liability associated with reliance on such submittals.

The declaration shall also state that the owner/applicant understands and accepts the risk of developing in an area with potential unstable soils and that the owner/applicant will advise in writing any prospective purchasers of the site, or any prospective purchasers or residential lessees of structures or portions of a structure on the site of the slide potential of the area.

The owner applicant shall also acknowledge that he, she or they understand and accept the need for future monitoring and maintenance of the property as described in the final geotechnical report when future monitoring and maintenance may affect slope stability over time. While an application may reference the reports of prior public consultants to the city, all conclusions shall be those of the owner/applicant and his or her professionals.

C. The plan set submittal shall include a disclosure letter from the geotechnical engineer and civil engineer who prepared the geotechnical report and civil plans, stating that in his or her judgment the plans and specifications submitted for the project conform to the recommendations in the geotechnical report, and that the risk of damage to the proposed development, or to adjacent properties, from soil instability will be minimized subject to the conditions set forth in the report; and the proposed development will not increase the potential for soil movement.

Minimized shall mean that the applicant has utilized best available science and commonly accepted engineering and architectural practice to minimize, to the extent possible, the risks associated with development of the property.

The geotechnical engineer shall review the erosion and sediment control plan and provide a statement about the adequacy of the

plan with respect to site conditions and report findings. The geotechnical engineer's statement shall also include an identification of landslide hazards applicable to the site, the on-site measures taken to correct or reduce the hazards, as applicable, and measures taken to mitigate potential impacts from the remaining hazards.

For sites where the hazards are not mitigated or where the risks from deep-seated or large-scale earth movement cannot be practically reduced by individual lot owners, the geotechnical engineer shall prepare a statement identifying what design measures will be taken to mitigate the risk to structures, adjacent properties, and inhabitants in the event of deep-seated or large-scale movement. The statement shall specify any risks from earth movement that are not fully mitigated by design measures and render an opinion as to whether the site will be stable within the meaning of the ordinance following installation of all proposed improvements. The statement will clarify to current and future owners what measures were installed to reduce risks and what hazards could not be addressed by individual lot development.

D. Further recommendations, signed and sealed by the geotechnical engineer shall be provided should there be additions or exceptions to the original recommendations based on the plans, site conditions or other supporting data. If the geotechnical engineer who reviews the plans and specifications is not the same engineer who prepared the geotechnical report, the new engineer shall, in a letter to the director accompanying the plans and specifications, express agreement or disagreement with the recommendations in the geotechnical report and state that the revised plans and specifications conform to the new recommendations.

E. The plan set submittal shall include a disclosure letter or notation on the design drawings by the structural engineer of record stating that; he has reviewed the geotechnical report(s), that he understands its recommendations, has explained or has had explained to the owner/applicant, the risk of loss due to slides on the site, and that he has incorporated into the design the recommendations of the report and established measures to reduce the potential risk of injury or damage that might be caused by any risk of earth movement referenced in the report. The statement shall note any risks, hazards, potential problems from earth movement that are not fully mitigated by design measures.

F. The owner shall execute a covenant, (in a form provided by the city) to be submitted with the application (with necessary fee) to be

filed with the Snohomish County Auditor. The director shall cause such completed covenant to be so filed. A copy of the recorded covenant shall be forwarded to the owner. This covenant shall be a covenant running with the land, which shall at a minimum include:

1. A legal description of the property.
2. A statement explaining that the site is in a potential earth subsidence and landslide hazard area, that the risk associated with the development of the site is set forth in permit file No. \_\_\_\_\_ with the city of Edmonds building department, that conditions or prohibitions on development may have been imposed by the city in the course of permit issuance, and referencing any features in the design which will require maintenance or modification to address anticipated soil changes. The covenant may incorporate by reference the statements and conditions to be observed in the form proposed by the owner/applicant's geotechnical engineer, geologist, architect and/or structural engineer as approved after the review set forth in ECDC 19.10.060.
3. A statement waiving and promising to indemnify and hold harmless the city of Edmonds, its officers and employees from any claims the owner/applicant and his/her successors or assigns may have for any loss or damage to people or property either on or off the site resulting from soil movement and arising from or out of the issuances of any permit(s) authorizing development on the site, as well as due to any act or failure to act by the indemnitor, its agents or successors in interest under or following issuance of the permit.
4. The date of permit issuance and permit number authorizing the development.

**19.10.050 Site bonds and contractor general public liability insurance.**

**A. Site bonding requirements.**

1. A surety bond, in an amount to be determined by the director, executed by a surety company authorized to do business in the state of Washington shall be posted by the owner/applicant or general contractor to assure the restoration of any areas on the site, or in the surrounding area, disturbed or damaged by slides during construction, and to ensure completion of the work authorized by the permit, or, if the work is not completed, to assure that the site will be restored to a safe and stable condition at least equal to the safety and stability of the site prior to commencement of work

under the permit. The bond will be exonerated upon occupancy approval of the building permit by the building official.

2. In lieu of the surety bond, the owner/applicant or general contractor may propose to file a cash deposit or an instrument of credit with the director in an amount equal to that which would be required in the surety bond, and similarly conditioned.

B. Public liability insurance. The general contractor of record shall carry general public liability insurance effective through final occupancy in the minimum amount of one million dollars, and which shall name the city as an additional named insured, against the injury, death, property damage and/or loss arising from or out of the city's involvement in the permitting process for the project.

C. Homeowner insurance. The city strongly recommends that each property owner maintain policies of liability insurance, adequate to provide sufficient funds, to indemnify and hold harmless third parties in the event of earth subsidence or landslides emanating from or across the owner's property.

**19.10.060 Review to determine compliance with engineering practice and best available science.**

A. The city shall require professional peer review of the plan set submittals accompanying the permit application by a civil engineer, geotechnical engineer, geologist, architect, and/or structural engineer as may be necessary and determined by the building official or director, in order to determine whether the plan set submittals were prepared in accordance with generally accepted engineering practice or the practice of the particular engineering or design specialty and are based upon best available science. The full cost of such peer review shall be paid in full by the owner/applicant within thirty (30) days of billing by the city. Failure to make timely payments shall result in a stay of city plan review services on the application.

B. This requirement may be selectively waived at the discretion of the director provided the applicable project geotechnical engineer, civil engineer or structural engineer provides written concurrence, determination, details, facts and/or data that individual site conditions warrant an exemption from outside peer review. Once waived, the building official shall not be required to inquire further into the adequacy of any report, plans, or data, but rather may rely upon the submittals as warranted by the owner/applicant as

reviewed by the city's consultant. Nothing herein shall relieve the owner/applicant of the obligation to submit a complete application fulfilling all the requirements of this chapter and the IRC/IBC.

C. The final recommendation of the peer review regarding whether a submittal complies with generally accepted practice and/or is based on best available science shall be binding upon the building official. Such recommendation may be appealed to Superior Court under the Land Use Petition Act.

#### **19.10.070 Issuance and denial of permits.**

A. Permit Issuance. The following requirements must be satisfied before a permit will be issued:

1. An approved geotechnical report has been submitted and approved.
2. Plans and specifications have been submitted incorporating the recommendations of the geotechnical report and said plans have been approved.
3. The required declarations, disclosures, covenants and waivers have been submitted and approved.
4. Required bonds, cash deposits and public liability insurance have been posted with the city.
5. When peer review has been required, all submittals have been determined to have been prepared in accordance with generally accepted engineering practice.
6. Peer review concurrence for permit issuance has been received by the building official.
7. All other provisions of ECDC Titles 16, 18 & 20 have been reviewed and approved by the appropriate city official.

B. Permit denial. The following criteria shall result in the denial of issuance of permit:

1. Building, grading and excavation permits for construction on land which the director finds to be unsuitable for improvement due to excessively steep slopes, unsatisfactory foundation support, instability or unsuitable topography, or

2. The resulting development would increase the potential of soil movement resulting in an unacceptable risk of damage to adjacent properties or an unreasonable risk of damage to the proposed development, or

3. Excessive flooding, seepage, high water table, or inadequate drainage, or

4. If the bluff retreat rate analysis shows that the rate retreat of the bluff is such that any structure or improvement would be unreasonably endangered or reasonably could be anticipated to be endangered by landslide or earth subsidence during its normal useful life, the application shall be denied. A structure is defined as:

- a. A building intended for human habitation,
- b. A building, structure or other improvement, whose stress or weight, collapse or movement would endanger public safety in the event of slope failure and,
- c. Any improvement on the site which is necessary to mitigate danger to public safety or provide stability, or

5. Other hazardous conditions posing an unreasonable risk to public health, safety, or welfare, or

6. Where the noted site dangers or geologic hazards are not minimized to the extent possible by the use of best available science and generally accepted engineering and architectural practice, or

7. If the applicant's geotechnical engineer determines that there is a greater chance than thirty (30) percent in a 25 year period that landslide damage on site will occur.

C. In making a determination of permit denial, the director shall consider not only the land which is the subject of the application, but in addition, the surrounding area which would be adversely affected if the permit were granted. Permit denial shall be made in writing to the owner/applicant when the site cannot be rendered stable as defined in ECDC 19.10.020(O). This decision and other preliminary determinations as referenced herein shall be appealable to Snohomish County Superior Court in accordance with the Land Use Petition Act. No other appeal shall be permitted. The appeal period shall commence upon the date of mailing of any preliminary or final decision, or upon posting, if posting is the only notice a party with standing receives under the terms of this chapter.

D. Prohibitions. Because of the relationship of groundwater to stability, the discharge of collected surface water or storm water to the ground surface or subsurface is prohibited on sites within the earth subsidence and landslide hazard area. In addition, the following construction, buildings, or improvements are hereby prohibited within the earth subsidence and landslide hazard area:

1. Swimming pools or hot tubs.
2. Ponds or other artificial impoundments of water.
3. Watering or irrigation systems.
4. Temporary or permanent stockpile of fill on top or bottom of slopes.
5. Rockeries.

E. Waiver. The prohibitions established in paragraph D above shall apply unless the property owner requests a waiver based upon the written analysis of a geotechnical engineer which clearly establishes that the proposed improvement will have no reasonable likelihood of triggering or otherwise contributing to any landslide hazard or earth subsidence risk either on the site or in the neighboring earth subsidence or landslide hazard area.

In any review or appeal of the director's or building official's denial of a waiver to construct an otherwise prohibited improvement, the burden of proof shall always be upon the applicant to establish by a clear preponderance of the evidence, that no such risk will be created by the improvement. Any geotechnical engineering report provided in any review shall consider not only the risk incurred due to or during construction of the otherwise prohibited improvement, but also the potential impacts due to failure to maintain the improvement, damage through reasonably foreseeable events such as earthquakes or other acts of God, or the reasonably foreseeable negligence of the owner or future owners. The director may utilize peer review consultants.

**19.10.080 Site access, professional/special inspection monitoring during construction and final geotechnical report.**

A. Site clearing and grading. The owner/applicant or contractor shall secure the building official's approval before entering an earth subsidence and landslide hazard area site with excavating or other grading and clearing equipment to clear, remove trees or grade for any purpose including the creation of access to the site.

The building official may condition such access approval if site conditions are warranted and when discretionary approval permits are required. As part of the approval process the building official may impose conditions that address site work issues; such measures could include but are not limited to limiting all excavation and drainage installation to the dryer season between May and the end of September, or sequencing activities such as the installation of drainage systems well in advance of construction.

Requests for early site access in advance of building permit approval or in the time period between October 1<sup>st</sup> and April 30<sup>th</sup> for any purpose shall be submitted to the building official accompanied by written concurrence of the owner/applicant's geotechnical engineer of record.

The building official may utilize peer review consultants to determine whether the request is based on generally accepted engineering practice and is reasonable with regard to time-frame to complete the work, types of equipment proposed to perform the work, length of exposure of slopes, and adequacy of site monitoring and temporary erosion control measures. When such peer review is utilized the applicant is responsible for the peer review fee.

B. Reporting authority. The owner/applicant shall retain a geotechnical engineer to monitor the site during construction. The owner/applicant shall preferably retain the geotechnical engineer who prepared the final geotechnical report in the plan set submittal and who has reviewed the approved plans and specifications.

If a different geotechnical engineering consultant is retained by the owner/applicant, the new geotechnical engineer shall submit a letter to the director stating that he or she has read all reports and recommendations and reviews to date and state whether or not he or she agrees with the opinions and recommendations of the original geotechnical report and peer review comments. Further recommendations, signed and sealed by the new geotechnical engineer, and supporting data, shall be provided should there be exceptions or changes to the original recommendations that would effect the approved plans.

C. Construction monitoring, special inspections.

1. Inspection requirements. During the period from October 1<sup>st</sup> to April 30<sup>th</sup>, when on site, the owner/applicant or designated erosion sedimentation control (ESC) site supervisor shall perform erosion

and sedimentation control inspections. Records of installed ESC facilities shall be maintained by the erosion and sedimentation control supervisor and copies of all ESC records shall be provided to City inspectors upon request.

ESC facilities on inactive sites (sites where no work will be performed for more than three (3) consecutive days) shall be inspected weekly by the erosion and sedimentation control supervisor. During all other times of the year, weekly inspections by the ESC site supervisor are required and shall be recorded.

2. Weekly field reports. The geotechnical engineer shall monitor, during construction, compliance with the recommendations in the geotechnical report including; site excavation, shoring, temporary erosion control, soil support for foundation, piles, sub drainage installation, soil compaction and other geotechnical aspects of the construction. Unless otherwise approved by the director, the specific recommendations contained in the geotechnical report shall be implemented by the owner/applicant. Omissions or deviations from the approved geotechnical report and civil plans shall be highlighted to the city in a separate report. All reports shall be submitted to the city on a weekly basis for review. Failure to submit required reports may result in the issuance of a stop work order.

3. Storm events. During all work periods, special inspections shall be performed after storm events as defined in ECDC 19.10.020(Q). The storm event report shall be provided within one week of the event.

D. Final construction report. The geotechnical engineer of record shall prepare a final written report to be submitted to the building official, stating that based upon his or her professional opinion, site observations and final site grading that the completed development substantially complies with the recommendations of the geotechnical report and with all geotechnical related permit requirements as shown on the approved plans.

Substantially complies means that the completed development offers at least the level of stability and safety, on and off site, as was afforded by the original recommendations and report. Recommendations to the owner/applicant shall be included in the report for future monitoring and maintenance of the property including drainage, tightlines, catch basins, berms, retaining wall drainage, hazard mitigation improvements, slopes, bluffs, vegetation, and permanent erosion control that effect slope stability

over time. Occupancy of the residence shall not be granted until the report has been reviewed and accepted by the building official.

Section 3. Severability. If any section, sentence, clause or phrase of this ordinance should be held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other section, sentence, clause or phrase of this ordinance.

Section 4. Effective Date. This ordinance, being an exercise of a power specifically delegated to the City legislative body, is not subject to referendum, and shall take effect five (5) days after passage and publication of an approved summary thereof consisting of the title.

APPROVED

\_\_\_\_\_  
MAYOR GARY HAAKENSON

ATTEST/AUTHENTICATED

\_\_\_\_\_  
CITY CLERK SANDRA S. CHASE  
APPROVED AS TO FORM:  
OFFICE OF THE CITY ATTORNEY:

BY \_\_\_\_\_  
W. SCOTT SNYDER

FILED WITH THE CITY CLERK:  
PASSED BY THE CITY COUNCIL:  
PUBLISHED:  
EFFECTIVE DATE:  
ORDINANCE NO. \_\_\_\_\_

**SUMMARY OF ORDINANCE NO. \_\_\_\_\_**

of the City of Edmonds, Washington

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On the \_\_\_\_ day of \_\_\_\_\_, 2004, the City Council of the City of Edmonds, passed Ordinance No. \_\_\_\_\_. A summary of the content of said ordinance, consisting of the title, provides as follows:

AN ORDINANCE OF THE CITY OF EDMONDS, WASHINGTON, AMENDING THE EDMONDS COMMUNITY DEVELOPMENT CODE, ~~REPEALING CHAPTER 19.05 EARTH SUBSIDENCE AND LANDSLIDE HAZARD AREAS, AND ENACTING IN ITS PLACE CHAPTER 19.10 EARTH SUBSIDENCE AND LANDSLIDE HAZARD AREAS,~~ PROVIDING A SAVINGS CLAUSE, AND FIXING A TIME WHEN THE SAME SHALL BECOME EFFECTIVE.

The full text of this Ordinance will be mailed upon request.

DATED this \_\_\_\_ day of \_\_\_\_\_, 2007.

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CITY CLERK SANDRA S. CHASE

**DRAFT**