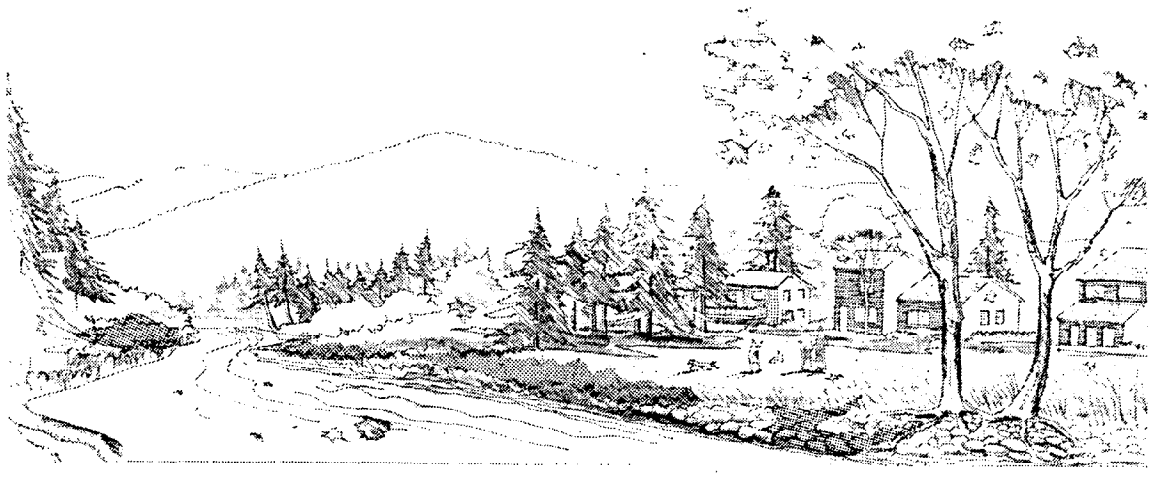
Revised DRAFT

SNOHOMISH COUNTY

Aquatic Resource Protection Program



Prepared by the Snohomish County Planning Division
April,1989

PLEASE NOTE: The following notation was not placed on the cover sheet of the Draft document, but will be clearly displayed in the Final report.

"The preparation of this report was financially aided through a grant from the Washington State Department of Ecology with funds obtained from the National Oceanic and Atmospheric Administration, and appropriated for Section 306 of the Coastal Zone Management Act of 1972."

Snohomish County Planning

Greg Williams, Manager
5th Floor, Administration Bldg.
Everett, Washington 98201
Willis D. Tucker, County Executive

Dear Program Reviewer:

The Snohomish County Planning Division has completed several draft documents which collectively represent the county's new Aquatic Resources Protection program. Several modifications have been made to these documents as a result of previous public review and input. These changes are generally noted within the documents.

The Snohomish County Planning Commission will begin public hearings on this program beginning at 6:00 p.m. on Tuesday, April 25th. The meeetings will be held in the Ginni Stevens hearing room, 1st. floor, Snohomish County Administration Building.

Testimony will be taken on two aspects of the proposed program. Testimony pertaining to the adequacy of the county's draft SEPA documents will be received. Following the initial hearing, the staff will respond to this testimony and finalize its position on the SEPA document. The Planning Commission will then review this finalized SEPA document at a subsequent hearing and provide a recommendation concerning its adequacy.

Testimony will also be taken concerning the general program content if time permits. Otherwise, an opportunity for general testimony will be provided at a subsequent hearing. The date and time for the subsequent hearing will be established later. The Planning Commission will continue holding hearings until all interested individuals have been given an opportunity to testify.

Thank you again for your response to this important planning program. If you have questions concerning any aspect of the various program documents, please contact Lorna Campion at 259-9313 or Gary Reiersgard at 259-9508.

Sincerely,

Greg Williams

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Aquatic Resource Protection Program
Summary Description

The proposed Aquatic Resource Protection Program consists of four primary components:

1. Aquatic Resource Policy Document
2. Title 24, Grading and Drainage Ordinance
3. Title 30, Aquatic Resource Protection Ordinance (including technical appendices)
4. Code amendments to various land use ordinances.

All program components are interrelated, either substantively or procedurally and when considered together, comprise the provisions necessary to ensure an adequate level of protection for existing aquatic resources in the county.

The Aquatic Resource Policy Document provides both general and specific policies pertaining to the preservation and protection of streams and wetlands. These policies provide the basis for ordinance implementation and will be incorporated into the county's comprehensive land use plan. The policy document also includes a discussion of the importance of aquatic resources in Snohomish County and their current susceptibility to environmental impact.

Proposed Title 24, Grading and Drainage Ordinance is a compilation of existing Chapter 17.04, SCC and Title 24, SCC provisions. The existing grading and drainage control regulations have been integrated into a single title with the addition of provisions pertaining to clearing in critical areas. Generally, development proposals requiring the review and approval of drainage plans will also be subject to the provisions of proposed Title 30, Aquatic Resource Protection Ordinance.

Proposed Title 30, Aquatic Resource Protection Ordinance is a new ordinance containing aquatic resource preservation and protection regulations including, definitions, aquatic systems (streams and wetlands) identification and classification procedures (as technical appendices), preservation thresholds, buffer requirements, proposed project review and permitting procedures, mitigation provisions, and variance procedures.

A variety of amendments to existing land use ordinances are proposed which will allow increased project design flexibility when aquatic systems are present on a project site. The amendments generally allow additional project design flexibility without decreasing overall project development potential. An expanded use of the lot size averaging and Planned Residential Development concepts is proposed, together with the potential for increased

building heights and decreased landscaping requirements when aquatic systems are preserved on a project site. Ordinance enforcement provisions specific to aquatic resource protection are also proposed.

Revised DRAFT
AQUATIC RESOURCE PROTECTION PROGRAM

April, 1989

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Snohomish County Planning Division, 5th Floor, County Administration Bldg. Everett, WA 98201-4060

I.

DRAFT AQUATIC RESOURCE POLICY DOCUMENT

The proposed aquatic resource protection policies will be included as an element of the County's Comprehensive Land Use Plan. The various existing subarea plans will be amended to incorporate these policies, which will supersede any existing policies now pertaining to aquatic resource protection. The policies therefore, will apply uniformly throughout the County and will provide direction for activities which may occur in, or adjacent to, aquatic systems.

WORKING DRAFT

AQUATIC RESOURCE PROTECTION PROGRAM

DISCUSSION AND POLICIES

INTRODUCTION

WATERSHED PERSPECTIVE

> "Although the river and the hillside do not resemble each other at first sight, they are only extreme members of a continuous series and when this is appreciated, one may fairly extend the "river" all over the basin and up to its very divides. Ordinarily treated, the river is like the veins of a leaf; broadly viewed, it is like the entire leaf." W.M. Davis 1899.

Snohomish County residents all share one thing in common: they live in a watershed. From a macro view the watershed extends from the crest of the Cascades to the shores of Puget Sound. On a smaller scale, a watershed may be a several square mile area that drains into a small tributary to one of the Snohomish County's rivers.

The myriad of streams, rivers and wetlands that drain watersheds throughout Snohomish County are extremely valuable resources. They provide recreational opportunities to area residents and are frequently viewed as aesthetically pleasing amenities valued by property owners. They provide a continuous source of clean water for our lakes, reservoirs and Puget Sound. In addition to being assets to Snohomish County residents, streams and their riparian corridors provide habitat for a large variety of fish and wildlife.

Water resources such as streams, rivers, lakes and wetlands are often the focal points of the watershed. They are a source of great joy to many, but they are also a source of controversy and complexity for those making land use decisions. Many of the activities which impact our water resources occur some distance away, upslope in the watershed. Such connections are not always obvious.

In urban areas, impervious surfaces, such as rooftops, and parking lots often replace open space and wetlands resulting in increased run-off, flooding, property damage and habitat loss. Typical urban streams have lost their natural meanders and vegetated overhangs which provided excellent shelter for spawning salmon. Large spawning salmon are particularly vulnerable in channelized streams with armored banks. Where riparian vegetation is absent, fish are unable to hide. Dogs, children and unknowing adults may harm the fish before they have a chance to spawn.

Other land use activities affect the riparian zone, eliminating many of the benefits that it provides to salmonids and wildlife. Common logging practices often involve clear cutting timber to the water's edge. In timber harvest areas some vegetation is required to be left around fish bearing streams, yet no protective vegetation is required on the smaller tributaries of the fish bearing waters or around wetlands.

Clearing land for livestock grazing eliminates riparian zones. Animals using the stream for drinking water, trample and eat the bank vegetation. This leads to bank erosion, forcing the stream into a braided, or wide, shallow, channel. Ditching in agricultural fields, either to drain or water fields, introduces massive amounts of sediments into streams.

Road building, whether for logging or urbanization, eliminates the vegetation and routes intermittent streams into straight ditches or pipes. The channelized streams carry the water much more swiftly, resulting in erosion and less opportunity for filtering of sediments.

Most of the damage to our County's streams, lakes and wetlands has occured as a result of ignorance rather than intent. Many land use decisions are made without taking into consideration ecological relationships. The following sections will provide some insight into the ecological functions of aquatic systems, their relationship to upland areas and their susceptibility to disturbance.

AQUATIC RESOURCE PROTECTION

Discussion:

STREAM AND RIPARIAN HABITAT ECOLOGY

The majority of Snohomish County's streams are utilized by salmon and trout (salmonids) and other species of fish for spawning, rearing or year-round residency. The highest quality fish habitat is found in those streams that have a naturally meandering stream channel with ample supplies of clean water and clean gravel and stream-side vegetation which provides food, shade, and other essential habitat components.

The vegetation bordering a stream which is occasionally flooded, or at least wet, due to its proximity to a stream may be called a "riparian" habitat. Species inhabiting this zone face a number of extreme conditions. Depending upon the variability of the summer/winter water table, plants may need to be not only water tolerant, but also drought tolerant. They must have a "holdfast" root system for maintaining their position during winter floods.

The riparian zone, with its life-giving water supply, experiences rapid growth and decomposition rates. The high level of primary productivity and subsequent decomposition of highly nutritious litter provides an extensive food base for insects, birds, reptiles, fish and mammals.

Salmonids are reliant on the presence of riparian vegetation. By far the largest nutrient source for salmonids originates from outside the stream. This external input of organic and inorganic material provides a food base for a multitude of aquatic insects and other invertebrates. Leaf material is shredded and eaten by herbivores while decomposers break down material into smaller nutrient supplies which feed more herbivores. Chunks of vegetative matter, herbivores, decomposers and their predators are, in turn, eaten by salmonids.

Many aquatic insects use stream-side vegetation during their emergence and in the adult stages of their life cycles. Representative salmonid food species are the caddisfly, mayfly, and stonefly. The diverse stream-side habitats created by vegetation (such as rootwads amidst an overhanging bank or log and twig debris) harbor a further food supply for fish. Terrestrial insects which have been blown in, or have fallen in, can be a significant food source for fish.

One of the components of the riparian ecosystem is the wetland adjacent to the stream or river. These riparian habitats can be important refuges for anadromous and resident fishes. The adjacent wetlands, swamps, and ponds are formed on old abandoned river meander bends, or behind gravel bar scars and swales. The water that feeds these wetlands usually comes from springs or other forms of groundwater sources, small creeks, or just collected from a high water table in winter. Once these wetlands are filled (charged), water spills into the river at the downstream ends of meander bends. These habitats are colonized in the spring and fall by coho salmon and cutthroat trout, as they seek refuge from the turbulence of the main river. Research indicates that while in these habitats the fish benefit from improved growth and survival.

Stream-side vegetation can be important in maintaining water temperature suitable for salmonid survival. Because streams are more susceptible to temperature changes than rivers, it is most critical to have their banks vegetated. Streams have a large percentage of surface area relative to overall volume and the water is more vulnerable to heat from the sun.

Riparian vegetation also acts as a buffer or "filter" against sediment and debris which would otherwise be deposited in the stream. Suspended sediment can cause damage to fish gill filaments and actually inhibits the ability of the gills to aerate blood. Suspended sediment also reduces visibility making it more difficult for fish to locate food. Sediment that settles on the substrate reduces the flow of intergravel water, thereby limiting the oxygen supply to the eggs and alevins (newly hatched salmonids) and hindering the removal of waste products. It may also prevent the emergence of newly hatched fry up through the gravel. Large quantities of sediment smother organisms upon which fish feed and may suffocate everything on or in the substrate.

Riparian vegetation offers salmonids shelter from predators. The stabilization of stream banks by extensive rooting results in undercut banks. Resulting overhangs, further exaggerated by grasses and shrubs, offer a shaded hiding place for fish. Overhangs also define territorial or predation zones for fish. The quality of the zone depends upon the scale of the undercut, depth of the water and existence of rootwads. Overhangs serve as resting or holding areas for fish so they don't have to constantly fight the current.

Many of the essential in-stream fisheries habitat features

(pools, riffles) are structured by large organic debris (logs, rootwads, large branches). These woody features of salmon streams are important in forming the pools, stabilizing spawning riffles, and providing cover from predators. The streams rely on a continuous input of this material from the riparian zone.

The diversity of tree and plant species in the riparian zone offer various advantages for salmonids. The supply of litter is much greater from deciduous trees and shrubs than from evergreen conifers. Conifers, however, protect stream habitat by their moderating influence on temperature extremes, precipitation and winds.

The riparian zone is utilized by wildlife to a far greater extent than any other type of habitat. This reliance can be attributed to the density, diversity, and structure of vegetation in conjunction with the topography of riparian areas. The combination of these factors provides more habitat niches for occupation by wildlife than any other type of habitat. Also, food, water, cover and space are readily available to wildlife, all in close juxtaposition. The presence of snags and large trees in the riparian area makes them particularly valuable to cavity nesters and perching raptors.

The presence of water, a life requirement for all organisms, is one of the chief attractions of the riparian zone. Food for fish and wildlife can be found in greater abundance and variety in riparian ecosystems than in uplands. Insects that sustain insectivorous birds and other wildlife are readily available. In turn large predators are attracted by the presence of their prey species.

The riparian zone provides a travel corridor used as a regular highway by many wildlife species during migration from summer to winter ranges, or to move between feeding, breeding, rearing, hiding, and resting habitats within their home ranges.

WETLAND ECOLOGY

Wetlands are areas of transition between aquatic and upland habitats. They are often associated with rivers, streams, lakes and Puget Sound shorelines. Wetlands are often referred to as marshes, swamps or bogs. Since the early days of settlement in Snohomish County many acres of wetlands have been lost through diking, draining and filling. Nearly 90% of

the wetlands that once covered the Snohomish River floodplain have been converted to agricultural and industrial uses, (Boule, 1985) Wetlands, once viewed as "waste lands" are today understood to be a integral and essential link in the hydrological cycle.

Wetlands play a number of important roles including flood control, stormwater control, sediment and pollution control, surface water supply, aquifer recharge/discharge, fish and wildlife habitat and education and recreation.

Flood Control.

Wetlands serve to lessen flood impacts in several ways. Riparian wetlands and the adjacent floodplain lands provide a floodway for the movement of floodwaters. As floodwaters spread out across the floodplain their velocity and wave height is reduced. Peat soils and wet-tolerant vegetation in wetlands acts as a sponge absorbing floodwaters and releasing them over time, thereby lessening adjacent and downstream impacts. Sediments carried in the floodwaters settle out in wetlands and floodplains, saving the expense of costly dredging of downstream navigational channels. Wetlands actually lessen the height of flood stages which in turn saves millions of dollars in flood damage repair.

Stormwater, Sediment and Pollution Control.

Wetlands intercept stormwater runoff before it enters lakes or streams. Pollutants and sediment contained in the runoff are absorbed and filtered out by wetland soils and wetland vegetation. However, wetlands are not entirely immune to the input of such materials. Wetlands that receive stormwater containing high burdens of silt and organic debris will become converted to uplands, in an acceleration of the natural process of eutrophication. Some pollutants may be cycled through the wetland and transported to adjacent aquatic systems when the wetland vegetation that absorbed the pollutants dies. Therefore it is necessary to treat urban stormwater by biofiltration before it enters wetlands to avoid such impacts.

Surface Water Supply.

During times of summer low flows, streams are dependent upon the ability of wetlands within their watersheds to store and slowly discharge waters to maintain in-stream flows. This role is the opposite of the role performed by wetlands during

months of winter storms and high flows when water moves from the stream to the wetlands and floodplains. Unfortunately, a number of important salmon streams in Snohomish County, including portions of North Creek, have in recent years gone completely dry for many weeks in the summer. Loss of tributary wetlands upslope in the watershed is the likely cause.

Groundwater Recharge/Discharge.

In many parts of western Washington where watersheds extend from the slopes of the Cascades to Puget Sound and where rainfall is abundant, the interaction between rainfall, surface water, wetlands and groundwater is ever-changing. During dry summer months wetlands that are located over aquifers are most likely acting to recharge groundwater supplies. During wet winter months the same wetlands may serve as discharge points for the same aquifer. Therefore, retention of wetlands in a natural, unpolluted condition is essential for providing clean, abundant drinking water to those areas dependent on aquifers and well systems.

Fish and Wildlife Habitat

Wetlands are especially important for the habitat they provide for fish, wildlife, and waterfowl. The basis for the high productivity of most wetlands is a food chain based on detritus, or decaying plant and animal material. Detritus is fed upon by microbial decomposers. These minute organisms provide food in turn for larger invertebrates such as the larvae of midges, mosquitos and crane flies. The populations of insects and other invertebrates provide an ample food supply for large numbers of fish and birds.

In addition to an abundant food source wetlands provide other important habitat components used by a wide variety of wildlife. Snags and downed woody debris are used for perch sites, nesting and cover. The edge between wetland and upland as well as between different plant communities of varying heights provides structural diversity that allows for utilization by a wide variety of wildlife.

Many species of ducks, shorebirds, and raptors feed, breed and nest in wetlands. Snohomish County's wetlands support a number of sensitive species which have merited special attention from the Washington Department of Wildlife including

great blue heron, osprey, and bald eagle. River otters, beavers, mink and raccoon are species of mammals dependent on wetlands and riverine systems for their existence.

Many species of recreationally and commercially important species of fish and shellfish use wetlands, both freshwater and intertidal, for spawning and nursery areas. Young salmonids retreat to the depths of beaver ponds and oxbow wetlands when stream temperatures elevate during the summer months. Wetlands provide shelter to the young of many species seeking to escape larger predators.

The high biological productivity and abundant water make wetlands prime feeding and resting areas for migratory waterfowl. A decline of waterfowl populations throughout the western hemisphere has been linked to loss of prime breeding and feeding wetland areas.

Education/Recreation/Open Space.

The unique species that inhabit wetlands and the intricate biological processes that occur throughout the year make wetlands ideal outdoor laboratories for students of all ages. Preschoolers can come face to face with crayfish and redlegged frogs while a doctoral candidate unravels the mysteries of insect-eating plants.

The same principle applies to recreational opportunities. The abundant beauty, the peaceful quiet and solitude, make wetlands a natural choice for the passive recreationalist out for a day hike or canoe trip. Fishermen, hunters, birdwatchers and photographers are attracted by the abundant wildlife and moving scenery. Wetlands left as open space areas provide a natural relief from the urban landscape of pavement, steel and glass.

WETLAND/STREAM EVALUATION AND RATING

Although all wetlands and streams perform important biological functions, they do not perform them to the same degree. Some aquatic resources, such as habitat for endangered species, steep stream banks, riparian wetlands or wetlands which play a key role in recharging groundwater supplies, may be especially susceptible to disturbance from land development activities. Rating processes for both streams and wetlands which consider degree of sensitivity and functional

performance of aquatic resources throughout Snohomish County will provide a flexible management approach that is responsive to resource protection needs while accommodating the demands of growth.

Aquatic Resource Protection :

Program Goals:

1. To protect and perpetuate the natural functions of aquatic systems in Snohomish County which are beneficial to the public welfare including water quality maintenance, fish and wildlife habitat, runoff and flood control, groundwater discharge and recharge, sediment retention, pollution assimilation and stream base flow maintenance.

2. To encourage development in Snohomish County which is compatible with and sensitive to aquatic systems including streams, wetlands and lakes and which respects existing hydrological patterns.

3. To provide flexible development design alternatives so that aquatic resource protection measures do not significantly effect development potential in Snohomish County.

4. To minimize overall net loss of the County's remaining aquatic resources, and to increase the quality and quantity of the County's aquatic resources over time.

Overall Program Policies:

1. Develop regulatory standards that will ensure the long term protection of all aquatic systems and their natural functions not already regulated by the County Shoreline Master Program.

2. Recognize steep slopes, aquatic systems, unstable soils, and the lands surrounding such areas as especially sensitive to development and drainage impacts, and develop specific regulatory requirements for development located within such critical areas.

3. Consider all aquatic systems as environmentally sensitive features and ensure that each aquatic system (including streams, lakes and wetlands) is identified and afforded appropriate protection.

4. Subject all development that has potential to adversely affect any aquatic system to County review and permit procedures.

5. Provide fairness in the application of aquatic resource protection measures by granting additional regulatory flex-

ibility for proposals that have previously received county site development plan approval.

6. Establish a stream classification procedure based upon the level of environmental sensitivity of individual streams including the potential for fish habitat, water quality and channel stability to be degraded.

7. Establish a wetland classification and rating procedure based upon the value of wetland functional characteristics and the presence of unique qualities such as endangered species or ecosystems or habitats of exceptionally high value.

8. Utilize the wetland classification and rating procedure to establish protection thresholds consistent with resource value and recognize that the minimum protection thresholds for aquatic systems may vary dependent upon the results of the rating procedure and the nature of the adjacent development.

9. Provide the greatest protection to the most valuable wetlands, including all riparian wetlands, and all wetlands larger than one acre.

10. Provide aquatic system protection by requiring buffer areas between the aquatic system and adjacent development.

11. Establish buffer widths based upon the value of the aquatic system and the potential intensity of adjacent development.

12. Establish code flexibility which allows reduction of structural setback requirements and/or buffer width requirements only when necessary to provide for a reasonable use of the property.

13. Establish a procedure to allow a minor or major deviation from strict ordinance requirements upon demonstration of a net improvement in existing aquatic system functional values.

14. Coordinate project approval with Departments of Fisheries and/or Wildlife so that all in-stream structures comply with the requirements of the Washington State Hydraulics Code (RCW 75.20.060).

15. Recognize that certain categories of land use activities have fewer design options for responding to aquatic

resource protection.

16. Institute grading permit requirements for all activities that have potential to impact aquatic systems.

17. Provide for the submittal of detailed information regarding any clearing activity within 200 feet of any aquatic system which specifies the methods for protecting the aquatic system.

18. Carefully review all projects to determine that undesirable drainage impacts resulting from development will be mitigated prior to drainage plan approval and that new development does not result in an increase in peak stormwater runoff.

19. Provide extra protection for Class I wetlands with sensitive features *by requiring that new design for stormwater transport and storage assures that* stormwater entering any Class I wetland has received pretreatment and biofiltration so that it does not degrade existing water quality, does not alter PH levels or temperatures, does not contribute additional sediment, and maintains existing hydrological patterns, including seasonal variations, of the wetland, *to the extent feasible utilizing available technology.*

Aquatic Resource Protection Program General Implementation Policies:

1. Discourage the alteration of significant aquatic systems, and allow development adjacent to or within aquatic systems only when development impacts can be mitigated to acceptable levels.

2. Encourage development which may impact aquatic systems to seek alternative design and construction techniques that are most compatible with the aquatic system. *To the extent possible development should be clustered and sited as far away from aquatic systems as possible.*

3. Encourage alternative design and location of utility corridors and facilities so that stream and wetland crossings are minimized. Where crossings are authorized construction timing should be coordinated with appropriate fish and wildlife agencies, erosion and sedimentation should be controlled to the maximum extent feasible and disturbed areas should be restored and stabilized as soon as possible.

Specific Stream Policies:

1. Encourage preservation of all streams in their natural condition.

2. Ensure that all streams are specifically identified in the field and accurately located on site development plans.

3. Allow stream relocation only when the relocation results in improved stream habitat.

4. Discourage the placement of streams in culverts except for necessary property access and circulation. Bridges or bottomless arch culverts are preferable to culverts where crossings are required.

5. Encourage bioengineering solutions to stream bank protection such as planting vegetation along eroding banks or placement of in-stream structures which serve to dissipate erosive energy or divert flows. Whenever it is practical non-structural solutions should replace the traditional use of rip-rap and other bank hardening measures.

6. Promote design of all in-stream structures, including stream crossings that maintains wildlife and fish habitat, and accommodates fish passage.

7. Promote construction of roads and utility corridors on upland sites to avoid stream crossings when possible.

8. *Require new* development to provide access points useable by multiple lots when stream or wetland crossings cannot be avoided.

9. Discourage alteration of the floodplain of streams so as to minimize public and private flood-related damage.

Specific Wetland Policies:

1. Encourage that all wetlands irrespective of size or value be preserved in their natural condition.

2. Allow wetland alteration only after it has been demonstrated that other reasonable alternatives are less desirable and when mitigation is provided that adequately compensates for lost functional values.

3. Ensure that all wetlands are specifically identified in the field and accurately located on site development plans.

4. Maintain the important natural functions of all wetlands. Alteration of wetlands through clearing, grading, draining and filling should be discouraged.

5. Promote the construction of roads and utility corridors on upland sites to avoid wetland crossings and disturbance.

Specific Lake Policies:

1. Discourage filling and draining of wetlands associated with lakes because of their value as filters for water quality maintenance, breeding, spawning, and rearing habitat for a wide variety of plant and animal life, and for their water holding capacity and help in maintaining stream flows.

2. Avoid wherever possible any development in the 100 year flood plain of any lake.

3. Locate, design and maintain access to lakes so as to protect the natural environment and natural processes.

4. Promote shared access to lakes, especially the placement of structures which intrude into the lake, so that public right of access and navigation on open waters is maintained.

5. Allow access points which are constructed on raised pilings or consist of floating structures through wetlands to lake waters. *Access through wetlands shall only be allowed when upland access points are not available.*

6. Encourage retention of vegetated buffers on all lake shores.

7. Allow alteration of vegetated buffers only as as necessary to provide lake access or view corridors. *Require retention of understory vegetation when cutting for view corridors.*

WETLAND AND STREAM BUFFERS

Discussion:

The primary functions performed by undisturbed vegetated buffers adjacent to streams and wetlands are maintenance of hydrology, water quality and fish and wildlife habitat. In addition buffers protect uplands from the impacts of flooding and erosion.

The width and efficiency of buffers varies dependent on specific site conditions. Generally, less sensitive aquatic systems adjacent to low density developments require the smallest buffers while more sensitive systems adjacent to high density urban development require larger buffers in order to adequately protect aquatic resources.

Buffer requirements to protect aquatic and wetland dependent wildlife species are related to four factors: habitat suitability, spatial requirements, access to upland and/or transitional habitat and visual and noise impacts on feeding, breeding and other life functions. Wetland dependent species are those which depend on wetland communities for at least some of their essential requirements. *Buffers serve as travel corridors for many terrestrial species of wildlife as well, providing cover for movement between resting and feeding areas, areas of seasonal useage, and other upland habitat areas.*

The requirement for a buffer zone for maintenance of water quality is related to the filtering capacity and roughness of natural undisturbed vegetation to minimize inputs of sediments and destructive velocity waters. The potential for erosion and subsequent sedimentation is a function of the erodibility of soil and slope.

Impervious surfaces and sod increase runoff coefficients significantly over coefficients characteristic of natural lands. Runoff carries with it pollutants and sediments which, if not intercepted, enter wetlands and streams, degrading water quality, exacerbating flooding, and destroying fish habitat. Use of vegetated buffers minimizes sediment deposition in wetlands and water courses.

Buffer areas adjacent to streams and wetlands are transition areas between aquatic and upland habitats. Such areas of habitat overlap support the highest species diversity and provide an extensive food base for insects, birds, reptiles,

fish and mammals. Wildlife that utilizes the buffer area requires undisturbed conditions to thrive.

Salmonids are reliant on the presence of riparian vegetation. Department of Wildlife recommends minimum buffer widths equivalent to the height of the mature trees present in the overstory canopy in order to protect fish habitat. This provides food, shade and instream habitat structures when the tree falls into the water. Woody debris causes pools to form in the stream providing rearing habitat at times of low water.

The majority of the flood damage that occurs in Snohomish County can be attributed to human encroachment into and alterations of the floodplains of rivers and streams, including filling and draining of wetlands. A preserved riparian buffer allows the stream to naturally migrate within its floodplain without threatening structures or developed property. A certain amount of scouring and deposition which results in lateral stream bed movement is part of the progressive sequence of channel migration and consequent floodplain construction. By minimizing encroachment and alterations to riparian zones, expensive flood protection measures may be reduced and water quality maintained for the benefit of man as well as fish and wildlife.

Buffer policies:

1. Require that vegetated buffers of an adequate width be maintained between proposed development and aquatic systems in order to protect the functional values of such systems.

2. Require that buffers be retained in their natural condition. Where buffer disturbance has occurred, require revegetation with native species to restore the buffers protective value.

3. Require that the location of all required buffers be clearly and permanently marked on any project site *prior to initiation of site work.*

4. Encourage that aquatic systems and their required buffers be reserved as common open space areas and designated as "native growth protection areas" where multiple ownership is involved and cooperative management is possible.

5. Allow limited activities within buffers only when such activities are compatible with the overall functions of the

buffer and when such activities do not diminish the functions of the buffer.

6. Recognize passive recreational and educational pursuits as preferred buffer uses.

7. Carefully control authorized buffer use to ensure that construction activity and buffer disturbance is limited to that minimally and reasonably necessary.

8. Allow buffer width averaging only where it can be demonstrated that the subject stream or wetland contains variations in sensitivity due to existing physical characteristics or species presence, and where buffer width adjustments would not diminish the functional values of the aquatic resource.

9. Consider a limited buffer width reduction where it can be demonstrated that partial or total buffer enhancement would increase the functional values of the buffer.

10. Allow buffer widths to be reduced when a buffer enhancement plan prepared by a professional aquatic resource ecologist is submitted and approved that substantiates improved buffer functions.

11. Maintain buffers between roads and utility corridors and aquatic systems wherever feasible. *Native growth protection easements for buffers should be included with* road or utility easements *wherever possible.*

MITIGATION

Discussion:

Aquatic system mitigation is a process designed to compensate for the unavoidable loss of *valuable functions performed by aquatic systems.* Wetlands are complex ecosystems that encompass a wide variety of interconnected organisms and processes. The beneficial functions performed by wetlands are diverse, but easily disrupted when the hydrology is altered through flow diversions, channelization and draining, diking or filling. Once natural wetlands *or streams* are lost or altered, beneficial functions are extremely difficult to duplicate.

Mitigation involving recreation or restoration of wetlands is

a relatively new field that has generated a great deal of controversy on the national and regional level. Few wetland mitigation sites have been in existence for a sufficient period of time to monitor and conclude the ongoing viability of the created or restored wetlands.

A draft report issued by the Region X EPA office concluded that most mitigation projects required under Section 404 failed to replace functions lost when the original wetland was destroyed. Much of the high failure rate was attributable to unclear or inadequate objectives, delay in completion of projects, and lack of monitoring, enforcement and contingency planning. In order to serve as the land management tool it was intended to be, mitigation must be carefully designed, constructed and monitored. Plans must include provisions for "adaptive management" of the mitigation site so that problems which arise can be corrected.

Mitigation on, or in immediate proximity to, the development site will often be most capable of developing in a manner similar to the altered habitat, with the same relationship to the system as a whole. Since mitigation that is both in-kind and on-site requires little detailed biological information about the development site and no specific information on the ecosystem role of the community to be lost, this option involves few built-in assumptions and the lowest probability of a predicting error (Gonor, 1979). Therefore, there is general agreement among managers and scientists that this option is preferable from an ecological perspective.

In order to obtain a high degree of certainty about the outcome of off-site, out-of-kind mitigation detailed development site assessment and similarly detailed assessments at candidate mitigation sites are required. The latter option is not generally desirable. A situation that could be an exception to the "in-kind rule" would be alteration of a wetland with low value and low diversity where values are to be replaced through enhancement and added diversity (Ashe, 1982).

Mitigation Policies:

2. Require consideration of project alternatives which avoid alteration of aquatic systems and the subsequent need for mitigation.

3. Require compensation for lost or impaired aquatic systems functions whenever alteration is allowed.

4. Promote and support first, compensation by complete in-kind replacement of functional values when wetlands *or other aquatic systems* are altered. Where such replacement is not practical or feasible, allow the provision of substitute resources of equal or greater value when it is of overriding benefit to the affected aquatic system.

5. Promote cooperation and coordination among involved resource agencies when mitigation is required by multiple agencies with jurisdiction over aspects of a single project.

6. Approve *aquatic system* alteration only when such alteration is confined to the minimum necessary and when proposed projects meet the criteria which allow wetland alteration.

7. Require restoration and enhancement of *aquatic systems* temporarily affected by construction or any other temporary phase of a project.

8. Encourage location of mitigation projects as near as possible to the area where *aquatic system* alteration occurs so that the project serves to mitigate direct impacts resulting from the alteration.

9. Limit off-site mitigation opportunities to public projects until a County land trust program is established. Off-site mitigation plans should provide for management of the mitigation site in perpetuity.

10. Require that preparation of a mitigation plan for all projects that propose alteration of aquatic systems which would result in the loss of functional values other than water quality, storage and conveyance.

11. Require consideration of mitigation for the loss of water quality, storage and conveyance functional values as part of the detailed drainage plan review required by Title 24 SCC.

12. Require that all mitigation plans be prepared by a professional aquatic resource ecologist, contain a comparative evaluation of lost and created functional values, and include provisions for monitoring, and bonding.

13. Require that mitigation projects replace lost functional values at a ratio of 1.5 (replacement value) to 1 (existing

value) when mitigation occurs on-site, and a ratio of 2 to 1 when mitigation occurs off-site to compensate for the loss of functional values over time, and the unproven nature of wetland creation/restoration projects.

14. Require that functional values be calculated using the Habitat Evaluation Procedures of the U.S. Fish and Wildlife Service (1981, or as subsequently amended), the Method of Wetland Functional Assessment of the Federal Highway Administration (March 1983 or as subsequently amended), any subsequent professionally recognized aquatic site assessment document and/or the best professional judgement of wetland professionals from involved governmental agencies, including Snohomish County.

AQUATIC RESOURCE PROTECTION AND LAND DEVELOPMENT

Discussion:

Poorly controlled construction and land development can have very serious negative consequences for the streams, lakes, wetlands and groundwater which comprise the hydrological system. A basic understanding of the hydrological cycle of a drainage basin is necessary in order to minimize land use-related impacts.

The cycle begins with precipitation falling to the earth. When it rains one of three things happens to the water. It either soaks into the earth in a process called infiltration, returns to the atmosphere through evaporation, or it flows downhill into a lake, river, stream, wetland or other water body.

In a natural drainage basin very little run-off reaches water bodies, except during extreme storm conditions. Instead, the water is absorbed by porous soils. It sinks into the ground where it is made available to the roots of plants, or it adds to the supply of groundwater. Vegetation slows and impedes run-off, aiding the soil's absorption and groundwater recharge capabilities. Groundwater moves slowly. In dryer months the stored water will recharge stream flows and water levels.

Wetlands play a signficant role in the natural hydrological cycle of the basin as well. During flood events wetlands store flood and run-off waters, releasing them slowly when they are needed by streams to maintain base flows. Wetlands maintain water quality by filtering out sediment and pollutants before they reach streams and lakes.

Many changes occur when poorly controlled land use activities result in the alteration of the natural hydrological characteristics of a stream's drainage basin . Removal of vegetation through clearing and grading, and compaction of the soil by the movement of heavy construction equipment greatly reduce the soil's ability to slow and retain stormwater run-off. Absorption and storage potential are further reduced when impervious materials are used in the construction of rooftops, driveways, sidewalks and roadways. When wetlands and drainage ways are filled and eliminated the problem is greatly exacerbated.

Where wetlands are retained they may be used to store increased stormwater run-off. The long term ecological consequences of storing urban stormwater in wetlands is uncertain. In some cases, wastewater addition to wetlands has resulted in significant ecosystem changes such as simplification of communities and elimination of some species, functions and values. However, some wastewater application systems have revealed no negative effects. Wetland types vary widely in their ability to improve water quality and their tolerance to wastewater or stormwater pollutants.

The increased volume and velocity of stormwater resulting from development necessitates the construction of storm sewers or drainage ditches to move the run-off waters to discharge points which are often streams, lakes, and wetlands. Storm sewers contribute sediment and pollutant loads from roadways and parking lots.

The result of all these hydrological changes is that a formerly peaceful meandering stream with ample floodplains develops tremendous scouring and erosive capacity during storm events. Where banks are eroded and washed away, property owners may attempt to armor their property with riprap or other bank hardening materials. Such measures only exacerbate the problem of scouring and channelization downstream.

Valuable salmon spawning areas are destroyed when they are covered with silt that has been carried along in the torrent. Heavy pollutant loads during high discharge periods may cause actual fish kills. Once lost, fish runs are very difficult to restore.

A number of lakes in developing areas of Snohomish County are experiencing advanced eutrophication, a process that occurs when lakes are subject to increased sedimentation and nutrient over-loading. Nutrient over-loading may occur when fertilizers, septic tank leachates and other organic material are carried in storm-water run-off to lakes and streams. Elevated levels of nutrients in lake waters may cause severe algal blooms. When the algae inevitably dies off, the oxygen supply in the lake is depleted, and other organisms begin to die or suffer distress as well. Water quality is degraded and often becomes unsuitable for water-contact recreation. Once begun it is very difficult and costly to reverse the process of eutrophication.

Some of the most acute impacts from development in the basin occur during project construction when the ground is bare and

permanent drainage controls have not yet been installed. Clearing and shaping the land during construction or development alters surface drainage patterns, causing erosion and siltation, impacting water quality and fishery resources. In addition, uncontrolled erosion and sediment often causes considerable economic damage to individual property owners and public facilities such as roads and bridges.

Channelization and bank hardening as a means of protecting shorelines from the effects of scouring, undercutting and erosion often result in exacerbation of downstream problems. In these situations upstream property owners may be liable for resulting damage to their downstream neighbors.

Clearing and grading are the first steps in site alteration. Careful planning and review must begin at this point in order to reduce undesirable impacts to aquatic systems and the entire hydrological regime. Clearing and grading actions that respect the existing terrain and drainage patterns and remove only the amount of vegetation necessary to accommodate facilities and structures will result in less impact to aquatic systems.

Installation of temporary erosion control measures during the site preparation/construction phase of project development is necessary to protect adjacent aquatic resources. Use of temporary settling ponds for routing of storm-water run-off may be necessary to avoid siltation of receiving bodies of water. Vegetated buffers left as corridors between road and utility construction and aquatic systems play an additional role in controlling non-point run-off leaving the construction site.

Road and utility corridors are often constructed across streams and wetlands or along stream or river corridors because such low-lying areas often provide the most direct routes with the fewest changes in elevation. The result has been major disruption to natural hydrological patterns. Ironically, such construction practices sometimes result in the establishment of wetlands where placement of inadequate culverts impounded natural drainage behind roadways or utility beds.

Impacts to wetlands from roads and utilities can be divided into two categories: those occurring during and immediately following construction and those caused by ongoing use and maintenance of the facility. Erosion can be a major concern during construction. Loss of vegetation through clearing and grading compounded by soil compaction and installation of im-

pervious surfaces results in a significant increase in run-off potential.

While most impacts from utility siting may be mitigated through site restoration once the utility line is in place, road impacts continue for as long as the road is in use. On-going impacts include use of herbicides and petrochemical pollution from road surfaces and automobiles. Application of salt and sand to road surfaces in the winter can be detrimental to adjacent water bodies. In addition road shoulders constructed too close to aquatic systems where inadequate buffers have been retained may be subject to slope failure and erosion.

Construction practices which avoid streams and wetlands wherever possible, minimize stream and wetland crossings when crossings are necessary and respect natural drainage ways can prevent future stream losses. Proper design includes stream crossings which are consistent with the requirements of the State Hydraulics Code and retention of buffers and other run-off and drainage controls. Such measures will help to ensure the health of Snohomish County's aquatic systems and the perpetuation of valuable salmon runs.

In some cases engineering solutions may be required to replace functions such as soil permeability and groundwater storage which are lost when impervious surfaces replace natural soil and vegetative cover. Such systems should be designed to mimic the functions of natural systems as much as possible.

Where pre-existing flooding and erosion problems require installation of some form of bank protection, use of non-structural bank protection methods is preferable. Such methods include bank vegetation and the installation of in-stream structures that serve as energy dissipaters or flow diverters. Use of these alternatives help to protect fisheries habitat and may avoid downstream property damage.

Subdivision of land through either the formal or short subdivision process can be compatible with the goal of protecting aquatic systems if the projects are designed with the purpose of retaining and protecting stream corridors and wetland areas to the the greatest extent possible.

The use of native growth protection areas should be required to encompass all aquatic systems and their buffer areas in all subdivisions, and should be imposed as a condition of

subdivision approval. It is preferable that these areas be included in common open space tracts so that long term maintenance and protection can more readily be accomplished.

Subdivisions should be allowed the flexibility and option to provide drainage and grading information at a sufficient level of detail so as to satisfy future informational needs for individual lots.

In order to provide for adequate water quality protection for all aquatic systems, subdivision drainage concept and facilities design should encourage the use of grass-lined swales and other acceptable methods of maintaining acceptable water quality prior to storm water discharge into natural systems on or off a given project site. The use and placement of detention/retention facilities within identified aquatic systems or their buffer areas should be carefully reviewed prior to approval to ensure that no damage will occur to the system and that any changes that could occur to the system are determined to increase the systems functional values.

Project amenities such as trail systems and active recreational areas or facilities should be carefully planned when in close proximity to an aquatic system so that the functions of the system are not degraded. The integration of passive recreation activities with aquatic systems should be discouraged where systems are fragile and very susceptible to damage.

Land Development Policies:

1. Ensure that all grading, clearing, and construction operations are conducted so that aquatic systems and natural drainage systems are maintained and enhanced and water quality protected.

Grading Policies:

1. Ensure that all grading operations are conducted so as to protect aquatic systems and other sensitive features from the impacts of soil disturbance which result in increased run-off, sedimentation or disruption of the natural hydrological regime.

2. Require temporary erosion and sedimentation controls be installed prior to any site disturbance to minimize erosion

and siltation resulting from project grading and construction.

3. Require that Temporary Erosion and Sedimentation Control (TESC) plans accompany all grading plans.

4. Ensure that all TESC installations are regularly inspected for efficiency.

5. Provide for retention of vegetated buffers between all grading operations and aquatic systems to protect water quality and habitat. *Grading permit conditions shall reflect buffer retention requirements and limit of other areas to be cleared.*

6. Encourage that replanting of disturbed areas occurs as soon as growing conditions allow. Erosion control devices should remain in place until soils have been stabilized.

7. Encourage the use of non-structural bank protection methods wherever practical including planting vegetation along eroding banks or placement of in-stream structures which serve to dissipate erosive energy or divert flows.

Clearing Policies:

1. Recognize that trees and other vegetation located adjacent to aquatic systems play a significant role in soil stabilization and stormwater run-off.

2. Provide for retention of buffers between all clearing operations and aquatic systems to protect water quality and habitat.

3. Minimize pre-development approved clearing within 200 feet of any aquatic resource if the clearing activity would preclude the provision of acceptable buffer widths or damage the aquatic resource.

Drainage Policies:

1. Ensure that all *new* development complies with the county's drainage ordinance in order to control erosion and siltation during construction, control the volume and rate of run-off, trap pollutants before they enter aquatic systems, and to maintain drainage facilities.

2. Promote retention and enhancement of natural drainage systems in order to protect water quality, reduce public costs associated with storm and floodwater abatement and prevent environmental degradation.

3. Ensure that public improvements and private developments which alter natural drainage systems provide acceptable mitigating measures which eliminate the risk of flooding or negative impacts to water quality.

4. Regulate all activities which may disturb or alter existing drainage patterns, impact water quality, or alter the rate and amount of storm water discharge entering or leaving a project site by requiring drainage plan review and approval.

5. *Require* pretreatment of stormwater *for new projects* so that drainage from roadways does not directly discharge into streams or wetlands.

6. Recognize the impacts to aquatic systems associated with construction and maintenance of roadways, bridges and utilities and encourage designs which maintain natural flow parallel to drainage.

7. Require that all drainage system designs include and specify management and maintenance schedules and responsibilities.

8. Require that the hydraulics of the wetland system must be known and/or properly designed so that an accurate determination of allowable water level fluctuations can be identified for a specific wetland system.

9. Generally discourage the location of stormwater detention/retention facilities within aquatic systems and allow them only when the functional values of the resource and its buffer are not diminished. *Regional facilities serving multiple projects may be located within aquatic systems when alternative sites which provide the same degree of downstream benefits are not available, and providing the facility is designed to minimize damage to aquatic resources and full functional mitigation is provided for any loss.*

10. Minimize the disturbance of any wetland used for detention or retention purposes.

11. Encourage enhancement through plantings which provide

additional stormwater treatment when wetlands are used for stormwater retention/detention. System design should include a proper selection of vegetation which best treats a characteristic runoff type.

12. Promote system designs which ensure that collected stormwater does not discharge into any wetland or adjacent stream channel prior to settling and biofiltration. Discharge systems should mimic natural conditions and utilize grass-lined swales where practicable.

13. Encourage the establishment of dense growth of emergent species in wetlands used for stormwater treatment. Also planting of mixed stands should be encouraged as different species function more efficiently at uptaking certain nutrients.

14. Allow wetland alteration such as excavation to increase storage capacity or detention time only when the result is a net increase in the wetland's functional values, ie. flood storage and flood flow dispersal, water quality treatment, and wildlife habitat. Excavation should generally be limited to the forebay where sediment settlement occurs.

15. Maintain water level fluctuations in wetlands used for stormwater retention/detention similar to those which would be present under natural conditions. *Periodic restriction of outflow, causing temporary increases in storage above normal volumes during storms, may be necessary to minimize flooding and erosion downstream.*

Subdivision Policies:

1. Encourage formal and short subdivision design to pursue and respect aquatic system preservation options before consideration of options which include the alteration of any aquatic system or its buffer. Encourage subdivision roadway and utility designs which avoid aquatic systems and their buffers unless no practical alternative location exists.

2. Require that new formal and short subdivisions protect aquatic systems through the use of native growth protection areas, and encourage the placement of aquatic systems and their buffers in common open space tracts.

3. Encourage the use of the planned residential development or lot size averaging procedure when aquatic systems or their buffers are located on a residential subdivision site.

4. Encourage subdivisions and other land intensive proposals to limit the number of individual small stormwater detention/retention facilities in favor of large regional facilities.

5. Allow subdivision stormwater detention/retention facilities to be located within an aquatic system and/or its buffer only when the functional values of the resource and its buffer are not diminished.

6. Encourage that all pedestrian trail systems planned within a subdivision be designed and located to minimize aquatic system and buffer disturbance. Discourage the placement of trail systems parallel with stream corridors or wetland edges unless aquatic system and buffer functional values can be maintained.

II.

DRAFT TITLE 24

GRADING AND DRAINAGE ORDINANCE

The proposed draft code incorporates existing drainage and grading regulations, together with new regulations (including limited clearing controls) into one title.

WORKING
DRAFT

COUNTY COUNCIL

SNOHOMISH COUNTY, WASHINGTON

ORDINANCE

GRADING AND DRAINAGE

An ordinance relating to grading and drainage.

BE IT ORDAINED:

SECTION 1. Snohomish County Code Chapters 24.04, 24.08, 24.12, 24.16, 24.20, 24.24, 24.28, and 24.32 enacted as Ordinance No. ___-___, adopted _____, 19__, are hereby repealed in their entirety.

SECTION 2. Snohomish County Code Chapters 17.04.____, 17.04 ____, and enacted as Ordinance No. ____-____, adopted _____, 19___, are hereby repealed in their entirety.

SECTION 3. A new title in the Snohomish County Code to be codified as Title 24 with the title heading of "Grading and Drainage " is hereby enacted to read as follows:

TITLE 24

GRADING AND DRAINAGE ORDINANCE

Chapter 24.05

GENERAL PROVISIONS

Sections:

24.05.010 Title. This title constitutes and may be cited as Title 24 SCC, Grading and Drainage. This title supersedes previous Title 24 SCC, Drainage and previous Title 17 SCC, Building sections....

24.05.020 Declaration of purpose. It is the purpose of this title to regulate grading and drainage activities in order to promote sound practical and economical development policies and construction procedures which minimize impacts to the county's waters; to minimize water quality degradation and control the sedimentation of creeks, streams, rivers, ponds, lakes and other water bodies; to provide for control of stormwater runoff originating on developing land; to preserve the suitability of water for recreation and fishing; to maintain areas of important habitat; to maintain and enhance the aesthetic quality of the waters; to minimize adverse effects of alterations in surface water or groundwater

quality, quantities, locations and flow patterns; to maintain the safety of county roads and rights-of-way; all to the end of safeguarding the public health, safety and general welfare.

24.05.030 Applicability. The provisions of this title shall apply to all land use activities regulated by Snohomish County, unless specifically exempted by this title.

24.05.040 Administrative procedures. Pursuant to SCC Chapter 2.68, the Director shall develop procedures for administering the provisions of this title.

24.05.050 Inspections. The Director is authorized to make inspections and take actions necessary to enforce the provisions of this title and the rules and regulations established hereunder.

24.05.060 Right of entry. Whenever necessary to make an inspection to enforce any of the provisions of this title, or whenever the Director has reasonable cause to believe that violations of this title are present or operating on a site, the Director may enter any property at reasonable times.

(1) If such property is occupied, the Director shall present identification credentials, state the reason for entry, and request entry.

24.05.070 Liability. Administration of this title shall not be construed to create the basis for any liability on the part of the County, its appointed and elected officials, and employees while working within the scope of their duties:

(1) For any injury or damage from the failure of an owner of property to comply with the provisions of this title.

(2) By reason of an inspection, notice and order, permission, or approval.

(3) For any action or inaction thereof authorized or done in connection with the implementation or enforcement of this title.

(4) For the accuracy of plans submitted to the County.

24.05.080 Hazards.

(1) Whenever the Director determines that any conditions or operations caused by any activity covered by this title have become a hazard to life and limb, endanger property or public resources, or adversely affect the safety, use, or stability of a public way or drainage channel; the Director shall notify in writing the owner of the property upon which the condition or operation is located, or other person or agent in control of said property, and direct them to repair or eliminate such condition or operation within the period specified therein so as to eliminate the hazard and be in conformance with the requirements of this title.

(2) Should the Director have reasonable cause to believe that the situation is so adverse as to preclude written notice, he/she may take the measures necessary to eliminate the hazardous situation, provided that he/she shall first make a reasonable effort to locate the owner before acting. In such instance, the owner of the property and the person responsible for the creation of the situation shall be responsible for the payment of any reasonable costs incurred.

(3) If costs are incurred and the hazardous situation has been created in conjunction with or as a result of an operation for which a bond has been posted pursuant to this title or any other County authority, the Director shall have the authority to *revoke the* bond or other security to recover costs incurred.

24.05.090 Severability. If any provision of this title or its application to any person or circumstance is held to be invalid, such decision shall not affect the validity of the remaining portions of the ordinance or its application to other persons or circumstances.

24.05.100 Effective date. This title shall take effect on _____.

Chapter 24.10

DEFINITIONS

Sections:

24.10.200 Excavation.

24.10.210 Filling.

24.10.220 Geotechnical engineer

24.10.230 Geotechnical engineering.

24.10.240 Grade.

24.10.250 Grading.

24.10.260 Hearing examiner.

24.10.270 Impervious surface areas.

24.10.280 Lake.

24.10.290 Ordinary high water *mark*.

24.10.300 Peak discharge.

24.10.310 Plans.

24.10.320 Reclamation.

24.10.330 Shorelines.

24.10.340 Site.

24.10.345 Site alteration.

24.10.350 Slope.

24.10.360 Soil.

24.10.370 Specifications.

24.10.380 Stream.

24.10.390 Terrace.

24.10.400 Watershed Management Plan.

24.10.410 Wetlands.

24.10.420 Wetland edge.

Unless the context clearly requires otherwise, the words and

phrases used in this title shall be defined as follows:

24.10.010 Activity. "Activity" means any land use action that requires a County permit or approval.

24.10.020 Applicant. "Applicant" means the person, corporation, or other private or governmental entity applying for or granted a land use or development permit or approval by Snohomish County.

24.10.030 Aquatic systems. "Aquatic systems" means streams, wetlands and lakes.

24.10.040 As-graded. "As-graded" means the extent of surface conditions on completion of grading.

24.10.050 Bench. "Bench" means a relatively level step excavated into earth material on which fill is to be placed.

24.10.060 Berm. "Berm" means an earthen mound or raised area used as a physical barrier to impound water or to screen a site .

24.10.070 Bond. "Bond" means a surety bond, assignment of savings, irrevocable letter of credit or other means acceptable to the Director to assure work is completed in accordance with all applicable County requirements.

24.10.080 Civil engineer. "Civil Engineer" means a professional engineer registered in the state of Washington to practice in the field of civil engineering.

24.10.090 Civil engineering. "Civil engineering" means the application of the knowledge of the forces of na--ture, principles of mechanics and the properties of materials to the evaluation design and construction of civil works for the beneficial uses of mankind.

24.10.100 Clearing. "Clearing" means, within a critical area:

(1) removal by mechanical means of vegetative material, stumps, logs, trees, and components thereof, where such removal deforms the underlying soil systems or results in the removal of roots from beneath the surface of the soil.

(2) removal by any means of more than 20% by area of the vegetative material within a critical area, exclusive of

the aquatic system.

(3) removal by any means of any amount of vegetative material within a wetland, stream or steep slope or within 50 feet of the wetland edge, stream ordinary high water mark or adjacent top of slope which is 25% or greater.

24.10.110 Compaction. "Compaction" means the densification of earth material by mechanical means.

24.10.120 Critical areas. "Critical Areas" means those areas within which stormwater run-off, flooding, erosion, groundwater recharge/discharge and/or instability conditions present special drainage-related problems and are limited to the following:

(1) Lands having a *continuous* slope of 25 percent or greater.

(2) Lands within 200 feet of the ordinary high water mark or within the flood plain of any stream or lake.

(3 Lands within 200 feet of the edge of a wetland or lands within 50 feet of the edge of a wetland where it has been demonstrated by the applicant to the satisfaction of the Director that no surface or subsurface drainage relationship exists between the site of a proposed activity and the wetland.

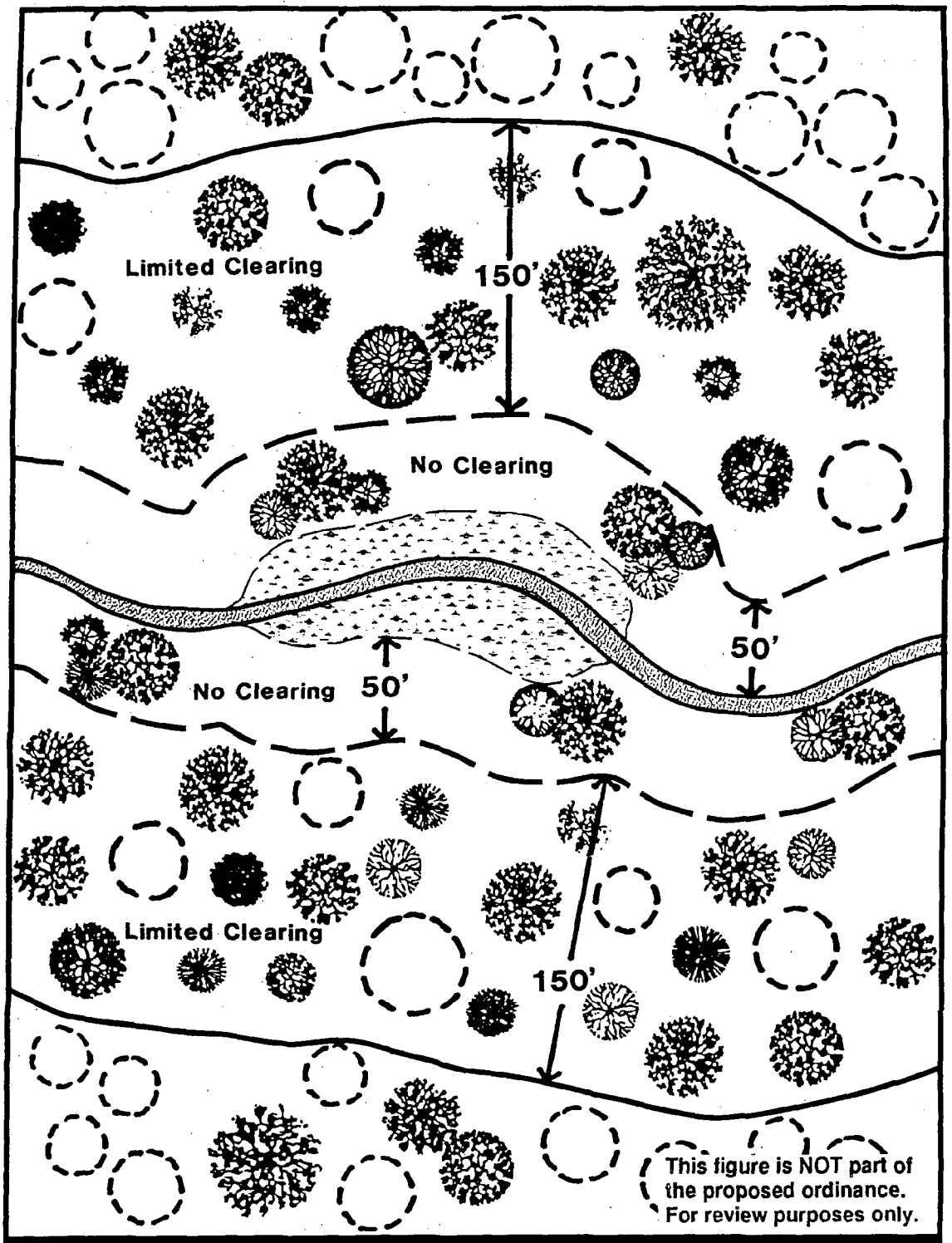
(4) Lands encompassing a known slide area as determined by the Director.

(5) Lands designated as critical areas in adopted County Watershed Management Plans.

24.10.130 Department. "Department" means the Department of Planning and Community Development, Community Development Division.

24.10.140 Design storm. "Design storm" means that rainfall event utilized for purposes of designing structures to accommodate the volume and velocity of water resulting from a specific return period storm.

24.10.150 Director. "Director " means the Manager of the Department of Planning and Community Development, Community Development Division or his/her authorized designee.



LEGEND

Stream

Wetland

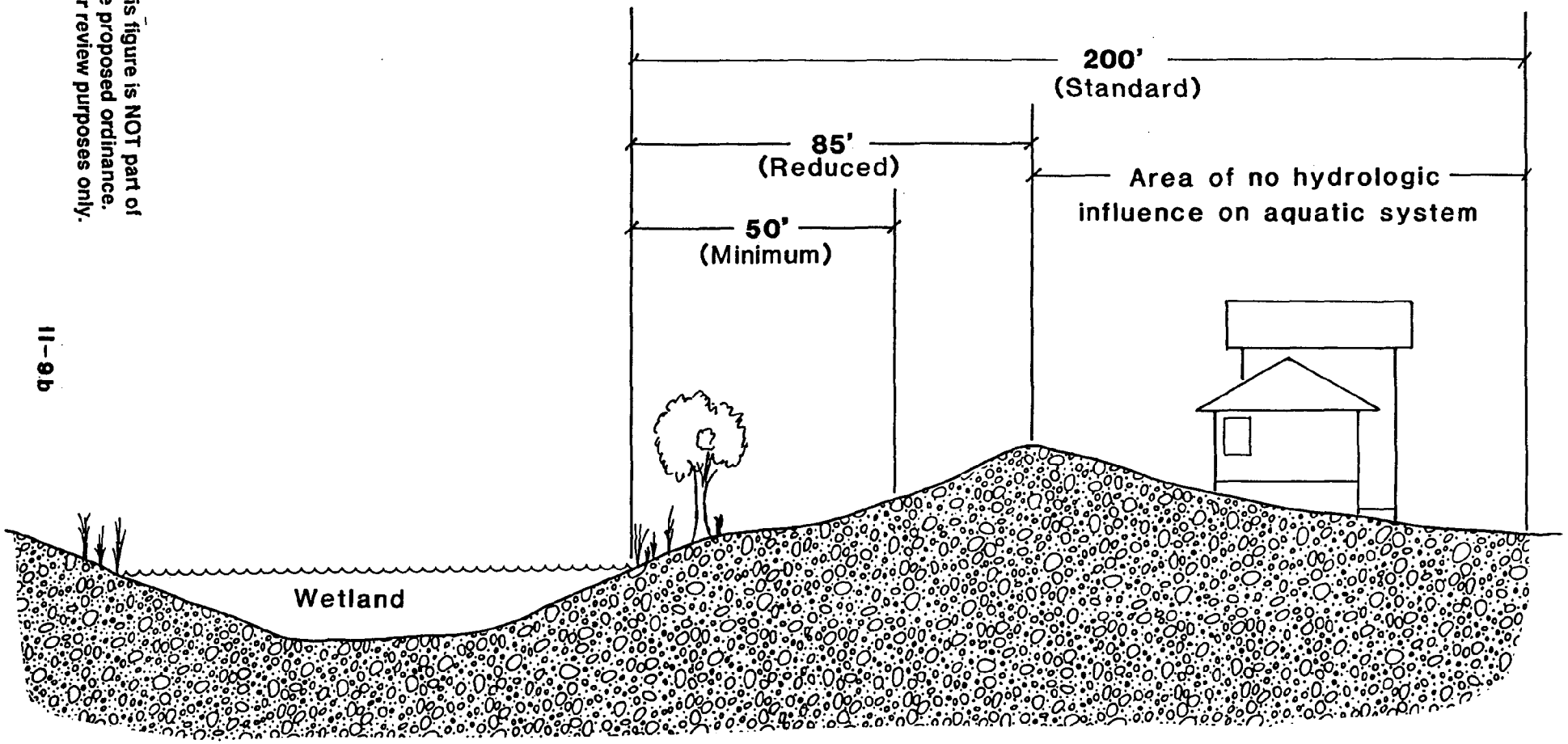
Cleared Tree

Undisturbed Tree

Clearing jurisdiction and provisions within Critical Areas per 24.10.120

Graphic depiction of a Critical Area per Section 24.10.140 definition

This figure is NOT part of the proposed ordinance. For review purposes only.



24.10.160 Drainage basin. "Drainage basin" means the geographic region within which water drains into a particular aquatic system or other body of water. It is also referred to as a watershed or catchment area.

24.10.170 Drainage plan. "Drainage plan" means a plan prepared by, or on behalf of, the applicant which identifies existing drainage conditions at the location of a proposed land use activity and identifies the proposed means of ameliorating anticipated impacts to surface and subsurface water associated with a proposed activity.

24.10.180 Earth material. "Earth material" means any rock, natural soil and/or any combination thereof.

24.10.190 Erosion. "Erosion" means the wearing away of the ground surface as a result of the movement of wind, water and/or ice.

24.10.200 Excavation. "Excavation" means the mechanical removal of earth material *from its place of origin*.

24.10.210 Filling. "Filling" means any act by which earth material or other material is deposited, placed, pushed, pulled or transported to a place other than the place from which it originated.

24.10.220 Geotechnical engineer. "Geotechnical engineer" means a licensed civil engineer experienced and knowledgeable in the practice of soils, geology or geotechnical engineering.

24.10.230 Geotechnical engineering. "Geotechnical engineering" means the application of geologic knowledge and principles in the investigation and evaluation of naturally occurring rock and soil for use in the design of civil works. "Geotechnical engineering" also means the application of soils mechanics in the investigation, evaluation and design of civil works involving the use of earth materials and the inspection and/or testing thereof.

24.10.240 Grade. "Grade" means the vertical location of the ground surface. "Existing grade" is the grade prior to grading. "Rough grade" is the preliminary stage at which the grade approximately conforms to the approved plan. "Finish grade" is the stage at which the grade conforms to the approved plan.

24.10.250 Grading. "Grading" means any excavation, or

filling, or combination thereof. This shall include construction of ditches and channels.

24.10.260 Hearing Examiner. "Hearing Examiner" means the office of Snohomish County Hearing Examiner created by SCC Chapter 2.02.

24.10.270 Impervious surface areas. "Impervious surface areas" means hard surfaced areas which prevent or retard the entry of water into the soil mantle and/or cause water to run off the surface in greater quantities or at an increased rate of flow than under natural conditions. Common impervious surfaces include, but are not limited to, rooftops, concrete or asphalt sidewalks and pavement, walkways, patio areas, driveways, parking lots or storage areas that are graveled, or other surfaces which similarly impede the natural infiltration of surface water or runoff patterns existent prior to development.

24.10.280 Lake. "Lake" means a naturally existing or artificially created body of standing water which exists on a year-round basis and occurs in a depression of land or expanded part of a stream, and includes reservoirs. A lake must be greater than one acre in size, greater than 2 meters (6.6 feet) in depth at the deepest point, and have less than 30% areal coverage by trees, shrubs, or persistent emergent vegetation. A lake is
bounded by the ordinary high water mark or, where a stream enters the lake, the extension of the elevation of the lake's ordinary high water mark within the stream. Provided, however, that for the purposes of this title "lake" does not include entirely artificial structures such as storm water retention/detention ponds or ornamental ponds created by man.

24.10.290 Ordinary high water mark. "Ordinary high water mark" means the mark on all lakes, streams and tidal waters which will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation, as that condition exists on the effective date of this title, or as it may naturally change thereafter;

Provided, however, that in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining saltwater shall be the line of mean higher high tide and the ordinary high water mark adjoining freshwater

shall be the line of mean high water.

24.10.300 Peak discharge. "Peak discharge" means the maximum surface water runoff rate in cubic feet per second (cfs) determined for the design storm.

24.10.310 Plans. "Plans" means the project drawings which show location, character and dimensions of the proposed work including layouts, profiles, cross-sections, and other details.

24.10.320 Reclamation. "Reclamation" means the final grading and land restoration of a site.

24.10.330 Shorelines. "Shorelines" means those lands defined as "shorelines of the State" in the state Shoreline Management Act of 1971, (RCW 90.58).

24.10.340 Site. "Site" means any lot or parcel of land or contiguous combination thereof, under the same ownership where land alteration is proposed.

24.10.345 Site alteration. "Site alteration" means the change in existing site conditions through grading, clearing, construction, paving or other means.

24.10.350 Slope. "Slope" means an inclined ground surface the inclination of which is expressed as a ratio of horizontal distance to vertical distance.

24.10.360 Soil. "Soil" means naturally occurring superficial deposits overlying bed rock.

24.10.370 Specifications. "Specifications" means requirements for the proposed work and include Washington State Department of Transportation standards and specifications and Snohomish County Department of Public Works design standards.

24.10.380 Stream. "Stream" means all lands and waters contained within a channel when such lands periodically support predominantly hydrophytes, the substrate is predominantly undrained hydric soil, or the substrate is non-soil and is saturated with water or covered by water at some time during the growing season of each year;

Provided however, that for purposes of this title, "stream"

does not include irrigation and drainage ditches, grass-lined swales, canals, stormwater runoff devices, or other entirely artificial water courses. Streams which have been channelized or culverted shall continue to be considered streams for the purpose of this title.

24.10.390 Terrace. "Terrace" means a relatively level step constructed in the face of a graded slope surface for drainage and maintenance purposes.

24.10.400 Watershed management plan. "Watershed management plan" means a plan adopted by the Council for a specific watershed management area. The plan consists of a detailed analysis of a drainage basin including a comparison of the capabilities and needs for runoff accommodation due to various combinations of development, land use, structural and nonstructural management alternatives, and recommendations as to the form, location and extent of quantity and quality control measures which would satisfy legal constraints, water quality standards, and community standards. The plan also identifies the institutional and funding requirements for plan implementation.

24.10.410 Wetlands. "Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include, but are not limited to swamps, marshes, bogs, and similar areas;

Provided however, for purposes of this title, wetlands shall be larger than 100 square feet and shall include the entire individual wetland irrespective of property ownership.

24.10.420 Wetland edge. "Wetland edge" means the line dividing the wetland from adjoining uplands or deepwater habitats. The edge is identified by examining the presence (wetland) or absence (upland) of: a prevalence of hydrophytic plants, hydric soils, and the water table at or near the surface.

Chapter 24.15

DRAINAGE PROCEDURES MANUAL

Sections:

24.15.010 Adopted. *The drainage procedures manual, adopted November 26th, 1979, is hereby readopted.*

24.15.020 Technical Modifications. *The public works Director is hereby authorized to make technical modifications to the manual as necessary to reflect changes in known and available technology consistent with the requirements of this Title.*

Chapter 24.20

GRADING REQUIREMENTS

Sections:

24.20.010 Grading permit required. A grading permit shall be required for:

(1) all grading except that exempted by Section 24.20.030.

(2) all clearing within critical areas except that exempted by Section 24.20.030.

24.20.015 Grading Permit Expiration. The Director may set a specific expiration date for permits issued pursuant to this Chapter if, after review of plans or supplemental information submitted to the Department, he determines that sensitive environmental conditions on the project site such as the presence of steep slopes or aquatic systems necessitate that grading, drainage improvements and site stabilization occur within a specific period of time.

24.20.020 Other permits and approvals. No grading permit will be issued until any and all permits and approvals required for development of a site have been obtained and review of the conceptual or detailed drainage plan completed.

24.20.030 Grading permit exemptions.

(1) A grading permit shall not be required for:

(a) All activities regulated by the state of Washington as Class I, Class II, Class III, or Class IV forest practices subject to RCW 76.09, Washington State Forest Practices Act where the land is not proposed to be converted to another use.

(b) Operation of refuse disposal sites controlled by other regulations, Provided, however, this exemption shall not apply to expansions, relocations, or closures of disposal sites.

(c) Operation of commercial activities involving mining, quarrying excavating, processing, stockpiling of rock, sand, gravel aggregate or clay where such operations are part of a valid Snohomish County conditional use permit or special use permit as required by Title 18, SCC, where such operations do not affect the lateral support or increase the stresses in or place pressure upon any adjacent or contiguous property or result in downstream drainage impacts: Provided, however, that any filling not specifically identified in the conditional use or special use permit shall require a grading permit.

(d) Site investigative work necessary for land use application submittals such as surveys, soil logs, percolation tests and other related activities.

(e) Construction and practices normal or necessary for *commercial* farming, ranching and associated irrigation, including normal maintenance and repair of *dikes,*

ditches, and existing structures, *placement of riprap when necessary to make emergency repair to dikes, installation of drain tile and drain maintenance for existing drainage systems, and implementation of best management practices as defined in "Snohomish County Metropolitan Municipal Corporation/King County 208 Area Wide Waste Management Planning Study, Farm Water Quality Management Manual", September, 1977; Provided that such best management practices are designed and approved by the Snohomish County Conservation District as part of an approved farm conservation plans.*

For the purposes of this title the following actions shall not be considered normal or necessary farming or ranching activities:

(i) any confined animal operation that has uncontrolled runoff which will degrade water quality,

(ii) all processing plants of any kind and other activities of a like commercial nature,

(iii) alteration of the contour of a critical area by leveling or filling except through normal cultivation or to implement best management practices as defined in *"Snohomish County Metropolitan Municipal Corporation/King County 208 Area Wide Waste Management Planning Study, Farm Water Quality Management Manual", September, 1977; Provided that such best management practices are designed and approved by the Snohomish County Conservation District as part of approved farm conservation plans.*

(iv) any filling within a wetland or within the ordinary high water mark of any river, stream or lake *unless to implement best management practices as defined in "Snohomish County Metropolitan Municipal Corporation/King County 208 Area Wide Waste Management Planning Study, Farm Water Quality Management Manual", September, 1977; Provided that such best management practices are designed and approved by the Snohomish County Conservation District as part of approved farm conservation plans.*

(v) placement of structures within 25 feet of a wetland or the ordinary high water mark of any river, stream or lake *unless to implement best management practices as defined in "Snohomish County Metropolitan Municipal Corporation/King County 208 Area Wide Waste*

Management Planning Study, Farm Water Quality Management Manual", September, 1977; Provided that such best management practices are designed and approved by the Snohomish County Conservation District as part of approved farm conservation plans.

(f) *Clearing and grading within critical areas when excavation and/or filling does not exceed 50 cubic yards of material; Provided that such clearing or grading is associated with uses normally incidental to a single family dwelling. These shall include, but not be limited to, gardening, cultivating, pruning, landscaping, firewood cutting, preparation of ground for placement of accessory structures and other actions of a similar nature; Provided further that aquatic systems are not impacted, buffers or other open space areas established and protected by easement or covenant are not impacted, and no filling, excavation or placement of riprap occurs within the ordinary high water mark of any stream or lake or within any Class I wetland.*

(g) Excavation for a well for a single family residence.
+

(h) Cemetery graves.

(i) Excavation or filling for siting utility transmission, distribution and service lines. Such excavation or filling shall be the minimum necessary to allow project construction and shall be in general conformance with the Aquatic Resource Protection element of the Snohomish County Comprehensive Land Use Plan.

(j) Construction within a County road right-of-way *established prior to the effective date of this title* for the purposes of road construction and maintenance.

(2) A grading permit is not required for the following actions except when done within a critical area:

(a) Fills or excavations which do not exceed 100 cubic yards on any one lot, do not obstruct a drainage course, and are not for the purpose of creating more than 5000 square feet of impervious surface.

(b) Excavations which do not exceed 500 cubic yards on any one lot for a basement or footing for a single family residence and accessory structures.

24.20.040 Grading permit application: Submittal re-

quirements. Submittal of the following information shall be required for a completed grading permit application:

(1) Four sets of plans and specifications drawn to scale upon mylar or substantial paper. Plans shall clearly indicate the nature and extent of the work proposed and be sufficiently detailed to allow the County to determine their conformance to the provisions of this title and all other relevant laws, ordinances, rules and regulations. The first sheet of each set of plans shall contain a site location map and the name and address of the owner and the person by whom they were prepared. In addition plans shall include the following information:

(a) vicinity map of the proposed site.

(b) property limits and accurate contours of existing ground and details of terrain and area drainage.

(c) accurate location, dimension and contours of all critical areas including steep slopes, slide hazard areas, streams, lakes and wetlands and buffers required pursuant to Title 30 SCC. within, or partially within the subject property: Provided, however, that the Director may require that critical areas located partially beyond the boundaries of the subject property be accurately depicted when he/she determines that such information is necessary to fully assess clearing and/or grading impacts to critical areas. For critical areas, the contour interval shall be no greater than five feet.

(d) limiting dimensions, elevations or finish contours to be achieved by the grading, and proposed drainage channels and related construction.

(e) extent and type of vegetative cover prior to clearing and/or grading and extent and type of vegetative cover after completion of clearing and/or grading.

(f) detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work, together with a map showing the drainage area and the estimated runoff of the area served by any drains.

(g) location of any buildings or structures on the property where the work is to be performed and the location of any buildings or structures on land of adjacent owners which are within 15 feet of the property or which may be af-

fected by the proposed grading operations.

(2) Off-site deposition site location for excavated material.

(a) If excavated material is to be deposited at an off-site location, the grading application must include information on the deposition site location and characteristics. The plan must include verification that the deposition site is not within a critical area.

(b) If the off-site deposition site is within a critical area, or if the amount of fill exceeds the thresholds specified in 24.20.030 (2) (a), a separate grading permit is required.

(3) Plan specification requirements. Specifications shall accompany each set of plans.

(4) Geotechnical report. A geotechnical report may be required by the Director if site inspection or information supplied by the applicant indicates that soils/and or geologic conditions may exist on site which merit the examination of further, more detailed information in order to adequately address project safety, stability and drainage issues.

(a) The geotechnical report shall include:

(i) Data regarding the nature, distribution and strength of existing soils and their load carrying capacity, conclusions and recommendations for grading procedures and design criteria for corrective measures when necessary, and opinions and recommendations pertaining to the adequacy of the site for grading and development, as related to the proposed project.

(ii) An adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed project, and opinions and recommendations pertaining to the adequacy of the site for grading and development.

(b) Recommendations included in the geotechnical report and approved by the Director shall be incorporated in the grading plans or specifications.

24.20.050. Issuance of grading permits; Modifications. After issuance of a grading permit, the Director may require

the modification of grading plans and operations if delays in completion of clearing and/or grading result in weather-generated problems not considered at the time the permit was issued.

24.20.060. Minimum requirements for grading operations.
The Director may increase minimim setbacks and other restrictions specified by this *Chapter* when he/she determines it to be necessary for safety and stability, to protect critical areas or to prevent damage to adjacent properties from deposition or erosion or to provide access for slope maintenance and drainage. In addition to the following minimum requirements, all permitted grading must be in conformance with Chapter 24.20, Drainage Requirements.

The following requirements shall apply to all cuts and fills:

(1) The tops of cuts and toes of fill slopes shall be set back from the outer boundaries of the permit area or property lines, and easements, in accordance with Figure No.1. Setbacks between graded slopes (cut or fill) and structures shall be provided in accordance with Figure No. 2. Retaining walls may be used to reduce the required setbacks when approved by the Director.

(2) Cut slopes shall be no steeper than one and one half horizontal to one vertical. Fill slopes shall not be constructed on natural slopes that are steeper than one and one half horizontal to one vertical: Provided, however, that approval for slopes that are steeper than two horizontal to one vertical may be granted by the Director when the applicant's geotechnical engineer verifies that the soils are suitable for such slopes or that containment measures such as berms will prevent soil slippage.

(3) The ground surface shall be prepared to receive fill by removing vegetation, noncomplying fill, topsoil and other unsuitable materials, scarifying to provide a bond with the new fill and, where slopes are steeper than five to one and the height is greater than 5 feet, by benching into sound bedrock or other competent material as determined by the applicant's geotechnical engineer.

(a) All benches shall be at least 10 feet wide, shall be back-sloped and shall be established at not more than twenty-five feet vertical intervals to control surface drainage and debris. Swales or ditches on benches shall have a maximum gradient of five percent.

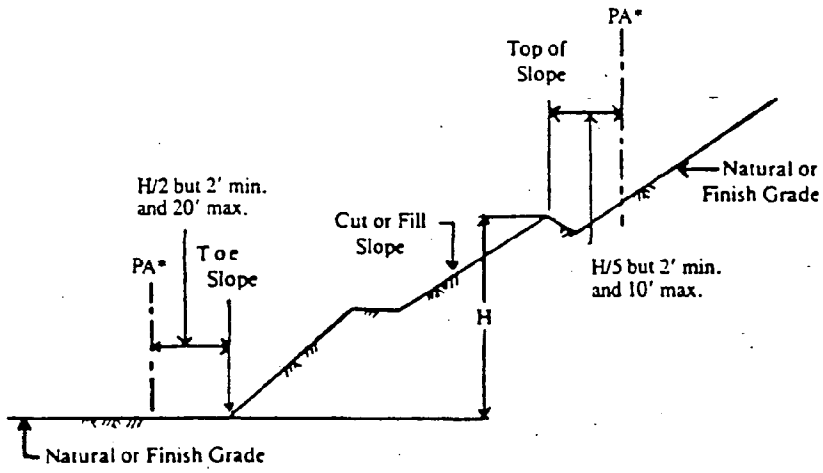


Figure 1

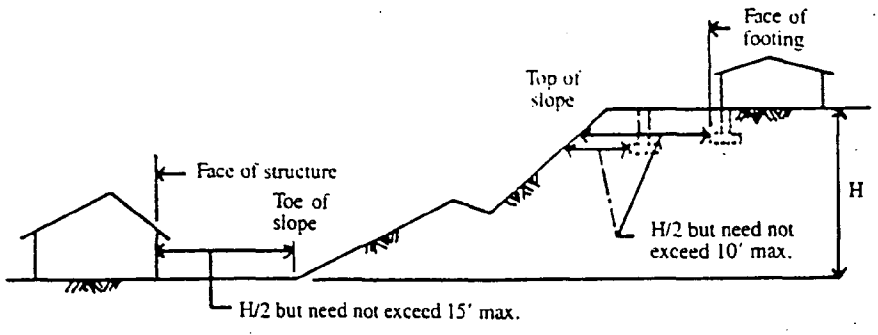


Figure 2

(b) The area beyond the toe of fill shall be sloped for sheet overflow or a paved drain shall be provided. The applicant's geotechnical engineer shall determine suitability of the cut as a foundation for fill after the cut has been made, but prior to placement of fill material.

(4) Except in an approved sanitary landfill only earth material may be used for filling. Organic soils may only be used when the Director determines that no stability problems will result from the use of such soils. No rock or similar irreducible material with a maximum dimension greater than 12 inches shall be buried or placed in fills unless prior approval has been obtained from the Director. The Director may permit placement of larger rock when the applicant's geotechnical engineer devises a method of placement acceptable to the Director, continuously inspects its placement and approves the fill stability; Provided, however, that the following conditions must be met:

(a) Prior to issuance of the grading permit potential rock disposal areas shall be delineated on the grading plan.

(b) Rock sizes greater than 12 inches in maximum dimension shall be placed 10 feet or more below grade, measured vertically.

(c) Rocks shall be placed so as to assure filling of all voids with fines.

(5) Compaction of all fills shall comply with the requirements of section 2-03 of the most current edition of the Standard Specifications for Road, Bridge, and Municipal Construction as published by the Washington State Department of Transportation and American Public Works Association, Washington State Chapter.

(6) All disturbed areas including faces of cuts and fill slopes shall be prepared and maintained to control erosion. Surface water or seepage shall be prevented from damaging the cut face of any excavations or the sloping face of a fill. The protection for the slopes shall be installed as soon as practicable. Final project approval shall not be granted until permanent erosion control measures are completed and functional.

(a) Temporary erosion and sedimentation control measures shall be installed on all projects when clearing or

grading commences or prior to other site disturbance, whichever comes first, and shall be maintained until permanent controls are established. Such measures shall prevent sediment from being carried in runoff from a site during construction, and shall protect existing water quality. Such measures may vary from site to site depending on such factors as weather, soils, slopes and construction practices. Erosion controls shall be constructed to minimize erosion and return waters to the natural drainage course or man-made facilities free of silt and other pollution so that existing water quality in the natural drainage course is maintained. Temporary erosion and sedimentation controls shall be designed for all storms up to and including the two-year storm event.

(b) Terraces at least 6 feet in width shall be established at not more than 30-foot vertical intervals on all cut or fill slopes to control surface drainage and debris. Where only one terrace is required, it shall be at mid-height. For cut or fill slopes greater than 60 feet and up to 120 feet in vertical height, the terrace located at approximately mid-height shall be 12 feet in width. Terrace widths and spacing for cut and fill slopes greater than 120 feet in height shall be designed by a civil engineer and approved by the Director. Suitable access shall be provided to permit proper cleaning and maintenance of all elements of the drainage system.

(c) Swales or ditches on terraces shall have a minimum gradient of 5 percent and must be reinforced. They shall have a minimum depth at the deepest point of 1 foot and a minimum paved width of 5 feet. A single run of swale or ditch shall not collect runoff from a tributary area exceeding 13,500 square feet (projected) without discharging into a down drain.

(d) Cut and fill slopes shall be provided with subsurface drainage as necessary for stability and to properly convey groundwater.

(e) All drainage facilities shall be designed to carry waters to the nearest practicable drainage way as specified in the approved drainage plan as a safe place to deposit such waters and where environmental impacts are minimized. Erosion shall be prevented in the area of discharge by installation of nonerosive down drains or other devices as specified in the approved drainage plan.

(f) Building pads shall have a drainage gradient of 2 percent sloped toward approved drainage facilities; Pro-

vided, however, that the gradient from the building pad may be 1 percent if all of the following conditions exist throughout the site:

(i) No fills are greater than 10 feet in maximum depth;

(ii) No proposed finish cut or fill faces have a vertical height in excess of 10 feet, unless fully retained to carry the required loads; and

(iii) No existing faces with a slope steeper than ten to one have a vertical height in excess of 10 feet.

(g) Interceptor drains. Paved interceptor drains shall be installed along the top of all cut slopes where the tributary drainage area above slopes towards the cut and has a drainage path greater than 40 feet measured horizontally. Interceptor drains shall be paved with a minimum of 3 inches of concrete or gunite and reinforced. They shall have a minimum depth of 12 inches and a minimum paved width of 30 inches measured horizontally across the drain. The slope of drain shall be approved by the Director.

(h) Other erosion control devices. Where necessary to control erosion and where specified in an approved drainage plan, check dams, cribbing, rip rap or alternative bank stabilization measures or other devices or methods shall be employed to control erosion and protect public health and safety.

(7) Access roads to grading sites shall be located, constructed and maintained to minimize problems of dust, mud, traffic circulation, drainage and other environmental concerns. Such roads shall be controlled by a gate when required by the Director.

(8) *Where hazardous conditions exist, warning signs shall be affixed at locations as required by the Director. The site must be enclosed by fencing with lockable gates that must be closed and locked when personnel are not present at the site. The fence must be no less than five feet in height and the fence material shall have no horizontal opening larger than two inches.*

24.20.070 Requirement for posting of grading permits and buffer marking.

(1) From the commencement of grading until completion of the

final inspection, evidence of a valid grading permit in such form as determined by the Director must be posted on site in a conspicuous location at the point of access to the site where it shall be easily discernible by the grading inspector or members of the public.

(2) Prior to grading or any other site disturbance, all *buffers on aquatic systems required pursuant to Title 30, SCC shall be marked in the field by the applicant using flagging or staking techniques acceptable to the Department.*

24.20.075 Obligations of persons performing the work.

Any person grading, or directing grading, shall have a copy of a valid grading permit on the work site at all times, and shall be responsible for compliance with plans, specifications, and permit requirements.

24.20.080 Grading inspection. All grading operations for which a permit is required are subject to periodic inspection by the County. Inspections shall be conducted for the purpose of verifying that work is being permformed in accordance with permit requirements.

24.20.090 Engineered and regular grading.

(1) All grading in excess of 5000 cubic yards shall require submittal and approval of a grading plan prepared by a civil engineer, and shall be designated as "engineered grading." Grading involving less than 5000 cubic yards shall be designated "regular grading": Provided, however, that the permittee, with the approval of the Director, may choose to have the grading performed as "engineered grading."

(2) Engineered grading.

(a) Prior to issuance of the grading permit, all required reports, compaction data and geotechnical engineering recommendations shall be submitted to the civil engineer and the Director.

(b) When *the Director determines that geologic, hydrologic or soil conditions may present special grading or drainage problems, he/she may require the applicant to submit a geotechnical report. When a* geotechnical report is required the applicant's geotechnical engineer shall inspect and approve the suitability of prepared ground to receive fills and the stability of cut slopes with respect to soil, *hydrologic,* and geologic conditions. The geotechnical

evaluation shall also include the need for subdrains or other groundwater drainage devices. Where required by the Director to verify safety, testing for required compaction, for stability of all finish slopes and for the adequacy of design of buttress fills shall be conducted.

(c) The civil engineer who prepares the approved engineered grading plan shall incorporate all recommendations from the geotechnical report into the grading plan. The civil engineer shall conduct a professional inspection and approval of the grading within his area of technical specialty. The inspection shall include, but need not be limited to, inspection and approval of the establishment of line, grade and drainage of the development area. The civil engineer shall also prepare revised plans and submit as-graded grading plans upon completion of the work.

(3) The Director may require evaluation of regular grading sites including inspection and testing by an approved testing agency. The testing agency shall be required to inspect and approve the suitability of cleared areas and benches to receive fill, and the compaction of fills. When the evaluation indicates that geologic factors may be present which require special consideration the grading operation will be required to conform to "engineered grading" requirements.

(4) If, in the course of fulfilling their responsibility under this title, the applicant's civil engineer, geotechnical engineer or the testing agency finds that the work is not being done in conformance with this *Chapter* or the approved grading plans, the discrepancies shall be reported immediately in writing to the Director along with recommendations for corrective measures, if necessary.

(5) If the civil engineer, the geotechnical engineer or the testing agency of record is changed during the course of the work, the work shall be stopped until the replacement has agreed, and supplied the Director with written notice thereof, to accept the responsibility for approval upon completion of the work.

24.20.100 Completion of work.

(1) Upon completion of rough grading and at final completion of the work the Director *shall* require the following reports and drawings and supplements thereto:

(a) An as-graded grading plan prepared by the civil engineer including original ground surface elevations, as-graded ground surface elevations, lot drainage patterns and locations and elevations of all surface and subsurface drainage facilities, together with verification that the work was done in accordance with the final approved grading plan.

(b) *When required pursuant to this Section, a* geotechnical grading report prepared by the applicant's geotechnical engineer which shall include:

(i) Locations and elevations of field density tests, summaries of field and laboratory tests and other substantiating data; comments on any changes made during grading and their effect on the recommendations made in the geotechnical engineering investigation report; and verification of the adequacy of the site for the intended use.

(ii) Final description of the geology of the site including any new information disclosed during the grading and the effect of same on recommendations incorporated in the approved grading plan. The report shall analyze geologic factors present on the site and verify the adequacy of the site for the intended use.

(2) The permittee or his agent shall notify the Director when the grading operation is ready for final inspection. Final approval shall not be given until all work, including installation of all drainage facilities and their protective devices and all erosion control measures, has been completed in accordance with the final approved grading plan, and the required reports have been submitted.

24.20.110 Abandonment/reclamation of mining/quarrying sites.

(1) Upon the exhaustion of minerals or materials or upon the permanent abandonment of the quarrying or mining operation, all nonconforming buildings, structures, apparatus or appurtenances accessory to the quarrying and mining operation shall be removed or otherwise dismantled to the satisfaction of the Director: Provided, that this requirement shall not apply to mining operations established prior to January 1, 1971, except those covered under previously existing zoning requirements.

(2) Grading or backfilling shall be done with non-noxious, nonflammable, noncombustible and nonputrescible solids.

(3) Such graded or backfilled areas, except for roads, shall be sodded or surfaced with soil of a quality at least equal to the topsoil of the land areas immediately surrounding, and to a depth equal to that of the topsoil of land areas immediately surrounding; Provided, however, that all sod and/or soil shall be at least four inches in depth.

(4) Bare topsoil shall be planted with trees, shrubs, legumes and/or grasses which are indigenous to the region and compatible with the surrounding area.

(5) Reclamation plans shall require submittal and approval of a drainage plan as required by *Chapter* 24.25. Graded or backfilled areas shall be reclaimed in a manner which will not allow water to collect nor permit stagnant water to remain.

(6) Non-harmful tailings consisting of earth material and soil piles shall be leveled. Grading must conform with fill requirements in subsection 24.20.060 (4) (c). The levelled and graded area must be sodded or surfaced and planted as required in subsection (4). Burying of unsuitable materials as part of the mining reclamation is prohibited.

24.20.120 Grading in shorelines of the State.

(1) No grading permit shall be issued for shorelines when such grading is associated with an activity that requires a shoreline substantial development permit, a shoreline conditional use permit or a shoreline variance until shoreline approval has been granted.

(2) Conditions of a shoreline substantial development permit, shoreline conditional use permit or a shoreline variance that pertain to grading shall be incorporated into the conditions of the grading permit.

24.20.130 Disclaimer of liability. Snohomish County is not responsible for the accuracy of plans (preliminary or final) submitted for approval to the Community Development Division of the Snohomish County Department of Planning and Community Development. The County expressly disclaims any responsibility for design or implementation of a grading plan, it being intended that design and implementation of a suitable grading plan are the responsibility of the person or firm submitting the grading application.

Chapter 24.25

DRAINAGE REQUIREMENTS

24.25.010 Conceptual drainage plan required. The conceptual drainage plan shall provide initial information regarding the drainage characteristics of a proposed project and project site. The plan shall contain sufficient information for preliminary assessment of drainage related impacts. Submittal and

approval of a conceptual drainage plan is required for:

(1) Any activity for which a public hearing is required *and for which project site alteration is proposed including rezone requests.*

(2) Short subdivisions and large lot subdivisions not located within a critical area.

(3) Excavations for a basement or footing for a single family residence when located in a critical area except where a detailed drainage plan has been approved by the County for the subdivision in which the lot is located and where the approved plan addequately addresses drainage impacts specifically associated with individual lots.

(a) Any applicant may submit a detailed drainage plan in place of a required conceptual drainage plan.

24.25.020 Detailed drainage plan required.

(1) Unless waived pursuant to 24.25.100 submittal and approval of a detailed drainage plan is required:

(a) Prior to final project approval for any activity specified in 24.25.010 *(1)*.

(b) For any other activity involving site alteration not otherwise specified in 24.25.010, or exempted in 24.25.030.

(2) The Department may require submittal and approval of a detailed drainage plan if the information contained in the conceptual drainage plan is insufficient for the purposes of assessing and assuring mitigation of potential adverse drainage impacts.

24.25.030 Conceptual and Detailed drainage plan exemptions. Neither a conceptual nor a detailed drainage plan is required for:

(1) Variances, where no site alteration is proposed.

(2) Construction and practices normal or necessary for *commercial* farming, ranching and associated irrigation, including normal maintenance and repair of *dikes, ditches, and* existing structures, *placement of riprap when necessary to make emergency repair to dikes, installation of drain tile and drain maintenance for existing drainage systems, and*

implementation of best management practices as defined in "Snohomish County Metropolitan Municipal Corporation/King County 208 Area Wide Waste Management Planning Study, Farm Water Quality Management Manual", September, 1977; Provided that such best management practices are designed and approved by the Snohomish County Conservation District as part of an approved farm conservation plans.

For the purposes of this title the following actions shall not be considered normal or necessary farming or ranching activities:

(a) any confined animal operation that has uncontrolled runoff which will degrade water quality,

(b) all processing plants of any kind and other activities of a like commercial nature,

(c) alteration of the contour of a critical area by leveling or filling except through normal cultivation or to implement best management practices as defined in *"Snohomish County Metropolitan Municipal Corporation/King County 208 Area Wide Waste Management Planning Study, Farm Water Quality Management Manual", September, 1977; Provided that such best management practices are designed and approved by the Snohomish County Conservation District as part of approved farm conservation plans.*

(d) any filling within a wetland or within the ordinary high water mark of any river, stream or lake *unless to implement best management practices as defined in "Snohomish County Metropolitan Municipal Corporation/King County 208 Area Wide Waste Management Planning Study, Farm Water Quality Management Manual", September, 1977; Provided that such best management practices are designed and approved by the Snohomish County Conservation District as part of approved farm conservation plans.*

(e) placement of structures within 25 feet of a wetland or the ordinary high water mark of any river, stream or lake *unless to implement best management practices as defined in "Snohomish County Metropolitan Municipal Corporation/King County 208 Area Wide Waste Management Planning Study, Farm Water Quality Management Manual", September, 1977; Provided that such best management practices are designed and approved by the Snohomish County Conservation District as part of approved farm conservation plans.*

(3) Clearing and grading within critical areas when excavation and/or filling does not exceed 50 cubic yards of material; Provided that such clearing or grading is associated with uses normally incidental to a single family dwelling. These shall include, but not be limited to, gardening, cultivating, pruning, landscaping, firewood cutting, preparation of ground for placement of accessory structures and other actions of a similar nature; Provided further that aquatic systems are not impacted, buffers or other open space areas established and protected by easement or covenant are not impacted, and no filling, excavation or placement of riprap occurs within the ordinary high water mark of any stream or lake or within any Class I wetland.

(4) Excavation or filling for siting utility transmission, distribution and service lines. Such excavation or filling shall be the minimum necessary to allow project construction and shall be in general conformance with the Aquatic Resource Protection element of the Snohomish County Comprehensive Land Use Plan.

(5) Except when located within a critical area, neither a conceptual nor a detailed drainage plan is required for:

(a) Activities involving excavation or filling of less than 100 cubic yards which do not result in the creation or approval of more than 5,000 square feet of impervious surface area.

(b) Excavations for a basement or footing for a single family residence and accessory structures when such excavations do not exceed 500 cubic yards.

24.25.040 Timing of conceptual and detailed drainage plan submittals and reviews.

(1) The conceptual drainage plan or detailed drainage plan shall be submitted at the time a permit application is submitted for any proposed activity.

(2) When a conceptual drainage plan or detailed drainage plan is required, review of the drainage plan shall occur prior to issuance of any other county land use permit or approval.

24.25.050 Conceptual drainage plan contents. Conceptual drainage plans shall include the following information:

(1) Location, site description and tax account number.

(2) Flow directions of existing drainage.

(3) Location of existing and planned structures.

(4) Approximate location of all critical areas including stream, lake and wetland boundaries, and buffers required pursuant to Title 30, SCC.

(5) Proposed method of handling drainage impacts, including inspection and maintenance schedule for drainage systems.

(6) Temporary Erosion and Sedimentation Control (TESC) Plan. The TESC Plan prepared by the applicant shall include proposed measures for controlling runoff during clearing, grading and construction and proposed staging and schedule of all building/clearing/grading activities. The TESC plan must be fully implemented at each stage of site development from the time of initial grading and clearing to final construction preceding occupation.

24.25.060 Detailed drainage plan contents. All detailed drainage plans shall be prepared by, and bear the stamp of a licensed professional civil engineer. Detailed drainage plans shall include the following information with respect to surface and pertinent subsurface water flows entering, flowing within, and leaving the subject property, before, during, and after construction.

(1) Project and site description:

(a) A legal description of the property.

(b) The names, addresses and telephone number of the owners and persons ordering the work to be performed.

(c) To the extent necessary to adequately demonstrate the accuracy of computations, the location of any existing or proposed buildings, structures, and utilities on the property where the work is to be performed and the location of any existing building or structure located on adjacent property and within fifteen feet of where the work is to be performed.

(d) Elevations, dimensions, location, and extent of slopes for all work proposed to be done, shown on a contour map. The map shall be at a minimum scale of one inch equals 200 feet. Other approved scales for contour maps are one inch equals 100

feet, one inch equals 50 feet, one inch equals 20 feet, or one inch equals ten feet. A one to ten vertical to horizontal relationship must be used for all plan/profile maps. The contour map shall show the existing contours of the land at no more than five foot intervals and the proposed contours of the land after completion of the proposed work, at the same intervals.

(e) Summary of existing and proposed vegetative cover, including types of trees, shrubs, and grasses depicted on a map of the proposed site.

(f) Location and extent of underlying soil types, and for hydric soils, moisture content under saturated and dry conditions.

(g) The boundaries of all areas that will be paved, cleared, graded or otherwise altered in a manner that will increase surface water runoff, and boundaries of all areas to remain in an existing or natural condition.

(h) Location and boundaries of all streams, lakes, wetlands and critical areas, and buffers required pursuant to Title 30, SCC.

(i) Location of existing and proposed drainage features which transport surface water onto, across, or from the site including natural watercourses, artificial channels, drainage pipes or culverts.

(2) Background computations for sizing drainage facilities:

(a) Peak discharge and volume of surface and subsurface water currently entering and leaving the subject property due to the design storm. For subsurface waters entering property methods used for estimating quantity for design purposes shall be indicated.

(b) Peak discharge and volume of runoff which will be generated due to the design storm within the subject property and at downstream discharge points off the subject property, if the proposed activity is allowed to proceed.

(3) Proposed method(s) of handling drainage:

(a) Proposed improvement for handling the computed runoff, including the location and capacity of all natural or proposed drainage facilities, the method of discharging stormwater off-site at the naturally occurring location, and provisions needed to restrict the velocity and direction of the discharge in

order to avoid damage to other properties and aquatic systems.

(b) Drawings of proposed open channel and closed conduit systems.

(i) In open channel work, the water surface elevation of the flow for the design storm must be indicated on plan and profile drawings as well as the configuration of the finished grades constituting the banks of the open channel.

(ii) The proposed cross-section of the channel with stable side slopes must be shown in the plan and

(iii) The water surface elevation of the flow for the design storm must be indicated on the cross section.

(c) Temporary Erosion and Sedimentation Control (TESC) Plan. The TESC Plan prepared by the applicant shall include proposed measures for controlling runoff during clearing, grading and construction and proposed staging and schedule of all building/clearing/grading activities. The TESC plan must be fully implemented at each stage of site development from the time of initial grading and clearing to final construction preceding occupation.

(d) Method for assuring long-term operation and maintenance of drainage improvements and facilities in accordance with 24.30.010, including inspection and maintenance schedule for drainage systems.

24.25.070 Effect of incomplete submittal. The County will refuse to process an application that fails to include all materials required by this *Chapter*.

24.25.080 Reuse of drainage plan submittals. A plan submitted during one permit/approval process may also be submitted as part of further required applications so long as it is supplemented with any additional information requested by the Director. If the Director determines that a previsously submitted plan, including supplementary information, is inadequate he/she may require a separate detailed drainage plan and fees.

24.25.085 Conceptual or detailed drainage plan register for proposed wetland or stream alteration. The Director shall maintain a register of all conceptual or detailed drainage plans submitted to the department for approval when such plans propose alterations to streams or wetlands. The register shall be posted at least 15 working days before drainage plan approval is granted. All other

County permits or approvals applied for by the applicant relating to the project for which the drainage plan was prepared shall be listed on the register.

24.25.090 Drainage and retention/detention systems design requirements.

(1) All projects which will increase peak rates of runoff from the property shall provide on-site retention/detention facilities, except as otherwise provided by this section or section 24.25.110.

(2) Surface water entering the subject property shall be received, and that exiting the property shall be discharged, at existing natural locations. All collected site run-off shall be required to flow through the detention/retention facility.

(3) The minimum design storm for purposes of sizing and designing drainage conveyance structures such as pipes, culverts and ditches, shall be a 6-hour duration, 25-year return period storm. The minimum design storm for the purposes of designing retention/detention facilities shall be the 6-hour or 24-hour duration, 25-year return period storm, whichever volume is greater, Provided, that in areas designated as "special flood hazard areas", as defined within Title 27, Snohomish County Flood Hazard Ordinance, the design storm shall be a 100 year return period storm.

(4) Weir design and/or minimum orifice sizes must be consistent with the design requirements contained in the Drainage Procedures Manual. All facilities must be designed to minimize maintenance requirements.

(5) Residential development drainage plans shall include a conveyance system for roof and downspout drains.

(6) To the maximum extent feasible drainage pipes and channels shall be located so as to run within single lots rather than being split by lot lines. Drainage easements may extend to either side of a lot line.

(7) Retention/detention facilities must be designed with adequate capacity and discharge controls to restrict peak runoff flows to predevelopment rates for the 24-hour storm event for the two-year, 10-year, and 25-year return period storm. Detention ponds shall be designed with 10% greater volume than shown by the run-off calculations to account for obstruction of pond volume by

vegetation.

(8) Overflow provisions must be suitable for passage of run-off from the 24-hour storm event, for the 100-year return period storm without failure, and must direct waters from storms ranging between 25-year and 100-year return period storms away from all structures.

(9) All projects where flows on-site exceed those of the predevelopment level discharges shall have systems with adequate energy dissipaters to avoid the erosive effects that result from increased flows.

(10) Cleanout gates in restrictor standpipes shall be of a liftgate or sheargate design. No slide gates shall be allowed.

(11) Existing water quality of aquatic systems receiving discharged stormwater shall be maintained. All discharges which may potentially degrade existing water quality shall be provided with applicable known, available and reasonable methods of treatment prior to discharge. The following are minimum water quality maintenance requirements:

(a) The use of permanent wet ponds and/or constructed wetlands shall be required for stormwater retention/detention where calculated storage needs exceed 3000 cubic feet. The wet pond shall be designed with a permanent pool that is maintained between storms. Additional storage is required to meet the detention volume requirements over and above that provided by the permanent storage of the wet pond. Dry (ie. detention) ponds shall be designed with gravel berms to create a circuitous route for low flows in order to enahance the pollutant removal capacity of the pond. All ponds shall be designed as flow through ponds. Ponds with over 10,000 cubic feet storage volume shall be provided with a separate sedimentation pond on the inlet side of the pond.

(b) All projects which will increase the peak rate of runoff from the property shall provide an on-site oil water separator prior to discharge from the site.

(c) Conveyance design shall incorporate grass swales and other means of biofiltration for surface water conveyance prior to discharge into naturally occurring aquatic systems. A minimum of 200 feet of grass-lined swale per acre of impervious surface area, or the equivalent water quality treatment, shall be provided. *Biofiltration systems and other elements of drainage systems designed to protect water quality should function for that purpose up to the 2-year, 24 hour storm. Generally, all run-off*

from parking areas, roads, and driveways shall be routed to sheetflow over grass prior to entering a pipe.

(12) Drainage plans which incorporate use of existing wetlands in order to meet requirements for retention/detention must meet the requirements of Title 30, Snohomish County Code.

(13) Retention/detention facilities must be designed so that direct access is provided from a public right-of-way for maintenance purposes. All catch basins, including the restrictor control catch basin, must be provided with a minimum 15 foot wide, level access road suitable for heavy maintenance vehicles. The design of the detention pond must include provisions to minimize the maintenance requirements.

(14) Where open channel construction is used to handle drainage within the subject property, a minimum fifteen (15) foot setback shall be provided between any structures and the top of the bank of the defined channel.

(15) Where a closed system is used to handle drainage within the subject property, a minimum ten (10) foot setback shall be provided between any structures and the closed system.

(16) Alll drainage facilities, including conveyand and retention/detention facililties, must be located in a drainage easement at least *twen*ty feet in width dedicated to the County for the purposes specified in 24.30.010 (2).

(17) Soils disturbed for drainage system construction shall be revegetated or otherwise stabilized to minimize erosion.

(18) In order to mitigate or eliminate special drainage problems, the Director may require drainage improvements in addition to those specified. Such improvements may include, but are not limited to, downstream improvements where the Director determines that downstream conditions are highly sensitive, or will be adversely impacted by the proposed activity.

24.25.100. Completion of work, requirements for engineered record drawings.

(1) Final reports. Upon final completion of the work the following reports and drawings and supplements thereto shall be submitted:

(a) A record drawing prepared by the applicant's civil engineer or licensed surveyor reflecting the actual vertical and horizontal locations of the road and storm drainage facilities constructed on the project site. The requirements for record drawings shall be determined by the Director.

(b) The record drawings shall include the following declaration by the applicant and his/her civil engineer or licensed surveyor.

> WE HEREBY DECLARE THAT THE ROAD AND STORM DRAINAGE IMPROVEMENTS ARE LOCATED AS SHOWN ON THESE RECORD DRAWINGS.
>
> BY:_____ _____
> Engineer/Surveyor Date
>
> BY:_____ _____
> Developer/Owner Date

24.25.110 Waiver of detailed drainage plan requirement. After a conceptual drainage plan has been submitted and reviewed, the Director may waive the requirement for a detailed drainage plan upon upon written findings in support of the waiver. A waiver shall be granted only if the activity meets all of the following criteria:

(1) it will not adversely impact existing water quality conditions of any aquatic systems;

(2) it will not alter the surface discharge location, alter the drainage pattern on adjoining properties, increase the peak discharge, adversely increase runoff volume, or cause any other adverse effects in the drainage area; and

(3) it will not alter the subsurface drainage patterns, flow rates, discharge points, nor result in any significant adverse effects to property or residents.

24.25.120 Modifications. The Director may allow modifications to the drainage requirements of 24.25.090 upon written findings that the proposed modifications specified in the detailed drainage plan comply with the intent and purpose of the requirements and either meet or exceed the performance of those requirements.

24.25.130 Drainage plan approvals. Conceptual or detailed

drainage plans will be approved only when such plans comply with all requirements of this Title and Title 30 SCC.

(1) When no specific site development plans have been submitted, conceptual or detailed drainage plans shall reflect Title 30 buffer retention requirements based upon potential use of the site allowed by the underlying zoning or applicable comprehensive plan, whichever allows the most intensive use.

24.25.140 Approval of construction changes to approved drainage plans. All proposed construction changes revising the concept of an approved drainage plan must receive approval by the Director prior to construction in the field. The Director may require submittal of design calculations or additional information to justify the changes prior to making a decision on the proposed changes.

24.25.150 Fee in lieu.

(1) The Director of Public Works may approve County acceptance of a voluntary fee in lieu of requiring on-site facilities when he/she determines that drainage impacts can best be mitigated by combining detention and conveyance facilities for multiple projects in close proximity. In such instances, the Director will coordinate the design and construction of combined facilities by the applicants. The fee shall be equivalent to the project share of the cost of the facility.

(2) Upon collection, such fees shall be placed in a separate fund and shall be used only for capital costs associated with detention and conveyance facilities serving the drainage basin within which they are collected.

Chapter 24.30

MAINTENANCE OF DRAINAGE FACILITIES

Sections:

24.30.010 Responsibility for maintenance.

(1) Developers of any residential project shall be responsible for maintenance of the entire drainage system, including detention/retention facilities, for a period of two years following construction acceptance by the County. The County shall periodically inspect the system for maintenance and shall enforce the maintenance requirements pursuant to Chapter 24.50 SCC and Title 28 SCC. Verification of effective maintenance and County approval must be obtained in writing prior to release of any bond required pursuant to Chapter 24.35.

At the end of two years if the County's inspection verifies that the facility has been adequately maintained and is functioning in accordance with the design, the County will assume responsibility for maintaining those elements of the drainage system which are within the County road right-of-way. If the two-year inspection identifies deficiencies in any element of the drainage system due to workmanship, materials or maintenance, the developer must rectify such deficiencies before the County assumes maintenance responsibility.

(2) In residential subdivisions the property owners shall have a common undivided interest in the ownership and maintenance of all elements of the drainage system which are not located within the County right-of-way or on other County lands. All such elements of the drainage system shall be placed within an easement consistent with the provisions of 24.25.090 (16).

(a) The easement shall be granted to the public for the purposes of conveying and/or storing stormwater and run-off as specified in an approved drainage plan in order to protect public safety, health and welfare.

(b) The easement shall also grant to Snohomish County the right on behalf of the public to enter said property when necessary to inspect drainage system installation, maintenance and operation, to correct hazardous situations *and to modify systems when necessary to protect the public safety, health and welfare.*

(c) The easement and restrictions shall be shown on all maps accompanying title reports, and all easement restrictions shall be attached to the property title. The following restrictions apply to all such easements:

(i) No fill, structures, fences, walls, rip-rap, buildings, or other simi*lar devices* may be placed within the drainage easement without the express written consent of the Director.

(ii) Individual property owners shall be responsible for maintaining elements of approved drainage systems located on property in their ownership. Maintenance shall include keeping all conveyance, storage and maintenance access areas free of accumulated debris, such as lawn clippings, leaves or trash.

(3) The owner of record of commercial, industrial, or multi-family projects shall be responsible for the maintenance of all on-site drainage systems. Systems shall be kept in full working order at all times so that their water quantity and quality functions are not impaired.

(4) Maintenance for all drainage systems must be conducted by the responsible party in compliance with a county approved schedule. Such schedules shall be included as part of all drainage plans submitted to the County pursuant to 24.25. The County shall enforce the maintenance requirements pursuant to Chapter 24.50 SCC.

Chapter 24.35

FEES AND BONDS

Sections:

24.35.010 Fees.

(1) Fees for fee in lieu of retention/detention facilities and for review of drainage studies, grading permits, construction plan specifications, and inspections shall be paid to the County in accordance with a schedule of fees.

(2) The initial schedule of fees shall be determined by motion of the Council. If the Director concludes that an adjustment is appropriate because of changes in the cost of administering this ordinance, he/she may modify any fee; provided that written notice of any such change shall be given the Council, which may, by motion within ten days, veto or amend the change.

24.35.020 Bonds.

(1) The Director *shall* require bonds *to be posted* in such form and amounts as he/she may *deem necessary* to assure that the work *required by the provisions of this Title,* if not completed in accordance with the approved plans, specifications and permit requirements will be corrected to eliminate hazardous conditions, and protect fish and wildlife habitat and the health, safety and general welfare of the public.

(2) Liability under the bond may be released upon written notification by the Director, following final site inspection, that he/she is satisfied that the project complies with conformance to permit conditions, plans and specifications,

including corrective work, compensation, enhancement, or restoration of critical areas, when required.

(3) The amount of the bond shall equal the estimated cost, as approved by the Director, of conformance to *plans, specifications and permit requirements,* including corrective work and compensation, enhancement, or restoration of critical areas and inspection by the Director.

(4) If the Director determines that conditions exist which are not in conformance with plans, specifications and permit requirements at any time during the term of the bond, he may issue a stop work order prohibiting any additional work until the condition is corrected. When the Director authorizes revocation of the bond, or a portion of the bond, in order to correct conditions which are not in conformance with plans, specifications, and permit requirements, work may not proceed until the original amount of the bond has been reestablished by the permittee.

24.35.030 Liability Policy. Applicants required to post bonds pursuant to this section shall also maintain a liability policy for the life of the performance or maintenance bonds in accordance with current County requirements for such policies.

Chapter 24.40

WETLAND, LAKE AND STREAM IDENTIFICATION

Sections:

24.40.010 Wetland identification and delineation for inventory and mapping. For general wetlands inventories and mapping Snohomish County shall use the wetland identification and delineation approach based primarily on examination of the prevalence of hydrophytic plants as specified in Classification of Wetlands and Deepwater Habitats of the United States, Cowardin, et.al 1979, for the U.S. Fish and Wildlife Service.

24.40.020 Use of multi-parameter delineation approach. In cases where conflict arises over the exact location of wetland boundaries, the County may require the applicant to submit a wetland survey map on which boundaries have been delineated using the multi-parameter approach developed by the U.S. Army Corps of Engineers and the Environmental Protection Agency as specified in *Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S.D.A. Soil Conservation Service, Washington D.C. Cooperative technical Publication.* The County shall review the results of such surveys.

24.40.030 Stream delineation. The delineation of stream channels shall be made by measuring from the ordinary high water mark to the ordinary high water mark on the opposite bank.

24.40.040 Lake edge delineation. Lake edges shall be

delineated by the ordinary high water mark.

24.40.050 Metes and bounds survey. The County may require a metes and bounds survey to identify exactly stream, lake, and wetland boundaries for the purposes of project siting. The County shall review the results of such surveys.

Chapter 24.45

APPEALS

Sections:

24.45.010 Appeals. Final decisions or determinations of the Director regarding issuance of grading permits, drainage plan approvals, modifications or waivers under this title may be appealed to the county hearing examiner. An appeal shall be filed in writing with the examiner's office within fifteen calendar days of the date the Director's decision or determination is transmitted to the applicant, shall state fully the grounds therefore, and shall be processed in the manner prescribed for administrative appeals under Chapter 2.02 and 18.18 SCC.

Chapter 24.50

ENFORCEMENT

Sections:

24.50.010 Director's authority. Whenever the Director determines that a condition exists in violation of this title or any code or standard required to be adhered to by this title, he/she is authorized to enforce the provisions of this title, or codes or standards, pertaining to such condition existing in violation thereof.

24.50.020 SCC Title 28 - applicable. All violations of this title, and codes and standards required thereby, are made subject to the provisions of SCC Title 28.

24.50.030 Order to cease violation. Whenever any condition is found to be in violation of this title, or codes or standards required to be adhered to thereunder, the Director may order the cessation of activity causing the violative condition by notice in writing served on the person(s) engaged in or causing such condition. The effect of such order shall be to require immediate cessation of activity causing the violative condition. Said order shall not be affected by any right of appeal afforded by this or any other title of this code.

24.50.040 Notice of violation - penalty - abatement. The Director is authorized to order correction and discontinuance of any violative condition of the provisions of this title under the procedures of SCC Title 28, which provide for notice of violation and assessment of penalty and order to abate.

24.50.050 Public nuisance. All violations of this title, and codes and standards required thereby, are determined to be detrimental to the public health, safety, and welfare and are public nuisances. All conditions which are determined by the Director to be in violation of this title, or codes or standards required thereby, shall be subject to the provisions of this title and shall be corrected by any reasonable and lawful means, as provided in this title.

24.50.060 Alternative remedies. As an alternative to any other judicial or administrative remedy provided in this title or by law or other ordinance, any person who willfully or knowingly violates any provision of this title or any order issued pursuant to this title, or by each act of commission or omission procures, aids, or abets such violation, is guilty of a misdemeanor, and upon conviction shall be punished as provided in SCC Title 1.01.100. Each day such violation continues shall be considered an additional misdemeanor offense.

24.50.070 Administrative jurisdiction - nonexclusive. The authority of the Director to enforce the provisions of this title is not in derogation of the authority of any other officer charged with the enforcement of law but is concurrent therewith. The authority of the Director to enforce the provisions of this title includes without limitation the requirement that he request the assistance of the prosecuting attorney's office for judicial enforcement as may be deemed appropriate by the prosecuting attorney.

PASSED this _____ day of _____, 19__.

SNOHOMISH COUNTY COUNCIL
Snohomish County, Washington

_____
Chairperson

Approved as to Form:

_____
Deputy Prosecuting Attorney

ATTEST:

_____
Clerk of Council

( ) APPROVED

( ) VETOED

( ) EMERGENCY DATE: _____

_____
County Executive

PUBLISHED _____ and _____

s;tl24888/campion/smart

TL24988/LC/3/89

III.

DRAFT TITLE 30
AQUATIC RESOURCE PROTECTION ORDINANCE

The draft ordinance contains all proposed aquatic resource protection regulations including definitions, aquatic systems identification and classification processes, preservation thresholds, mitigation and buffer requirements, proposed permitting process, and variance procedures.

AQUATIC RESOURCE PROTECTION

CHAPTERS

Chapter 30.04

GENERAL

Sections:

30.04.040 Title. This title constitutes and may be cited as the Snohomish County Aquatic Resource Protection Ordinance.

30.04.080 Purpose. The purpose of this title is to preserve and protect Snohomish County's aquatic resources so that the important functional values of all aquatic systems including water quality maintenance, fish and wildlife habitat, runoff and flood control, groundwater discharge and recharge, sediment retention/entrapment, pollution assimilation, water supply and stream base-flow maintenance are preserved for the benefit of, and to further the public health and welfare of, all Snohomish County citizens.

30.04.120 Applicability.

(1) The regulations set forth herein shall apply to any activity which is located within a critical area containing an aquatic system and for which a conceptual or detailed drainage plan is required by Title 24 SSC. Approval shall not be granted for such activities unless they are found to be consistent with the provisions of this title.

(2) The regulations set forth herein shall not be applicable to:

(a) Aquatic systems subject to the County permitting authority pursuant to Title 21 SCC and the Snohomish County Shoreline Management Master Program; or

(b) Any activity for which site development plans or contractual stipulated final site plans have been approved by the county hearing examiner or council prior to the effective date of this title; or

(c) Any activity for which applications requiring binding site plans or subdivision maps have been determined to be complete prior to the effective date of this title.

(3) Those activities exempted from the provisions of this title per 30.04.120 (2) above shall continue to be subject to other applicable regulations and policies pertaining to aquatic resource protection.

Chapter 30.08

DEFINITIONS

Sections:

30.08.005 Activity. "Activity" means any land use action that requires a County permit or approval.

30.08.010 Alteration. "Alteration" means any activity including clearing, grading, draining, filling, or other aquatic system disturbance which results in a decrease or loss of functional values.

30.08.015 Applicant. "Applicant" means the person, corporation, or other private or public entity applying for or granted a land use or development permit or approval by Snohomish County.

30.08.020 Aquatic systems. "Aquatic systems" means streams, wetlands and lakes.

30.08.025 Bond. "Bond" means a surety bond, cash deposit or escrow account, assignment of savings, irrevocable letter of credit or other means acceptable to the Manager to assure work is completed in accordance with all applicable County requirements.

30.08.030 Buffer. "Buffer" means an undisturbed zone of vegetation adjacent to an aquatic system that protects the aquatic system from upland impacts, protects the uplands from flood and erosion damage, and provides valuable habitat for wildlife.

30.08.035 Channel. "Channel" means an open conduit which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water.

30.08.040 Class I wetland. "Class I wetland" means those wetlands that are rare in Snohomish County and perform irreplaceable ecological functions. Such wetlands must:

(a) be verified by a state or federal resource management agency as being utilized by species recognized to be endangered, threatened or sensitive by the U.S. Fish and Wildlife Service, Washington State Department of Wildlife, or Washington State Department of Natural Resources; or

(b) contain a unique or rare habitat type for Snohomish County (those habitats limited to sphagnum bogs and fens, climax community forested swamps with spruce/cedar/lodgepole pine associations and estuarine wetlands); or

(c) have a significant habitat value and diversity as demonstrated by the following characteristics: having a similar proportion of open water to vegetative cover in dispersed patches where the open water area is no greater than 60 percent, and no less than 40 percent of the total wetland area, at least three wetland subclasses as identified per the U.S. Fish and Wildlife Service wetland classification system, and at least two types of special habitat features. Special habitat features are salmonid rearing areas as demonstrated by the presence of juvenile salmonids, snags, trees with dead and dying tops, rocky outcroppings, islands suitable for nest sites, nest colonies of protected species and large downed woody debris. In addition to the above criteria the wetland must be connected to another habitat area, either upland or aquatic, via a stream or vegetated corridor, or be surrounded by a minimum of a 100 foot wide vegetated upland; or

(d) be greater than ten (10) acres in size and have 3 or more wetland subclasses as identified by the U.S. Fish and Wildlife Service wetland classification system, one of which is open water; or

(e) obtain a score greater than eighty percent (80%) through the wetland evaluation procedure established in section 30.12.160 SCC.

30.08.045 Class II wetland. "Class II wetland" means those wetlands which perform important ecological functions. Class II wetlands shall include all of those wetlands which do not meet the definitional criteria for Class I or Class III wetlands. Riparian wetlands which do not meet the definitional criteria for Class I wetlands per 30.08.040 shall in all cases be Class II wetlands. A Class II wetland shall also be a wetland that obtains a score greater than fifty percent (50%) and up to eighty percent (80%) through the wetland evaluation procedure established in section 30.12.160 SCC.

30.08.050 Class III wetland. "Class III wetland" means those wetlands which are of minimum habitat value as evidenced by the lack of food plants for wildlife, are characterized by monotypical vegetation of similar age class, lack open water areas and special habitat features, and are hydrologically isolated from other aquatic systems (lacking either surface or subsurface connections). A Class III wetland shall also be a wetland that obtains a score of fifty percent (50%) or less through the wetland evaluation procedure established in section 30.12.160 SCC.

30.08.055 Clearing. "Clearing" means, within a critical area:

(1) removal by mechanical means of vegetative material, stumps, logs, trees, and components thereof, where such removal deforms the underlying soil systems or results in the removal of roots from beneath the surface of the soil.

(2) removal by any means of more than 20% by area of the vegetative material within a critical area, exclusive of the aquatic system.

(3) removal by any means of any amount of vegetative material within a wetland, stream or steep slope or within 50 feet of the wetland edge, stream ordinary high water mark or adjacent top of slope which is 25% or greater.

30.08.060 Critical areas. "Critical Areas" means those areas within which stormwater runoff, flooding, erosion, groundwater recharge/discharge and/or instability conditions present special drainage-related problems and are limited to the following:

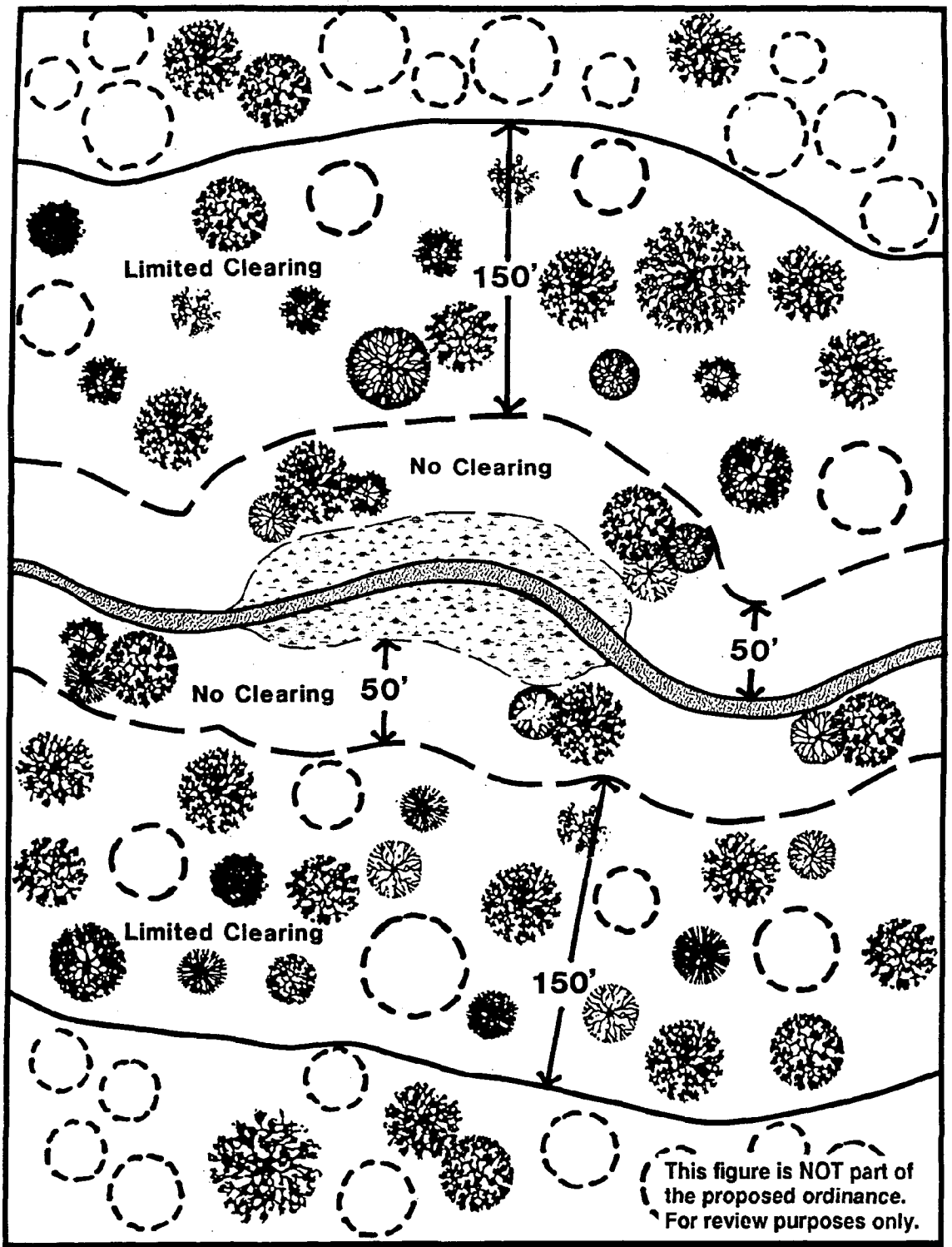
(1) Lands having a continuous slope of 25 percent or greater.

(2) Lands within 200 feet of the ordinary high water mark or within the flood plain of any stream or lake.

(3) Lands within 200 feet of the edge of a wetland or lands within 50 feet of the edge of a wetland where it has been satisfactorily demonstrated by the applicant that no surface or subsurface drainage influence exists beyond 50 feet from the edge of the wetlands.

(4) Lands encompassing a known slide area as determined by the Department.

(5) Lands designated as critical areas in adopted County wa-



LEGEND

Stream

Wetland

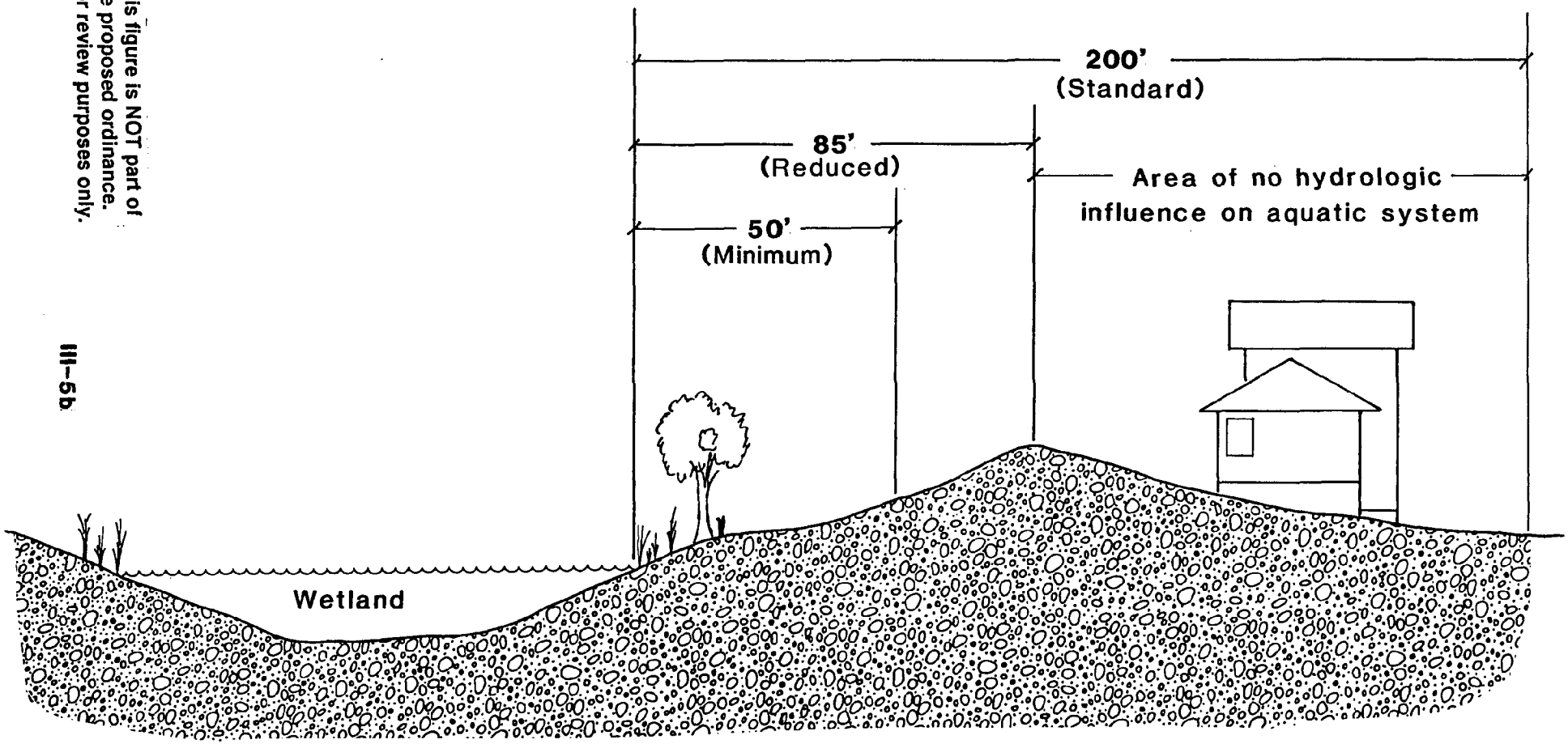
Cleared Tree

Undisturbed Tree

Clearing jurisdiction and provisions within Critical Areas per 30.08.055

Graphic depiction of a Critical Area per Section 30.08.060 definition

This figure is NOT part of the proposed ordinance. For review purposes only.



tershed management plans.

30.08.065 Department. "Department" means the Department of Planning and Community Development, Planning Division.

30.08.070 Drainage plan. "Drainage plan" means a plan prepared by or on behalf of the applicant which identifies existing drainage conditions at the location of a proposed land use activity and identifies the proposed means of ameliorating anticipated impacts to surface and subsurface water associated with a proposed activity.

30.08.075 Enhancement. "Enhancement" means to increase the overall value of an aquatic system and/or its buffer area by increasing existing functional values, restoring lost functional values, or introducing new functional values.

30.08.080 Erosion. "Erosion" means the wearing away of the ground surface as a result of the movement of wind, water and/or ice.

30.08.085 Excavation. "Excavation" means the mechanical removal of earth material from its place of origin.

30.08.090 Filling. "Filling" means any act by which earth material or other material is deposited, placed, pushed, pulled or transported to a place other than the place from which it originates.

30.08.095 Flood plain. "Flood plain" means land adjoining a river, stream, watercourse, ocean, bay or lake having a one percent chance of being inundated in any given year with flood waters resulting from the overflow of inland or tidal waters and/or the unusual and rapid accumulation of surface runoff from any source.

30.08.100 Functional Values. "Functional Values" means those functions performed by an aquatic system or buffer considered by the County to be highly beneficial to the maintenance of the system and surrounding environment. "Functional Values" for wetlands, streams and buffers are limited to the following elements:

(1) Streams. Fish and wildlife habitat, water quality maintenance, water supply, and water conveyance.

(2) Wetlands. Fish and wildlife habitat, water quality maintenance, pollution assimilation, shore stabilization, sediment retention, runoff and floodwater storage and conveyance, runoff control, stream base-flow maintenance, and groundwater discharge/recharge.

(3) Buffers. Fish and wildlife habitat, runoff absorption, pollution assimilation, sediment entrapment, water quality maintenance, noise and visual screening, upland flood protection, and recreation.

30.08.105 Grading. "Grading" means any excavation, or filling, or combination thereof, including the construction of ditches and channels.

30.08.110 Hearing Examiner. "Hearing Examiner" means the Office of the Snohomish County Hearing Examiner created by SCC Chapter 2.02.

30.08.115 Lake. "Lake" means a naturally existing or artificially created body of standing water, including reservoirs, which exists on a year-round basis and occurs in a depression of land or expanded part of a stream. A lake must be greater than one acre in size, greater than 2 meters (6.6 feet) in depth at the deepest point, and have less than 30% areal coverage by trees, shrubs, or persistent emergent vegetation. A lake is bounded by the ordinary high water mark or, where a stream enters the lake, the extension of the elevation of the lake's ordinary high water mark within the stream.

Provided, however, that for the purposes of this title "lake" does not include entirely artificial structures such as storm water retention/detention ponds or ornamental ponds created by man.

30.08.120 Manager. "Manager" means the Manager of the Planning Division, Department of Planning and Community Development.

30.08.125 Mitigation. "Mitigation" means the offsetting of impacts to the functional values of aquatic systems and/or their buffers through minimizing the impacts by limiting the magnitude of the action; rectifying the impacts by repairing, rehabilitating or restoring the affected environment; reducing or eliminating the impacts through enhancement techniques; or providing compensation for the impacts by replacing or providing substitute resources or environments.

30.08.130 New Development. "New Development" means any activity for which a permit application has been submitted after the effective date of this title, but does not include activities proposed on lands zoned commercial or industrial prior to the effective date of this title, residential development on single family lots created prior to the effective date of this title, or preliminary subdivision maps or other site development plans either approved or included as part of a complete application prior to the effective date of this title.

30.08.135 Ordinary high water mark. "Ordinary high water mark" means the mark on all lakes, streams and tidal waters which will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in re-

spect to vegetation, as that condition exists on the effective date of this title, or as it may naturally change thereafter.

Provided, however, that in any area where the ordinary high-water mark cannot be found, the ordinary high-water mark adjoining salt-water shall be the line of mean higher high tide and the ordinary high-water mark adjoining freshwater shall be the line of mean high water.

30.08.140 Riparian wetlands. "Riparian wetlands" means those wetlands that occur within or partially within the flood plain of any stream and those wetlands located in the upper stream basin which serve as discharge points forming the headwaters of a stream.

30.08.145 Run-off coefficient. "Run-off coefficient" means a measure of a site's roughness, relative imperviousness and surface water discharge used in the rational method of determining total project runoff under post development conditions.

30.08.150 Site. "Site" means any lot or parcel of land or contiguous combination thereof under the same ownership where land alteration is proposed.

30.08.155 Stream. "Stream" means all lands and waters contained within a channel when such lands periodically support predominantly hydrophytes, the substrate is predominantly undrained hydric soil, or the substrate is non-soil and is saturated with water or covered by water at some time during the growing season of each year.

Provided however, that for purposes of this title, "stream" does not include irrigation and drainage ditches, grass-lined swales, canals, stormwater runoff devices, or other entirely artificial water courses. Streams which have been channelized or culverted shall continue to be considered streams for the purpose of this title.

30.08.160 Watershed management plan. "Watershed management plan" means a detailed analysis adopted by the Snohomish County Council for a drainage basin which compares the capabilities and needs for runoff accommodation due to various combination of development, land use, structural and nonstructural management alternatives. The plan recommends the form, location and extent of quantity and quality control measures which would satisfy legal constraints, water quality standards, and community standards, and identifies the institutional and funding requirements for plan implementation.

30.08.165 Wetlands. "Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circum-

stances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include, but are not limited to swamps, marshes, bogs, and similar areas.

Provided however, for purposes of this title, wetlands shall be larger than 100 square feet and shall include the entire individual wetland irrespective of property ownership.

Chapter 30.12

IDENTIFICATION AND CLASSIFICATION

Sections:

30.12.040 Wetland Identification.

(1) The delineation of wetlands on site development plans required for activities regulated by this title and on county wetland inventory maps shall be primarily based upon the prevalence of hydrophytic plants. It shall be assumed that the results of such an identification method are sufficiently accurate to meet the regulatory definition of "wetlands" contained in SCC 30.08.165.

(2) In those cases where a conflict arises over the exact location of wetland boundaries, the County may require the applicant to submit a wetland survey map on which wetland boundaries have been delineated using the multi-parameter approach specified in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands. The wetland boundaries established by this approach shall then be used in satisfying the regulatory requirements of this title.

30.12.080 Stream Identification. The delineation of streams shall be made by measuring the stream channel from the ordinary high water mark on one stream bank to the ordinary high water mark on the opposite bank.

30.12.120 Metes and Bounds Survey. The County may require a metes and bounds survey to precisely locate wetland or stream boundaries for the purpose of project siting. The County may verify such surveys.

30.12.160 Wetland Classification.

(1) Wetlands shall be classified by the department based upon their functional values and the presence of unique qualities, including endangered species or ecosystems and high hydrological significance. Wetlands shall be classified as either Class I, Class II, or Class III, with Class I representing those with very high functional values.

(2) The functional values of individual wetlands shall be based upon wetland characteristics measurable in the field.

(3) For the purpose of this title wetlands shall be considered Class II wetlands unless they display the extraordinary characteristics of a Class I wetland (30.08.040) or display only the minimal functional values of a Class III wetland (30.08.050).

(4) In those cases where a dispute exists regarding the appropriate classification for a given wetland, the wetland evaluation process contained in Appendix A shall be used to determine the wetland classification. The wetland class shall be determined based upon the following percentage of points scored as calculated by dividing the points scored by the maximum number of points available for any given wetland, and multiplied by 100:

Class I = >80 to 100 percent
Class II = >50 to 80 percent
Class III = 0 to 50 percent

(5) In those cases where a dispute may exist between the department and the applicant regarding the appropriate wetland class, the applicant may request a written statement justifying the wetland classification. All such statements shall be reviewed and signed by the manager, and shall be subject to the administrative appeals procedure of section 30.20.240.

30.12.200 Stream Classification.

(1) Streams shall be classified by the department according their level of environmental sensitivity. The level of sensitivity will be determined by the stream's ability to maintain the quality of the existing fish habitat in the stream, the water quality of the stream and the stability of the stream channel. Streams shall be classified as either Class I, Class II, or Class III, with Class I representing the most sensitive class.

(2) The stream reach class shall be based upon stream characteristics measurable in the field including, but not limited to, soil slippage potential, channel stability, and habitat quality.

(3) The stream reach evaluation process contained in Appendix B shall be used to determine the stream classification for individual stream reaches. The stream class shall be determined based upon the number of points scored in the evaluation process. The stream class shall correspond to the following range of points scored:

Class I = >43 to 60 points
Class II = >26 to 43 points
Class III = 13 to 26 points

(4) In those cases where a dispute may exist between the department and the applicant regarding the appropriate stream class, the applicant may request a written statement justifying the stream classification. All such statements shall be reviewed and signed by the manager, and shall be subject to the administrative appeals procedure of section 30.20.240.

Chapter 30.16

AQUATIC RESOURCE PRESERVATION

Sections:

30.16.040 Preservation Standards.

(1) All wetlands and streams shall be retained in their existing unaltered condition unless alteration is allowed by this title.

(2) Alteration of wetlands and streams may be allowed in accordance with this title when the applicant has demonstrated to the satisfaction of the county that normal design practices and traditional project design schemes can not be accommodated without the alteration of wetlands, and when other provisions of this title and other relevant county codes which provide addtional project design flexibility have been reasonably utilized.

(3) When aquatic system and/or buffer alteration is unavoidable, buffer alteration is preferable.

30.16.080 Wetland Preservation Thresholds - New Development. The following provisions pertaining to wetland protection and potential wetland alteration apply to all new development activities as defined by this title:

(1) Class I Wetland

(a) All Class I wetlands shall be preserved (no alteration allowed) unless otherwise allowed by section 30.16.240 or chaper 30.32;

(2) Class II Wetland

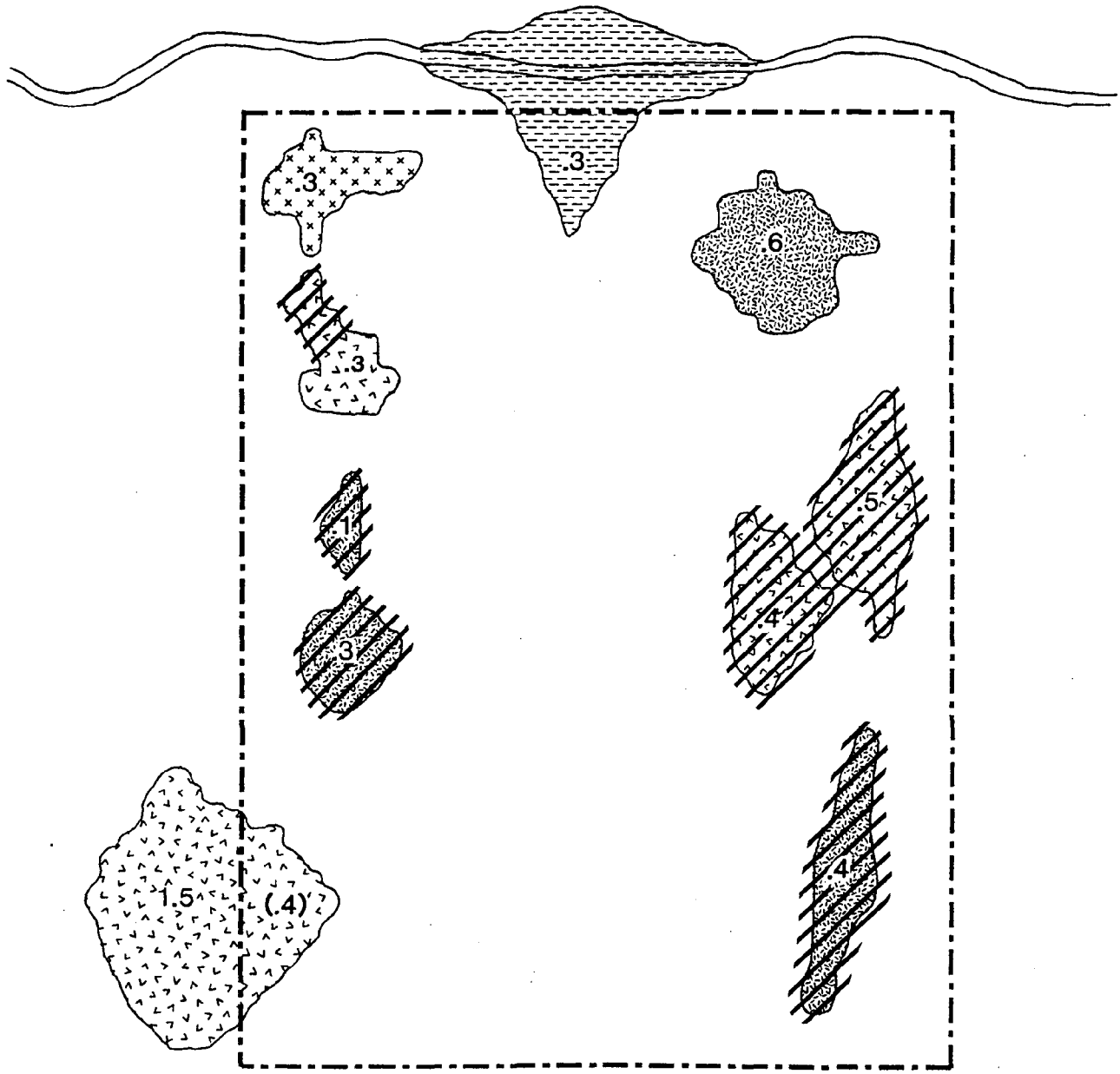
(a) All Class II wetlands .5 acre or larger shall be preserved (no alterations allowed);

(b) Alteration of individual Class II wetlands larger than 5000 square feet and smaller than .5 acre shall be allowed only when mitigation is provided for the loss of all wetland functional values;

(c) Alteration of individual Class II wetlands smaller than 5000 square feet shall be allowed only when mitigation is provided for the loss of water quality, storage, and conveyance functional values consistent with the provisions of Title 24 SCC;

(d) No more than one (1) acre of cumulative Class II wetland alteration shall be allowed on any single project site;

Graphic depiction of wetlands eligible for alteration based upon NEW DEVELOPMENT wetlands preservation thresholds of 30.16.080



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LEGEND

Wetland Type

- CLASS I
- CLASS II
- CLASS III
- RIPARIAN

.4 Acreage of wetland area

Property Boundary

Wetland potentially eligible for alteration with mitigation

(3) Class III Wetland

(a) All individual Class III wetlands one (1) acre or larger shall be preserved (no alteration allowed);

(b) Alteration of individual Class III wetlands smaller than one (1) acre shall be allowed only when mitigation is provided for the loss of water quality, storage, and conveyance functional values consistent with the provisions Title 24 SCC;

(c) The cumulative alteration of Class III wetlands in excess of the first one (1) acre of authorized alteration on a single project site shall not exceed ten percent (10%) of the total area of all remaining Class III wetlands less than one acre in size.

Provided that, no alteration shall be allowed in any riparian wetland or in any wetland greater than one (1) acre in size irrespective of wetland classification unless otherwise allowed by section 30.16.240 or chapter 30.32.

30.16.120 Wetland Preservation Thresholds - Existing Commercial and Industrial Zones. The following provisions apply to all nonresidential development activities on properties zoned Freeway Service, Neighborhood Business, Planned Community Business, Community Business, General Commercial, Industrial Park, Business Park, Light Industry, or Heavy Industry prior to the effective date of this title:

(1) Class I Wetland

(a) All Class I Wetlands shall be preserved (no alteration allowed) unless otherwise allowed by section 30.16.240 or chapter 30.32;

(2) Class II Wetland

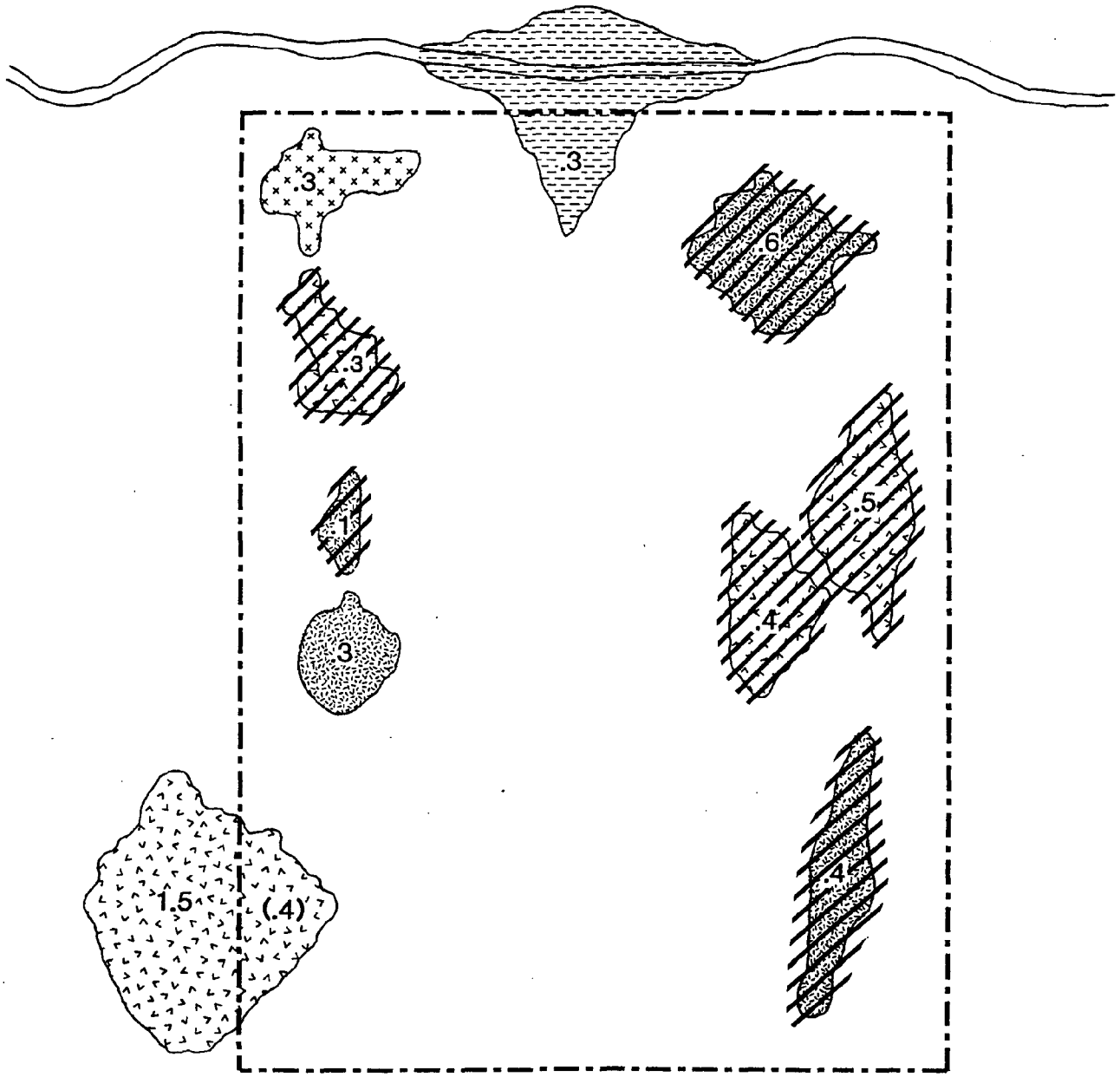
(a) Alteration of individual Class II wetlands smaller than one (1) acre shall be allowed only when mitigation is provided for the loss of water quality, storage, and conveyance functional values consistent with the provisions of Title 24 SCC; Provided that the cumulative alteration of Class II wetlands in excess of the first one (1) acre authorized for alteration on any single project site shall not exceed twenty five percent (25%) of the total area of all remaining Class II wetlands less than one (1) acre in size;

(3) Class III Wetland

(a) Alteration of individual Class III wetlands shall be allowed irrespective of wetland size only when mitigation is provided for the loss of water quality, storage, and conveyance functional values consistent with the provisions of Title 24 SCC; Provided that the cumulative alteration of Class III wetlands in excess of the first one (1) acre authorized for alteration on any single project site shall not exceed fifty percent (50%) of the total area of all remaining Class III wetlands.

Provided that, no alteration shall be allowed in any riparian wetland or in any Class II wetland one (1) acre or larger unless otherwise allowed by section 30.16.240 or chapter 30.32.

Graphic depiction of wetlands eligible for alteration based upon EXISTING COMMERCIAL/INDUSTRIAL ZONES wetlands preservation thresholds of 30.16.120



This figure is NOT part of the proposed ordinance. For review purposes only.

LEGEND

Wetland Type

- CLASS I
- CLASS II
- CLASS III
- RIPARIAN

.4 Acreage of wetland area

Property Boundary

Wetland potentially eligible for alteration with mitigation

30.16.160 Wetland Preservation Thresholds - Existing Single Family Lots. The following provisions apply to all residential development activities on single family lots existing prior to the effective date of this title:

(1) Class I Wetland

(a) All Class I wetlands shall be preserved (no alteration allowed) unless otherwise allowed by section 30.16.240 or chapter 30.32;

(2) Class II and Class III Wetlands

(a) All Class II and Class III wetlands 5000 square feet or larger shall be preserved (no alterations allowed);

(b) Alteration of Class II and Class III wetlands larger than 2500 square feet and smaller than 5000 square feet shall be allowed only when mitigation is provided for the loss of water quality, storage, and conveyance functional values consistent with the provisions of Title 24 SCC, and when the applicant has demonstrated to the satisfaction of the department that no other reasonable design alternative exists that would accommodate wetland preservation on the project site;

(c) Alteration of Class II and Class III wetlands 2500 square feet or smaller shall be allowed only when mitigation is provided for the loss of water quality, storage, and conveyance functional values consistent with the provisions of Title 24 SCC.

Provided that, no alteration shall be allowed in any riparian wetland or in any wetland one (1) acre or larger irrespective of wetland classification unless otherwise allowed by section 30.16.240 or chapter 30.32.

30.16.200 Stream alteration allowed. The following activities shall be allowed to encroach within a stream Provided that the provisions of 30.16.280 are met.

(1) Utility lines, hydroelectric power generating facilities and other utility facilities;

(2) Public and private roadway crossings;

(3) Bridge construction and culvert installation;

(4) Bank protection devices and flood protection structures, including flow control structures for regional retention/detention systems;

(5) In-stream fish and/or wildlife habitat enhancement structures; and

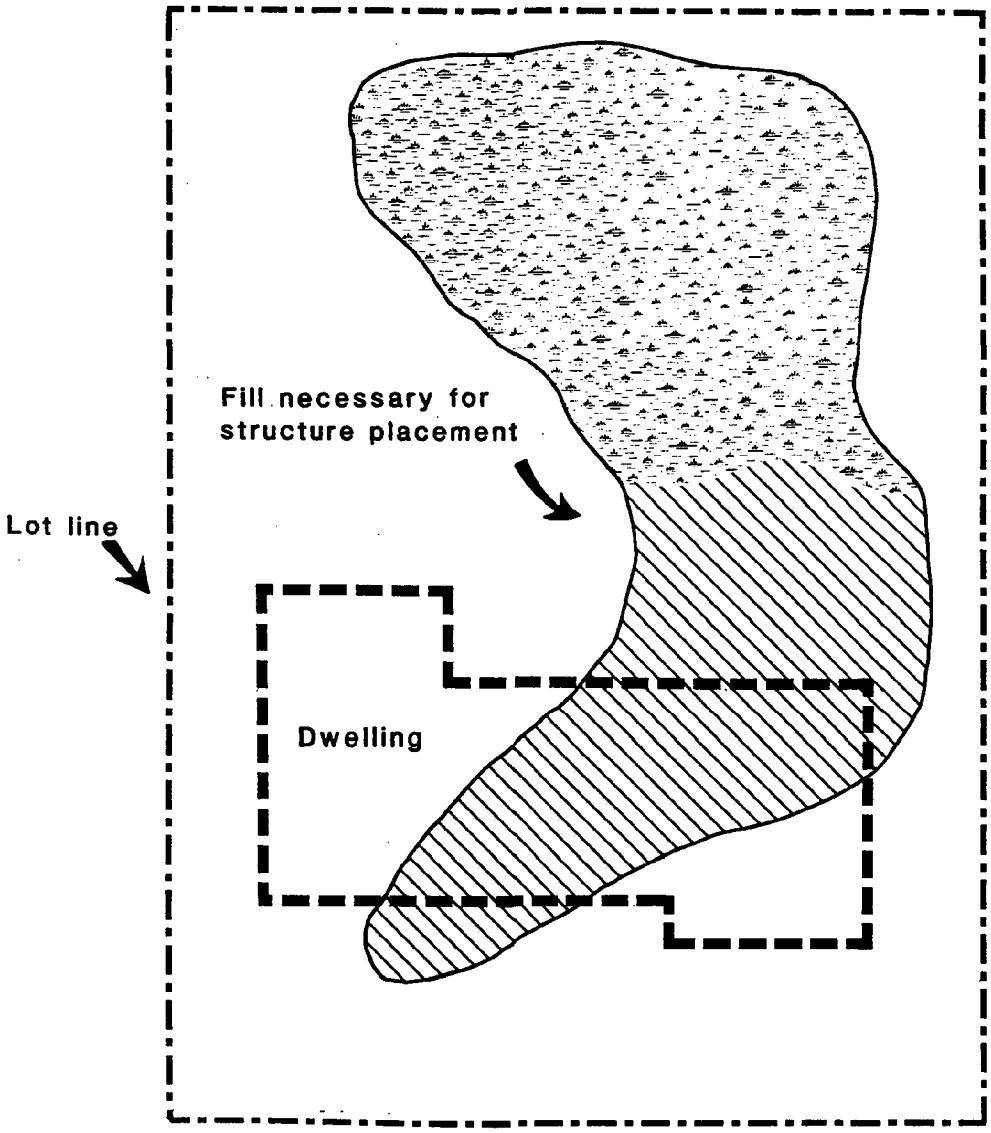
(6) Activities and mitigation authorized by this title including stream restoration, enhancement, and relocation.

30.16.240 Wetland alteration allowed. In addition to the wetland alteration allowed by 30.16.080, 30.16.120 and 30.16.160 SCC, the following activities shall be allowed to encroach within wetlands; Provided that the provisions of 30.16.280 are met.

(1) Utility lines and facilities;

(2) Public and private roadways, including bridge construction and culvert installation;

Graphic depiction of potential wetland alteration allowed per EXISTING SINGLE FAMILY LOT preservation thresholds of 30.16.160



This figure is NOT part of the proposed ordinance. For review purposes only.

Wetland less than 5,000 sq. ft., partial fill may be allowed

Fill allowed

(3) Pedestrian and vehicular access to lakes, including boat launch facilities and docks;
(4) Stormwater detention/retention facilities;
(5) Wildlife management or viewing structures;
(6) Scientific or educational facilities;
(7) Activities and mitigation authorized by this title; and
(8) Enhancement proposals where no net loss of functional values results.

30.16.280 Aquatic system alteration criteria. Activities allowed pursuant to sections 30.16.200 and 30.16.240 shall be subject to the following criteria:
(1) Each activity/use shall be designed so as to minimize overall aquatic system alteration to the greatest extent possible.
(2) Construction techniques and field marking of areas to be disturbed shall be approved by the department prior to site disturbance to ensure minimal encroachment.
(3) A mitigation plan which may include aquatic system and/or buffer enhancement provisions shall be required by the department, and shall be prepared in accordance with Section 30.16.320 SCC.
(4) Proposals that request wetland alteration which consists solely of the enhancement of existing wetlands (including the creation of open water areas, where appropriate) with no net loss of wetland area shall not be subject to number (1) above.
(5) Alteration of aquatic systems shall be consistent with the policies contained within the Snohomish County Aquatic Resources Protection Policy Document.

30.16.320 Mitigation for loss of aquatic system functional values.
(1) Mitigation shall be required for the loss of wetland and stream functional values as specified by this title. All required mitigation shall be specified in a mitigation plan prepared by or on behalf of the applicant, except that, where mitigation is necessary only for storage, water quality or conveyance functional values, the detailed drainage plan required per Title 24 SCC shall be allowed to substitute for the mitigation plan. Said plan shall:
(a) be prepared by a qualified biologist or other qualified aquatic resource professional using accepted agency methodologies;
(b) include a base line study that quantifies the existing functional values of the aquatic system, functional values that will be lost, and the system's functional values after mitigation;
(c) specify how lost functional values will be replaced;
(d) specify when mitigation will occur relative to project construction and to the requirements of permits issued by other jurisdictions;
(e) include provisions for monitoring the mitigation

area on a long term basis to determine whether the plan was successful; and

(f) include provisions for a bond to assure that work is completed in accordance with the plan and that restoration or rehabilitation is performed if mitigation failure results within 3 years of implementation.

(2) Mitigation required by this title shall be consistent with the mitigation policies contained within the Snohomish County Aquatic Resources Protection Policy Document.

(3) When a mitigation plan is required by this title, said plan shall be approved by the department prior to any site disturbance within a critical area containing an aquatic system.

(4) In those cases where wetland alteration is authorized by this title and for which a mitigation plan is required, said plan shall address the need for and when appropriate, determine the width of the buffer adjacent to the altered wetland edge.

Chapter 30.20

DEVELOPMENT REVIEW AND PERMIT ADMINISTRATION

Sections:

30.20.040 Authority. The department is vested with the authority to administer the rules and regulations of this title and may prepare and require the use of such forms as are essential to such administration.

30.20.080 Coordination with Title 24 SCC drainage plan review process.

(1) The application of the provisions of this title shall be coordinated with the drainage plan submittal and review procedures established by Title 24 SCC.

(2) In accordance with section 30.04.120 the department shall apply the regulations of this title to any activity located in a critical area containing an aquatic system and requiring the submittal of a conceptual or detailed drainage plan per Title 24 SCC.

30.20.160 Submittal Information.

(1) The location of aquatic system boundaries shall be provided on the conceptual or detailed drainage plan required per Title 24 SCC.

(2) Eight (8) copies of the conceptual or detailed drainage plan shall be submitted to the department for review and/or distribution when prepared in conjunction with the application for any permit/approval requiring a public hearing. Five (5) copies shall be submitted when prepared in conjunction with an application for any other permit/approval.

(3) Prior to the granting of any permit/approval for any activity regulated by this title, a site development plan or an amended drainage plan shall be submitted and shall contain the following information:

(a) location of aquatic system boundaries;

(b) location of all buffers required pursuant to this title;

(c) location of any area within the aquatic system or buffer proposed for alteration or disturbance; and

(d) location of any area within or outside the aquatic system or its buffer proposed for enhancement or other mitigation, and the submittal of a final mitigation plan consistent with the

provisions of SCC 30.16.320.

(4) Any and all project data compiled to demonstrate compliance with the provisions of this title shall be maintained in the official project case file and shall include aquatic system identification and classification evaluations, and mitigation and/or enhancement plans, if applicable.

30.20.200 Use of Available Data. The department shall maintain all data applicable to any aquatic system within its inventory files. Aquatic system data shall be available for general public and applicant use.

30.20.240 Appeals.

(1) Unless otherwise specified in subsection (3) below, or elsewhere in this title, appeals of any decision or determination made by the manager or his designee in the administration of the provisions of this title shall be final and conclusive unless appealed by a party aggrieved thereby under the applicable procedure established by County code for appeal of the underlying county permit being sought for the subject proposal.

(2) When an appeal is filed pursuant to this chapter, and the underlying county permit is an administrative permit for which no administrative appeal procedure is otherwise provided by county code, the appeal shall be made to the hearing examiner under the provisions for administrative appeals in Chapter 18.72 SCC.

(3) Any decision or determination made by the manager or his designee pertaining to the classification of a stream or wetland, shall be final and conclusive unless:

(a) Within (15) calendar days from the date of the department's written decision, the applicant appeals the decision to the Snohomish County hearing examiner pursuant to the procedure established for administrative appeals in Title 18, Chapter 18.72 SCC; or

(b) The determination or decision is considered by the hearing examiner during the public hearings process for the underlying county permit; or

(c) The applicant combines the appeal of the decision or determination with an appeal of the underlying county permit being sought for the proposal pursuant to the procedure established for such appeals.

(4) For appeals made pursuant to subsection (3) (a), notice of hearing shall also be provided in conformance with the notice provisions of the underlying county permit being sought for the proposal; Provided that, when the underlying county permit is an administrative permit for which no appeal procedure is otherwise provided by county code, notice shall also be provided in conformance with the notice requirements of zoning code variances as provided in section 18.72.160 (A) SCC.

(5) For appeals made pursuant to subsection (2), notice shall also be provided in conformance with the notice requirements of zoning code variances as provided in section 18.72.160 (A) SCC.

(6) In those cases where a decision has been appealed pursu-

ant to (3) (a) above, said decision shall not be subject to further review by the county pursuant to subsections (3) (b) or (c) above.

Chapter 30.24

WETLAND AND STREAM BUFFERS

Sections:

30.24.040 General. Buffer areas shall be required adjacent to wetlands and streams identified for preservation by this title in accordance with the provisions of this chapter. The character of buffer areas shall be consistent with this title and the applicable policies contained in the Snohomish County Aquatic Resource Protection Policy Document.

30.24.060 Buffers not required. Buffer areas shall not be required for any Class II wetland 1000 square feet or less in size, or for any Class III wetland 5000 square feet or less in size; Provided that, no building shall be located within 25 feet of the wetland edge.

30.24.080 Buffer Character and Use.

(1) Except as otherwise specified by this title, all buffers shall be retained in their natural condition. The following activities/uses have the potential to be compatible with the functions of a buffer area and may be allowed within a required buffer when found by the manager to be in compliance with subsection (2) of this section:

(a) Pedestrian walkways/trails when constructed with natural permeable materials and planned and designed as part of an overall site development plan for a specific proposal.

(b) Golf courses, where at least 60 percent of the area of the required buffer is left undisturbed, and at least 75 percent of the wetland or stream perimeter remains bounded by a minimum 25-foot-wide undisturbed buffer; Provided that, a chemical application and water quality management plan must be submitted to the department for approval together with a mitigation plan, as required by Section 30.16.280, which demonstrates that all buffer functional values have not been decreased.

(c) Wildlife management and viewing structures.

(d) Detention/retention systems.

(e) Fishing access areas, where vehicular parking is provided outside the buffer and foot trails are constructed with natural permeable materials.

(f) Educational and scientific study facilities.

(g) Utility lines and facilities installation, where no reasonably feasible location is available outside the buffer area.

(h) Public and private roadways; Provided that, private access to individual parcels is allowed only if no other reasonable access alternative exists.

(2) The activities/uses allowed pursuant to subsection (1) of this section are subject to the following requirements:

(a) Each activity/use shall be designed so as to minimize overall buffer disturbance.

(b) Construction techniques and field marking of areas to be disturbed must be approved by the department prior to site disturbance in order to ensure minimal encroachment into buffer areas.

(c) A mitigation plan, which may include resource and/or buffer enhancement provisions, may be required by the department. When required, said plan shall be prepared in accordance with section 30.16.320 SCC.

(d) Each activity shall be consistent with the applicable policies pertaining to buffer use contained with the Snohomish County Aquatic Resources Protection Policy Document.

(3) Where aquatic system alteration has been authorized by this title, and a mitigation plan has been prepared in accordance with section 30.16.320, the standard buffer requirements of this chapter shall not apply adjacent to the altered aquatic system. Said plan shall address the need for and when appropriate, determine the width of the buffer.

(4) Where aquatic system alteration has been authorized by this title, and a detailed drainage plan has been allowed to substitute for a mitigation plan, all structures shall be setback a minimum of 25 feet from the aquatic system. Treatment of the setback area shall be determined by the department consistent with the policies of the Aquatic Resource Program Policy document, and prior to conceptual or detailed drainage plan approval.

30.24.120 Wetland Buffer Width.

(1) The width of required wetland buffers depends upon the wetland class and the maximum development potential and slope characteristics of surrounding properties. Maximum development potential for a project site shall be determined by the current land use designation applied to the site by the Snohomish County Comprehensive Land Use Plan. Buffer widths stated in Table 1, Buffer Width by Wetland Classification shall be applied to individual development proposals dependent upon the applicable plan designation as specified in Table 1-A, Comprehensive Plan Designations and Wetland Buffer Width, unless modified by other provisions of this title.

(2) Any project site irrespective of plan designation shall be subject to Column B, Table 1 buffer width requirements when at least 50 percent of the site contains slopes averaging 25 percent or greater.

(3) Any nonresidential activity proposed on residential designated properties shall be subject to Column B, Table 1 buffer

width requirements unless it can be demonstrated that the run-off coefficient for the proposed development does not exceed 4.0.

(4) Where the existing zoning on the project site allows a more intensive land use than the current plan designation, the zoning shall be used to determine buffer width requirements. The buffer width shall be based upon the plan designation within the applicable planning area as listed in Table 1-A that is equivalent to the current zoning category.

(5) For all wetland classes the minimum buffer width for residential development on residential lots created prior residential designated properties shall be subject to Column B, Table 1 buffer width requirements unless it can be demonstrated that the run-off coefficient for the proposed development does not exceed 4.0.

Table 1
Buffer Width by Wetland Classification

Wetland Classification	Buffer Width (in feet)	
	Column A	Column B
Class I	75	100
Class II	35	50
Class III	25	25

Table 1-A
Comprehensive Plan Designations and Wetland Buffer Width

RURAL plan designations requiring Column A buffer widths	SUBURBAN, URBAN, COMMERCIAL and INDUSTRIAL plan designations requiring Column B buffer widths
Agriculture	High Density
Critical Watershed	High Urban
Forestry	Master Planned Community
Low Density	Medium Density
Open Space/Parks*	Multiple Residential
Parks*	Suburban
Residential Estate	Urban
Rural	Business Park
Rural Conservation	Community Business
Rural Diversification	Freeway Service
Rural Reserve	General Commercial
Rural 5	Heavy Industry
Secondary Agriculture	Industrial
Wetlands	Industrial Park
Watershed/Site Sensitive	Light Industry
	Neighborhood Business
	Planned Community Business
	Planned Neighborhood Business
	Open Space/Parks*
	Parks*

* Applicable column is dependent upon underlying designation for planning area.

30.24.160 Stream Buffer Width.

(1) The width of required stream buffers depends upon the character of the stream and the maximum development potential and slope characteristics of surrounding properties. Maximum development potential for any project site shall be determined by the current land use designation applied to the site by the Snohomish County Comprehensive Land Use Plan. Development shall comply with the buffer width requirements of Table 2, "Buffer Width by Stream Classification" unless modified by other provisions of this title.

(2) Buffer widths specified by Table 2 shall be based upon the average stream channel width for that portion of the stream that lies within or abuts a project site, and upon the specific land use designation of the site as denoted by the rural, suburban, or urban land use categories listed in Table 2-A.

(3) The required buffer width for a specific stream classification is found in Table 2 by locating the appropriate stream channel width column and the row with the appropriate land use designation category which contains the current plan designation of the project site per Table 2-A and then locating the cell (box) in the table where the row and column intersect.

(4) Where at least 50 percent of a project site contains slopes averaging 25 percent or greater, buffer widths for properties designated Rural shall be determined according to the requirements of Table 2 for Suburban designated property, and buffer widths for properties designated Suburban shall be determined according to the requirements of Table 2 for Urban designated property.

(5) Where the existing zoning on the project site allows a more intensive land use than the current plan designation, the zoning shall be used to determine buffer width requirements. The buffer width shall be based upon the plan designation that is equivalent to the current zoning on the project site.

(6) For all stream classes the minimum buffer width for residential development on residential lots created prior to the effective date of this title shall be 25 feet, rather than the widths specified in Table 2; Provided that, where greater buffer widths have previously been required pursuant to subdivision approval of the subject property, the greater widths shall be required.

Table 2
Buffer Width by Stream Classification*
(in feet)

Land Use Category	Stream Channel Width (in feet) 0 - 5	>5 - 10	>10
Rural	50 (I)	75 (I)	100 (I)
	35 (II)	50 (II)	75 (II)
	25 (III)	35 (III)	35 (III)
Suburban	75 (I)	100 (I)	125 (I)
	50 (II)	50 (II)	75 (II)
	35 (III)	35 (III)	35 (III)
Urban	100 (I)	125 (I)	150 (I)
	50 (II)	75 (II)	100 (II)
	35 (III)	35 (III)	50 (III)

* Class I Stream = (I)
Class II Stream = (II)
Class III Stream = (III)

Table 2-A
Land Use Designation Categories

RURAL

Agriculture
Critical Watershed
Forestry
Low Density
Open Space/Parks
Parks
Residential Estate
Rural
Rural Conservation
Rural Diversification
Rural Reserve
Rural 5
Secondary Agriculture
Watershed/Site Sensitive (Where project density is 2 du/acre or less)
Wetlands

SUBURBAN

Master Planned Community
Medium Density
Suburban
Urban (where project density is 7 du/acre or less)
Watershed/Site Sensitive (Where project density is greater than 2 du/acre)

URBAN

Business Park
Community Business
Freeway Service
General Commercial
Heavy Industry
High Density
High Urban
Industrial
Industrial Park
Light Industry
Multiple Residential
Neighborhood Business
Planned Community Business
Planned Neighborhood Business
Urban (where project density is greater than 7 du/acre)

30.24.200 Buffer Width Averaging. The standard buffer widths specified in SCC 30.24.120 and SCC 30.24.160 may be modified through a buffer width averaging process. The Manager is authorized to allow buffer averaging when all of the following requirements are met:

(1) The stream or wetland necessitating the buffer contains areas of both relatively high and low sensitivity which would otherwise indicate a need for a smaller buffer width in one area and a larger buffer width in another; Provided, that for purposes of determining compliance with this subsection, the specific physical character of the stream or wetland must be delineated by the applicant at a level of detail acceptable to the manager.

(2) The physical characteristics of the buffer are suitable for buffer width reduction.

(3) The total area contained within the buffer after averaging is no less than that contained within the standard buffer prior to averaging.

(4) The buffer width is at least 25 feet.

(5) The functional values of the stream or wetland, and the standard buffer are not decreased.

30.24.240 Buffer Width Reduction through Enhancement. The manager may allow buffer enhancement and an accompanying reduction in the buffer widths specified in sections 30.24.120, 30.24.160 and 30.24.200 when all of the following requirements are met:

(1) Standard buffers, or buffers required after buffer averaging are determined to have a minimal functional value due to existing physical characteristics.

(2) The applicant has demonstrated that any proposed buffer enhancement, when considered together with any proposed buffer width reduction will result in an increase in the functional value of the buffer when compared with the standard buffer requirements.

(3) The applicant has submitted a buffer enhancement plan which includes a comparative analysis of buffer values and demonstrates compliance with subsection (2) above.

(4) Buffer width reduction does not result in a reduction of more than 25 percent of the total buffer area required prior to enhancement consideration.

(5) The buffer width is not reduced below 25 feet.

(6) The functional values of the stream or wetland being protected by the buffer are not decreased.

30.24.280 Buffer Measurement and Marking.

(1) Buffers shall be measured from aquatic systems as follows:

(a) For wetlands, the buffer shall measured horizontally from the wetland edge.

(b) For streams, the buffer shall be measured horizontally in a landward direction from the ordinary high water mark; Provided, that where the adjacent stream bank and/or side slopes display a continuous slope of twenty five percent (25%) or greater, the buffer shall include such sloping areas; Provided

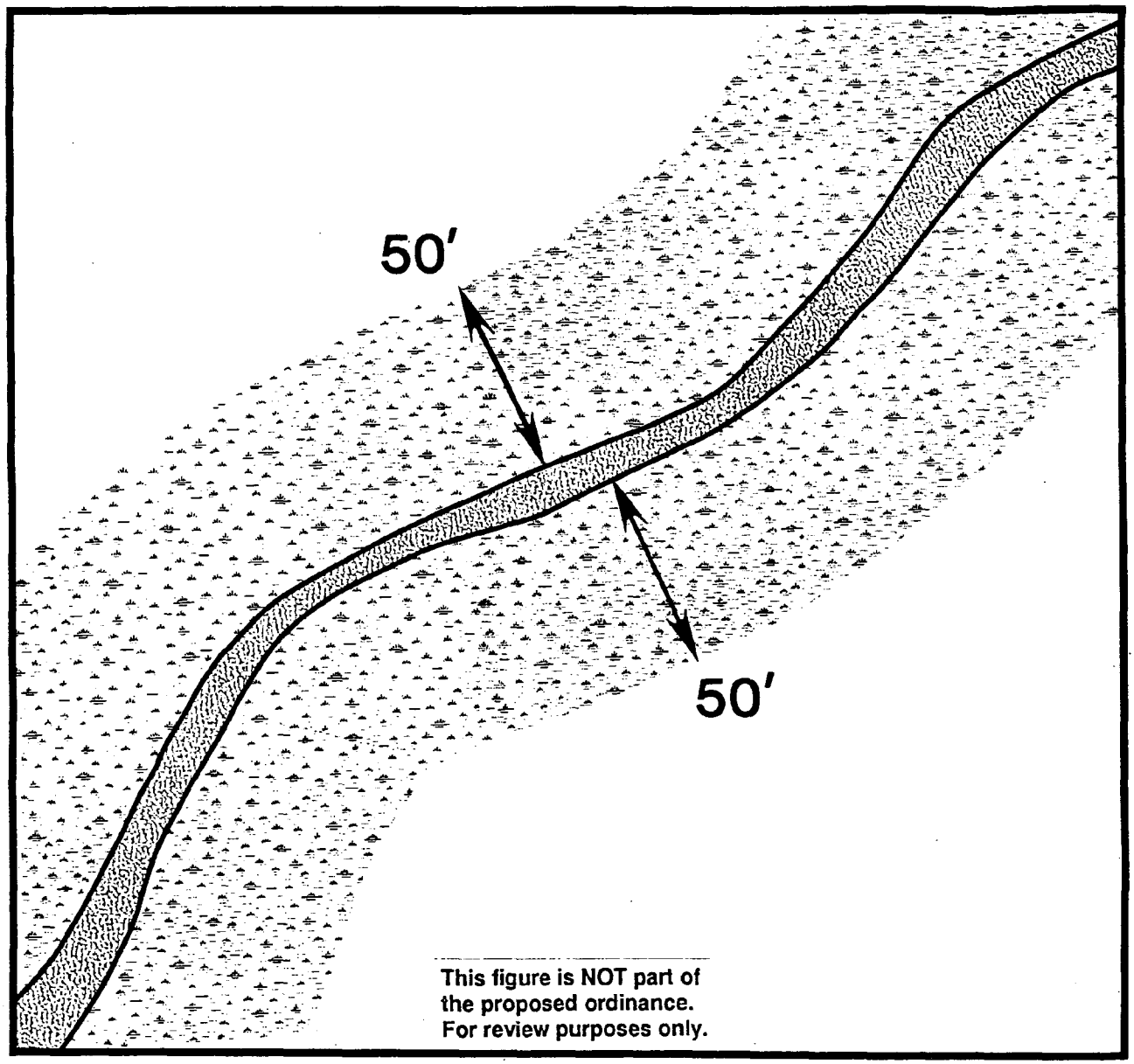
further, that where the horizontal distance of the sloping area is greater than the required standard buffer, the buffer shall be extended to point twenty five (25) feet beyond the top of the bank of the sloping area.

(2) Prior to any site disturbance, all buffers required by this title shall be marked in the field by the applicant using flagging or staking techniques acceptable to the department.

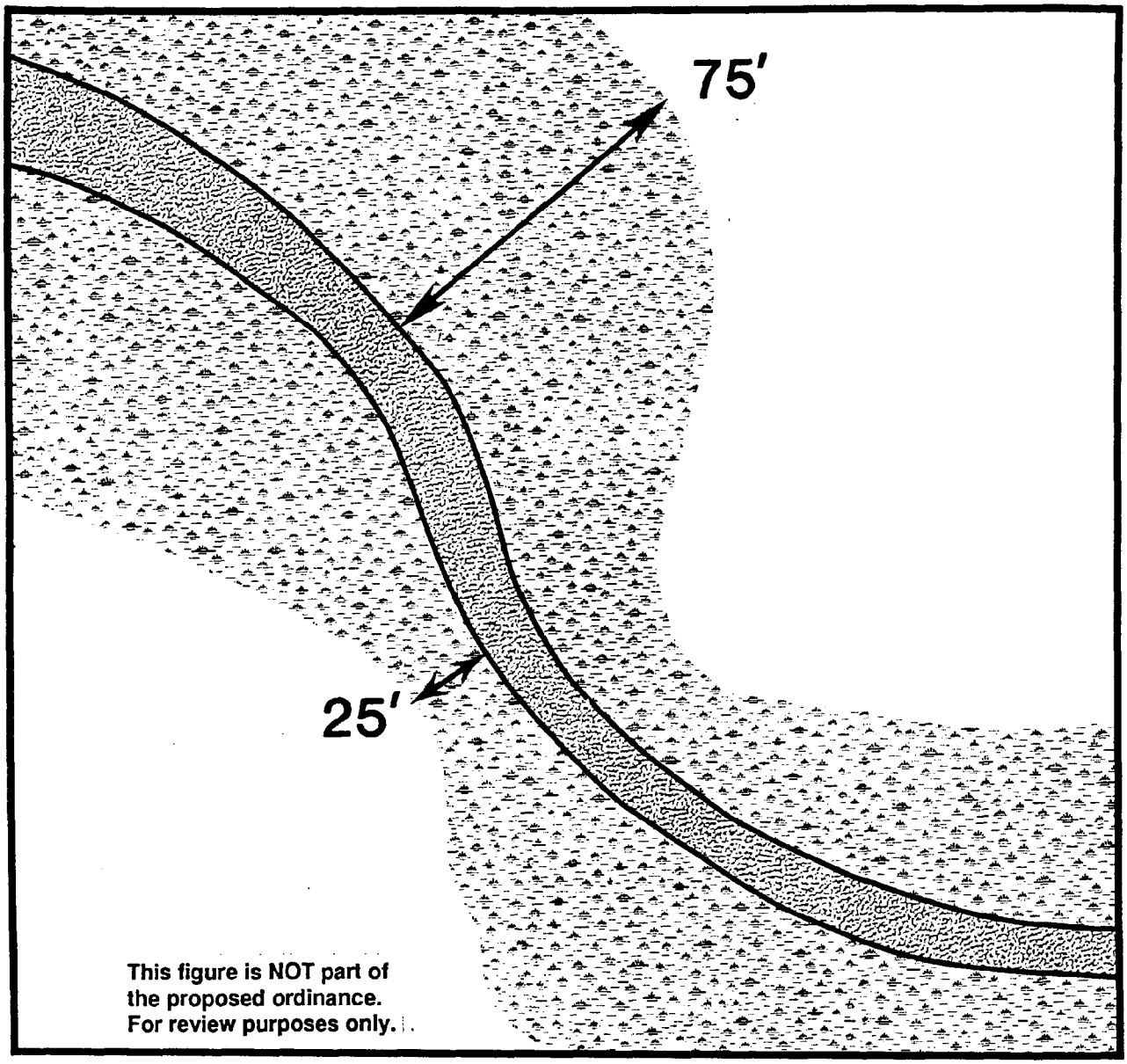
(3) Buffer boundaries shall be permanently marked/identified on the project site prior to final grading inspection approval required per section 24.20.100 (2) SCC.

STREAM AND WETLAND BUFFER AVERAGING & ENHANCEMENT

STANDARD BUFFER: **50' in width per section 30.24.120, Table 1 (Class II wetland & urban land use)**



BUFFER AVERAGING: 50' average allowed per provisions of 30.24.200

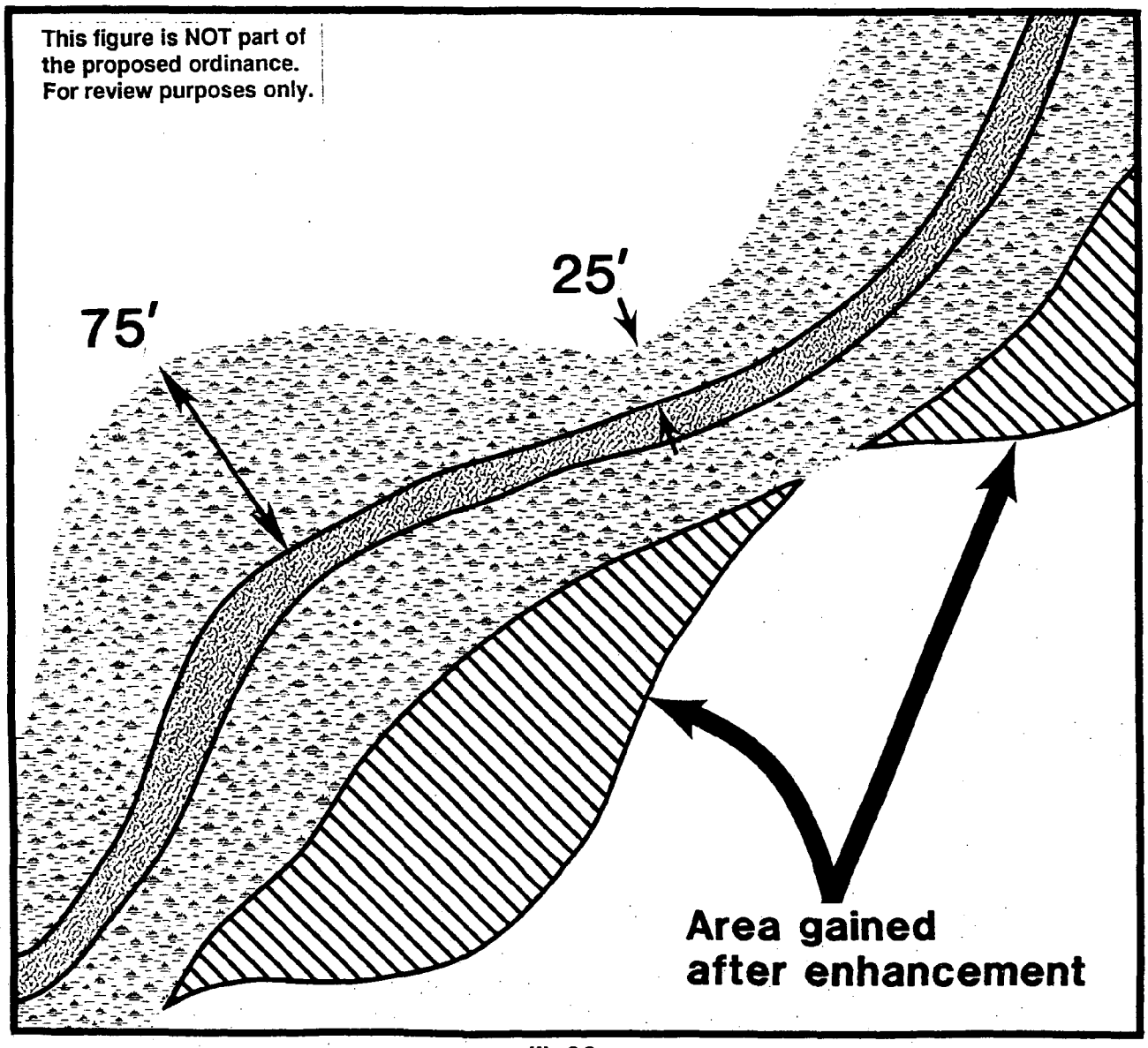


- policies will direct when buffer width may be averaged. 25 ft is absolute minimum when averaging is used.

BUFFER ENHANCEMENT OPPORTUNITIES

per the provisions of 30.24.240

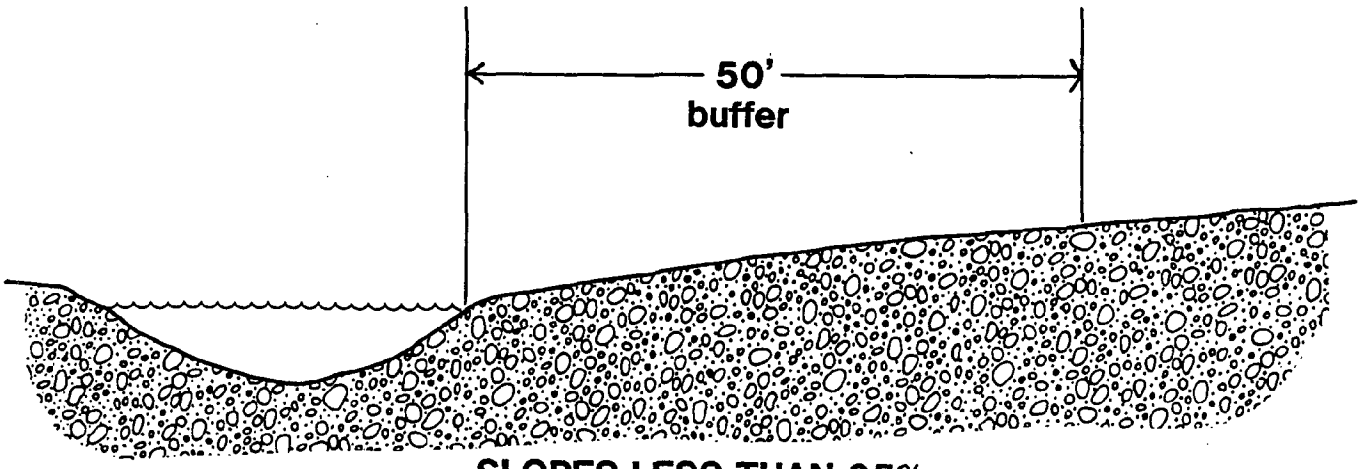
Policies will direct that reduction of the buffer width may be considered when enhancement of the buffer through plantings and/or recontouring will increase the functional values of the buffer. Such enhancement may result in reductions up to 25% of the area required after averaging, with the 25' minimum buffer width still enforced.



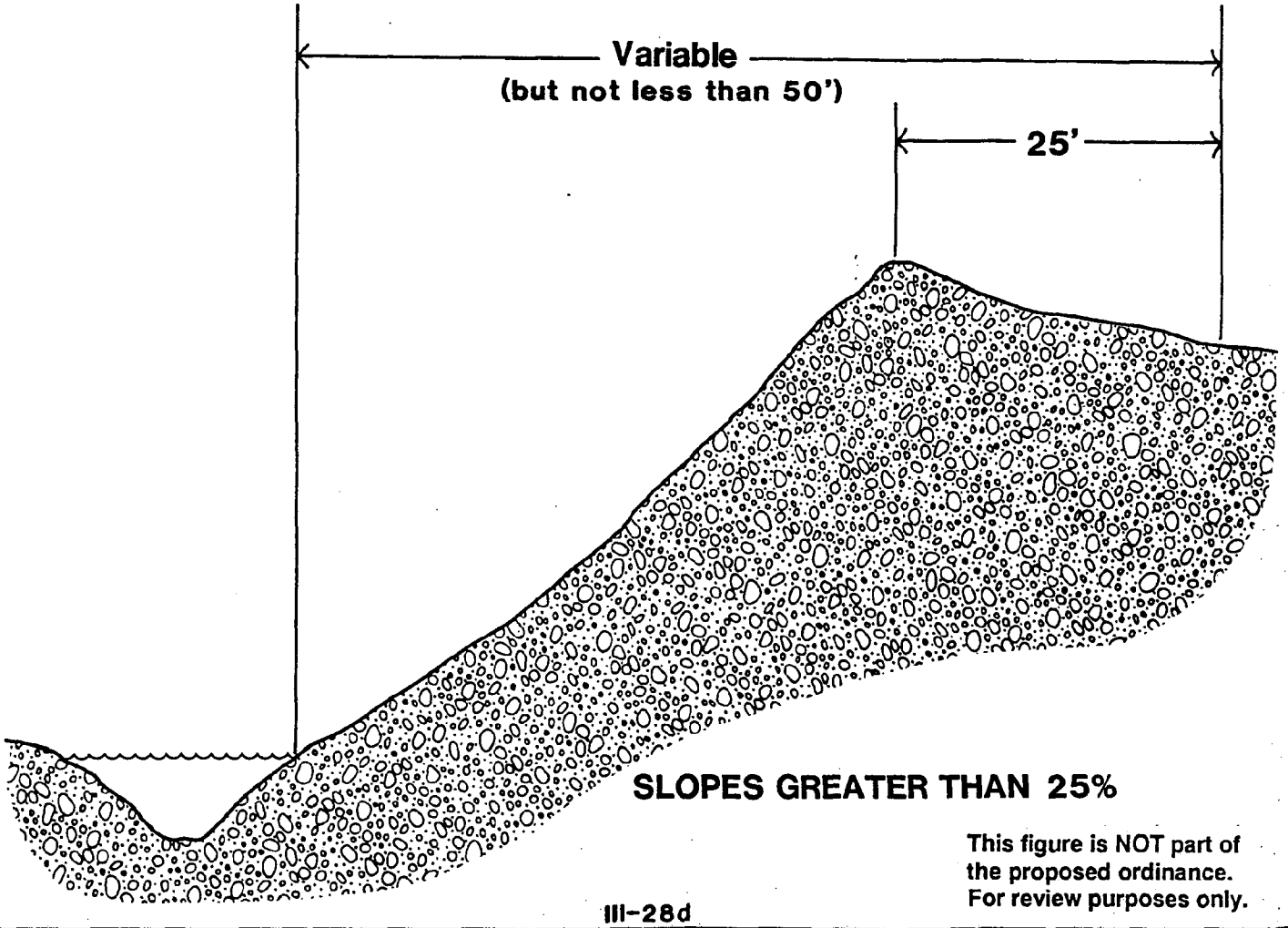
Measurement of Stream Buffers

per section 30.24.280

(Example 50'wide buffer required)



SLOPES LESS THAN 25%



SLOPES GREATER THAN 25%

This figure is NOT part of the proposed ordinance. For review purposes only.

Chapter 30.28

ADMINISTRATIVE VARIANCE

Sections:

30.28.040 Procedure. Requests for administrative variances from the provisions of this title shall be considered by the Manager pursuant to provisions of this chapter only when an aquatic system and/or its required buffer is located on the project site.

30.28.080 Variance limitations. Administrative variances shall be limited solely to the consideration of:

(1) Relaxation of structural setbacks specified in SCC Title 18;

(2) Relaxation of landscaping/buffer width requirements specified in SCC Title 18;

(3) Relaxation of aquatic system buffer width requirements of this title.

Variances shall not be considered for any procedural or informational requirements of this title

30.28.120 Conditions for granting. Before a variance to the provisions of this title or the setback and landscaping/buffer provisions of SCC Title 18 may be granted, it shall be shown that:

(1) The area comprising required aquatic system buffers, and structural setback and landscaping/buffer areas specified by SCC Title 18 exceed 50 percent of the total area of the subject property less the area of the aquatic system; and

(2) The granting of the variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity and zone in which the subject property is located; and

(3) Such a variance is the minimum necessary to afford relief; and

(4) Failure to grant the variance would result in exceptional hardship to the applicant; and

(5) A reduction in aquatic resource buffer width does not exceed 25 percent of that required by this title; and

(6) A reduction in setback and/or landscaping/buffer width provisions of SCC Title 18 does not exceed 35 percent of that required by SCC Title 18; and

(7) All other applicable provisions of this title pertaining to resource buffer width reduction and the provisions of SCC 18.43.080, if applicable, have been considered and utilized; and

(8) A reduction in aquatic resource buffer width will not significantly effect the identified buffer and aquatic system functional values.

30.28.160 Application form. The department may prescribe the form in which applications are made for an administrative variance. It may prepare and provide printed forms for such purpose and may prescribe the type of information to be provided in the application by the applicant. No application shall be accepted unless it complies with such requirements.

30.28.200 Filing fee. The filing fee for administrative variances requested under this chapter shall be $150.00.

30.28.240 Notice of Application. Notice of application for an administrative variance shall be provided in accordance with the following procedure:

(1) The applicant shall, within fifteen (15) days of submitting an application, post at least two (2) signs, one sign on each frontage abutting a public right-of-way or at the point of access to the property. Signs for posting shall be provided to the applicant by the county. Such posting shall be evidenced by submittal of a verified statement regarding the date and location of posting.

(2) The manager shall, within twenty (20) days of the receipt of an application, notify taxpayers of record within three hundred (300) feet of the subject property.

30.28.280 Commenting and Department Action.

(1) Comments of interested parties must be submitted in writing and received within fifteen (15) days of notification provided per 30.28.240.

(2) A decision to approve, approve with conditions, or deny the requested variance shall be made within forty-five (45) days of receipt of the request and shall be transmitted in writing to the applicant and any person(s) having received public notice as required by subsection 30.28.240 (2) above and having provided written comment in accordance with subsection (1) above. Said decision shall include findings of fact for approval or denial and requirements for modifications, if any.

(3) The manager shall maintain a record of all administrative variance applications and decisions within a department log that is available for public review.

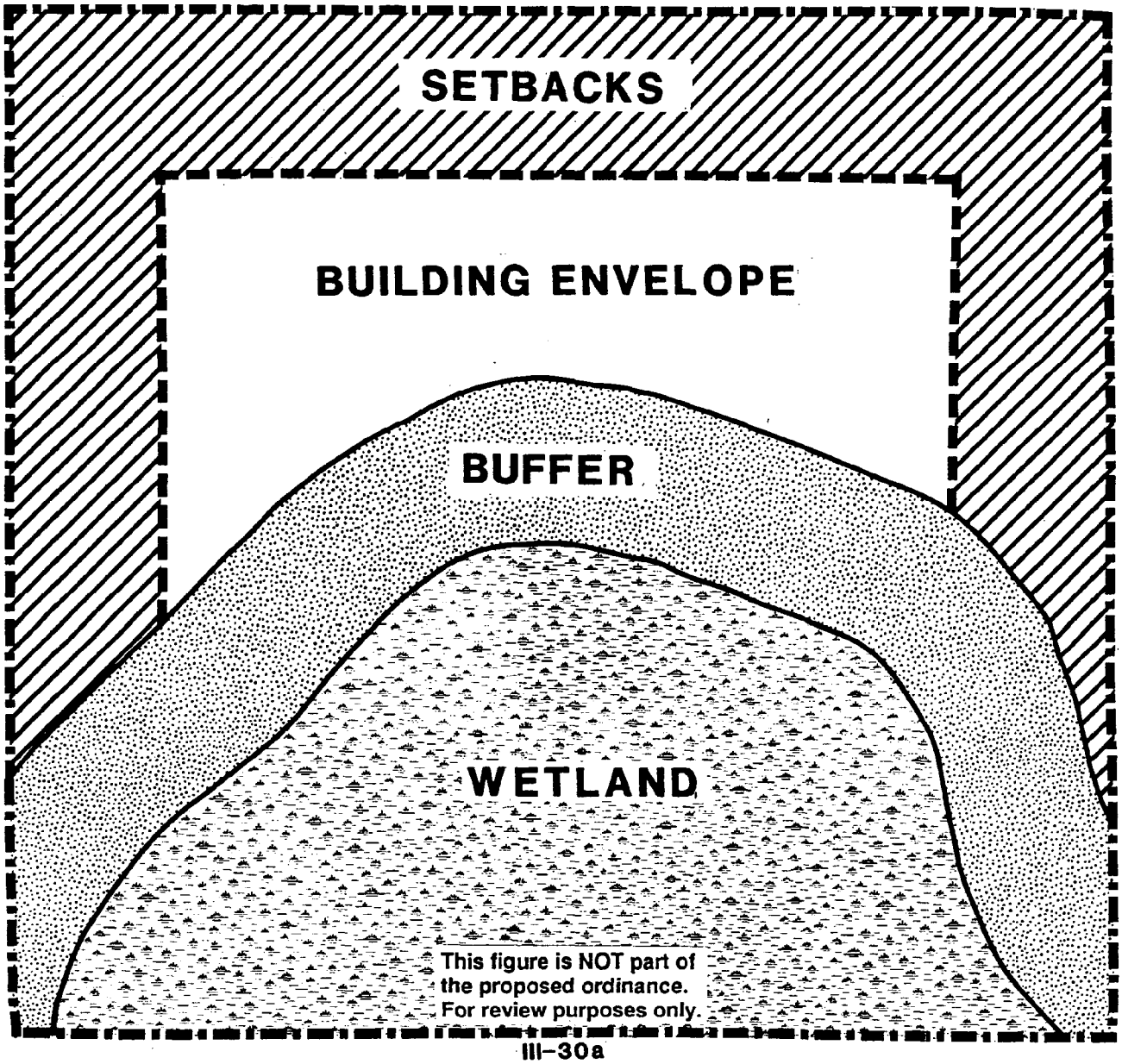
30.28.320 Appeals. The decision of the manager regarding a requested variance shall be final unless appealed to the hearing examiner under the provisions for administrative appeals in Chapter 18.72 SCC.

ADMINISTRATIVE VARIANCE PROCESS

per Chapter 30.28

Staff may administratively consider setback and buffer variances up to a 35% reduction when:

The area required for building setbacks and aquatic resource buffers exceeds 50% of the building area remaining after the aquatic resource has been subtracted.



Chapter 30.32

FORMAL VARIANCE

Sections:

30.32.040 Granting variances. Upon application therefor, the hearing examiner shall have the authority to consider a variance from the provisions of this title except as provided in 30.32.080. The examiner may grant a variance and impose conditions when the request is found to be in harmony with the general purpose and intent of this title and the conditions of section 30.32.160 have been met.

30.32.080 Variance limitations.

(1) The procedural or informational requirements of this title may not be varied.

(2) Variances requested under this chapter may include consideration of development proposals representing a significant departure from the standards of this title in order to creatively address aquatic systems preservation and/or mitigation on a given site.

(3) A formal variance may be sought for the following types of projects:

(a) Type I - projects which are land extensive by their nature and design, and cannot reasonably be expected to meet the standard regulations because of their inherent lack of design flexibility. These land uses are specifically limited to :

(i) public facilities
(ii) landfills
(iii) airports
(iv) outdoor recreation facilities

(b) Type II - all other projects which are seeking an improved development design without increasing development potential above that technically achievable through the application of the standard regulations.

30.32.120 Submittal information and application form.

(1) The Department shall prescribe the form in which applications are made for a variance. It may prepare and provide

printed forms for such purpose and may prescribe the type of information to be provided by the applicant. No application shall be accepted unless it complies with such requirements.

(2) For type I projects, the applicant shall also submit a statement of justification which demonstrates technically the impracticality of applying the standard regulations to the proposed project.

(3) For type II projects, the applicant must also submit a conceptual development proposal which technically and visually illustrates the development potential achievable for the project site through use of the standard regulations. This development potential, if supported by the Hearing Examiner, will serve as the basis for the baseline development potential for projects using the formal variance procedure.

30.32.160 Criteria for Granting. Before any variance may be granted, it shall be shown that:

(1) The variance will result in a net improvement in the functional values of the subject aquatic system;

(2) The proposed aquatic systems treatment and mitigation plan will receive approval from all state resource agencies with jurisdiction.

(3) The proposed mitigation approach is deemed by the Hearing Examiner to be preferable to that obtainable through the imposition of the provisions of this title;

(4) A formal mitigation plan as specified in section 30.16.320 has been submitted to and reviewed by the department, and the plan conclusively demonstrates a net resource benefit; and

(5) The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity and zone in which the subject property is located.

30.32.200 Filing fee. The filing fee for variances requested under this chapter shall be $250.00.

30.32.240 Notice of hearing. Upon the filing of an application for a variance by a property owner, the department shall set the time and place for a public hearing to consider the application, as provided for in the examiner's rules of procedure. Notice of the first public hearing for such an application shall be given as follows:

(1) At least fifteen (15) days prior to the first hearing, the applicant shall post at least two (2) signs, one (1) sign on each frontage abutting a public right-of-way or at the point of access to the property. Signs for posting shall be provided to the applicant by the county. Such posting shall be evidenced by submittal of a verified statement regarding the date and location of posting.

(2) At least fifteen (15) days prior to the first public hearing, the county shall mail a notice of the hearing to each property owner of record within five hundred (500) feet of the

subject property.

30.32.280 Effect of hearing examiner's decision. The decision of the hearing examiner on a variance application shall be final and conclusive. Within ten (10) days from the date of the examiner's decision, the applicant or an adverse party may apply to a court of competent jurisdiction for a writ of certiorari to review the decision of the hearing examiner.

30.32.320 Reapplication. When the hearing examiner has denied an application for a variance, the department shall not accept further applications for substantially the same variance for a period of one year from the date of the final denial.

30.32.360 Transfer of ownership. A variance runs with the land; compliance with the conditions of any such variance is the responsibility of the current owner of the property, whether that be the applicant or a successor in interest. No variance for which a bond or other surety is required shall be considered valid during any time in which the required bond or surety is not posted.

30.32.400 Land use permit binder required. The recipient of any variance shall file a land use permit binder, on a form provided by the hearing examiner, with the county auditor within the time period stipulated by such variance. The variance shall not be effective until such binder has been filed. The binder shall serve both as an acknowledgment of, and agreement to abide by the terms and conditions of the variance and as a notice to prospective purchasers of the existence of the variance.

30.32.440 Vacation of variances. The department may authorize vacation of a variance issued pursuant to this chapter as follows:

(1) The current landowner must file a written request to vacate with the department; and

(2) The department must find that:

(a) The use authorized by the variance does not exist and is not actively being pursued; or

(b) The use has been terminated and no violation of the terms and conditions of the permit exists; and

(3) If the vacation is approved by the department, the landowner must file a notice of land use permit vacation on a form provided by the department with the county auditor.

Chapter 30.36

ENFORCEMENT

Sections:

30.36.040 Manager's authority. Whenever the manager determines that a condition exists in violation of this title, or any code or standard required to be adhered to by this title, he is authorized to enforce the provisions of this title, or codes or standards, pertaining to such condition existing in violation thereof.

30.36.080 Title 28, Snohomish County Code - Applicable. All violations of this title, and codes and standards required thereby, are made subject to the provisions of Title 28, SCC.

30.36.120 Order to cease violation. Whenever any condition is found to be in violation of this title, or codes or standards required to be adhered to thereunder, and pending commencement and completion of the notice and order procedure of SCC 30.36.160, the manager may order the cessation of activity causing the violative condition by notice in writing served on the person(s) engaged in or causing such condition. The effect of such order shall be to require immediate cessation of activity causing the violative condition. Said order shall not be affected by any right of appeal afforded by this or any other title of this code.

30.36.160 Notice of violation - Penalty - Abatement. The manager is authorized to order correction and discontinuance of any violative condition of the provisions of this title under the procedures of Title 28, SCC, which provide for NOTICE OF VIOLATION AND ASSESSMENT OF PENALTY AND ORDER TO ABATE.

30.36.200 Public nuisance. All violations of this title, and codes and standards required thereby, are determined to be detrimental to the public health, safety, and welfare and are public nuisances. All conditions which are determined by the manager to be in violation of this title, or codes and standards required thereby, shall be subject to the provisions of this title and shall be corrected by any reasonable and lawful means, as provided in this title.

30.36.240 Alternative remedies. As an alternative to any

other judicial or administrative remedy provided in this title or by law or other ordinance, any person who wilfully or knowingly violates any provision of this title or any order issued pursuant to this title, or by each act of commission or omission procures, aids or abets such violation, is guilty of a misdemeanor and upon conviction shall be punished as provided in Title 1.01.100, SCC. Each day such violation continues shall be considered and additional misdemeanor offense.

30.36.280 Administrative jurisdiction - Nonexclusive. The authority of the manager to enforce the provisions of this title is not in derogation of the authority of any other officer charged with the enforcement of law buy is concurrent therewith. The authority of the manager to enforce the provisions of this title includes without limitation the requirement that he request the assistance of the prosecuting attorney's office for judicial enforcement as may be deemed appropriate by the prosecuting attorney.

Chapter 30.40

SEVERABILITY

Sections:

30.40.040 Severability. If any provision of this title or its application to any person or circumstance is held invalid, such decision shall not affect the validity of the remaining portions of the ordinance or its application to other persons or circumstances.

IV.

DRAFT TITLE 30 TECHNICAL APPENDICES

This chapter contains the evaluation forms for wetlands and streams. Also included is the explanation of the questions for the wetlands evaluation and discussion of the options for each question. In addition, there is a discussion of the stream classification procedure.

WORKING DRAFT

WETLANDS EVALUATION

Wetland ID number:____

Evaluation date:_____________________ Sno. Co. wetland class:______

Evaluated by:_____________________ Title:_______________

Smallest functional watershed name:___________________________

Upslope watershed size(ac):_____________ Wetland size(ac):_________

Upslope wetland size(ac):________ Upslope wetland percent(%):_________

Has this wetland been recently altered? _____no _____yes If yes, what type of

alteration?________________________ Approx. date:__________

* *

Indicators of Automatic Class 1 Status

If any question in this section is answered "Yes" then this wetland is automatically a Class 1 wetland. Go to the matrix. If all questions are "No", then continue with the rest of the evaluation questionnaire. This wetland may still receive a Class 1 rating through the evaluation procedure.

Question	YES	NO	Comments
1. Does the wetland contain habitat verified by a State or Federal resource management agency as being utilized by a species recognized to be endangered, threatened, or sensitive by the U. S. Fish and Wildlife Service, the Washington State Department of Wildlife, or the Washington State Department of Natural Resources?	___	___	
2. Is the wetland a sphagnum bog; fen; climax community forested swamp with spruce, cedar, or lodgepole pine associations; or estuarine wetland?	___	___	

Classification Questions

<u>Water Quality and Hydrology</u>

Question	Score	Comments
1. Rate the bank sediment stabilization ability of the wetland by answering only ONE of the following: A. (Lakeshore bank sediment stabilization) If the wetland is adjacent to a lake rate its ability to reduce erosion of shorelines. (less than 5 feet landward width of vegetative cover = 1; at least 5 feet of cover = 3; at least 10 feet of cover = 5) If the wetland is not adjacent to a lake, go to 1.B. B. (Streambank sediment stabilization) If the wetland is adjacent to a stream rate its ability to reduce erosion of streambanks. (over 50% of the streambank broken or eroding, streambanks being severely altered, failure of overhangs and sloughing frequent = 1; 26 to 50% of the streambank receiving major alterations, root mat overhangs and sloughing frequent = 3; 10 to 25% of the streambank receiving minor to moderate alteration = 4; less than 10% of the streambank being altered, bank protection material natural, artificial or combination of both = 5) If the wetland is not adjacent to a lake or stream, then "N/A".	___	
2. (Sediment retention) Rate the wetland's ability to settle suspended sediments from the water column by adequately reducing stream or runoff velocities. (large channel in wetland allowing for only minimal water detention or biofiltration or no defined inlet or outlet = 1; small channels in wetland or semirestricted outlet = 3; restricted outlet causing reduction in water velocity, increased retention and biofiltration (persistent vegetation and sheet flow for maximum score) = 5)	___	
3. (Toxicant retention) Rate the wetland's ability to remove toxic materials based on the wetland's soil type. (less than 3 points in question 2 above and organic soils = 1; 3 or more points and organic soils = 3; 3 or more points and inorganic soils = 5)	___	

4. (Nutrient uptake or transformation) Rate the wetland for the beneficial uptake of water-borne nutrients. (less than 3 points in question 2 above = 1; 3 or more points and with moderately vigorous plant growth and wetland cumulatively occupies less than 3 times the channel width at most points perpendicular to the channel and point or nonpoint nutrient source inferred = 3; 3 or more points and vigorous plant growth and wetland occupies more than 3 times the channel width and point or nonpoint nutrient source inferred = 5) ___

5. (Pollution reduction) Rate the opportunity for pollutant inflow to the wetland based on observed or potential loading. (no visible discharges or no potential upslope sources (forested or sparsely populated) = 1; probable discharges or wetland downslope from urban watershed = 3; visible discharge (grey water, fungal hyphae in channel, signs of water quality stress) = 5) ___

6. (Flood flow alteration opportunity) Rate the wetland's opportunity for flood flow alteration based on its location in the basin. (upslope wetlands comprise >5% of upslope watershed and watershed primarily forest or scrub/shrub = 1; upslope wetlands comprise >5% of upslope watershed or soils impervious or with slow infiltration = 3; upslope wetlands comprise <5% of upslope watershed and soils impervious or with slow infiltration = 5) ___

7. (Flood flow alteration ability) Rate the wetland's ability to alter flood flows based on its physical features. (wetland permanently flooded and outlet unconstricted or fringe wetland = 1; wetland with unconstricted outlet or wetland not permanently flooded = 3; wetland with no permanent outlet or with unconstricted inlet and constricted outlet or in 1-year floodplain with constricted outlet or expansive flooding evident = 5) ___

8. (Stream base flow contribution potential) Rate the wetland's potential effectiveness for contributing to stream base flow based on its location in the watershed. (wetland is located in lower watershed =1; lower middle =2; middle = 3; upper middle = 4; upper = 5) ___

9. (Stream base flow contribution ability) Rate the wetland's ability to contribute to stream base flow based on its physical features. (wetland without permanent outlet and not contiguous (fringe wetland) = 1; wetland contiguous or wetland with permanent constricted outlet to stream = 5) ___

10. (Groundwater recharge) Rate the wetland's value for groundwater recharge based on opportunity and ability. (base flow rated high or wetland with outlet and no inlet = 1; wetland with inlet and no permanent outlet or inflow greater than outflow = 5) ___

TOTAL ___

Wildlife Habitat

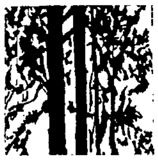
1. (Habitat diversity) Rate the habitat diversity of the wetland community by answering only ONE of the parts below: ___
   A. If the wetland is primarily palustrine emergent and open water, then rate the percentage of open water in the wetland. (less than 10% = 1; 10% to 40% or 61% to 90% = 3; 41% to 60% = 5)
      If the wetland is not palustrine emergent, go to B.
   B. If the wetland is primarily palustrine forested or scrub/shrub, then rate the level of structural diversity. (nearly monotypical = 1; some variety in canopy = 3; high variety in canopy = 5)
      If the wetland is not palustrine forested or scrub/shrub go to C.
   C. Denote the number of FWS classes the wetland contains. (1 class = 1; 2 = 3; 3 or more = 5)

2. (Habitat value) Rate the habitat value of the wetland in relation to its proximity to a stream, river or slough. (1/4 ___

mile or greater = 1; within 1/4 mile but not adjacent = 3; conjoint or adjacent = 5) ___

3. (Plant food quality) Rate the food quality of the predominant plants available in the wetland. (low = 1; moderate = 3; high = 5) ___

4. (Disturbance reduction) Rate how well the surrounding upland and wetland vegetation reduces visual and noise disturbances to wildlife in the wetland. (<50% occlusion = 1; 50% to 75% = 3; >75% = 5) ___

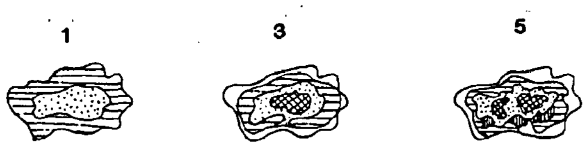


50% visual occlusion

75% visual occlusion

5. (Special habitat features) Rate the number and variety of special habitat features available on or near the wetland. (low = 1, moderate = 3, high = 5) ___

6. (Edge) Rate the extent of edge within and around the wetland. (low = 1; moderate = 3; high = 5) ___



7. (Total habitat area) How many total acres of wetland and upland wildlife habitat are connected by vegetated corridors? (less than 1 acre = 1; 1 to 2 acres = 3; greater than 2 acres = 5) ___

8. (Observed species usage) Rate the observed or known concentrations of fish and/or wildlife species on this site. (low = 1, moderate = 3, high = 5) ___

9. (Known site usage) Is the site known to contain seasonally important nesting, resting, spawning, breeding, feeding, or rearing habitat for fish and/or wildlife? (no = 1; yes = 5) If no information is available, then "N/A". ___

10. (Sensitive and monitor species present) Are any sensitive or monitor species of animal or plant known to occur in the wetland? (no = 1, species proposed for listing present = 3, yes = 5) ___

11. (Ecological food support) Rate the wetland's role in ecological food support by estimating the wetland's opportunity and ability to flush organic plant material into downslope waters. (no permanent outlet or intermittent outlet with poor seasonal plant productivity = 1; intermittent or permanent outlet, but with low water to vegetation interspersion, modest plant productivity = 3; significant areas of erect predominantly aquatic or emergent vegetation, potential for expansive flooding and eutrophic conditions = 5) ___

TOTAL ___

* *

Wetland Classification

Since there are questions that may not be answerable with the information available to the person doing the evaluation, the scores generated by the wetland

evaluation must be converted to a percentage. In order to be valid, no fewer than half the questions in either functional category must be answered.

Tentatively, the percentage of the total number of points received by a wetland will be used to determine its class. For mitigation purposes, however, each individual function's value will have to be replaced. The tentative breakdown of points for the different classes is:

Class 1: 81% to 96%
Class 2: 51% to 80%
Class 3: <24% to 50%

Initial examinations of representative wetlands has shown a good correlation between the evaluation procedure and the physical attributes of the wetland.

	Water Quality & Hydrology	Wildlife Habitat	Wetland Total
1. Total Points Possible for Function	50	55	105
2. N/A & U/K Questions ____ x 5 Points Each			
3. Points Available (Total - N/A & U/K)			
4. Points Scored by This Wetland			
5. Percent of Pts Scored (Scored / Avail)			

DRAFT

WETLAND EVALUATION FORM DOCUMENTATION

This documentation applies to the evaluation form draft dated March 08, 1989.

This wetland evaluation form was developed to evaluate a wetland's functional performance at a particular point in time. However, wetlands are dynamic systems which are constantly undergoing change. In natural undisturbed systems, these changes occur over long periods of time. Under the influence of man's activities, these changes may occur much more rapidly. If there have been significant changes to the wetland or its watershed, the functions of the wetland may also be affected.

This wetland evaluation form takes into consideration processes occurring within the wetland's immediate surroundings and its upstream drainage basin, as well as within the wetland itself. Thus, it is possible that two wetlands which appear otherwise identical may score quite differently.

Cowardin et al. (1979) identifies five wetland systems: marine, estuarine, lacustrine, riverine, and palustrine. This wetland evaluation is designed for use on palustrine wetlands.

Delineating the Wetland Evaluation Area
(adapted from Adamus et al. 1987)

The Wetland Evaluation Area (WEA) is the area that will be evaluated for functions and values. The primary goal in delineating the WEA is to identify an area that is characterized by a high degree of hydrologic interaction and interdependence (e. g., unconstricted movement, interchange of surface water, etc.).

Delineation of the WEA is straightforward when the wetland is in a small, topographic depression where a high degree of hydrologic interaction occurs. In this situation, the WEA simply includes all wetlands within the topographic depression. Delineation of the WEA becomes more difficult as the wetland becomes larger and more complex.

The following general guidelines should be used in identifying and delineating the WEA:

1. Identify the wetland area of interest. This may be the site of a proposed impact, a mitigation site, an environmental assessment site, etc.

   Document the rationale for wetland identification and boundary determination by using the Snohomish County Wetland Determination Data Form which describes the characteristics which identify the area as a wetland (see page 5 of the Wetland Evaluation Form). The wetland determination data form provides information on the dominant plant species in each canopy layer, their Wetland Indicator Sta tus (WIS), the dominant soils present, and the hydrology of the area under study.

2. Identify physical points of hydrologic change in the wetland area of interest. Physical points of hydrologic change include natural (geomorphic) or man-made constrictions (e. g., road crossings), points where gradient changes rapidly, points of significant inflow (e. g., tributaries), or places where there are other factors that limit hydrologic interaction.

   The boundary of the WEA includes the wetland area of interest and contiguous wetlands with a high degree of hydrologic interaction. When the wetland area of interest is large, several WEA's may have to be delineated in order to meet the criteria of hydrologic interaction. Each WEA delineated within the area of interest must be evaluated separately. The area contained within each WEA is given the classification status determined through the use of this evaluation. The Snohomish County Planning Division will make the final determination on the WEA for purposes of this evaluation.

Guidelines for delineating the WEA in specific situations are outlined below:

1. Wetlands with a High Degree of Hydrologic Interaction. If detailed field measurements indicate a high degree of hydrologic interaction between two wetlands that appear to be hydrologically independent, include them in the same WEA. If little or no evidence of hydrologic interaction is evident, delineate the two wetlands as separate WEA's.

2. Wetlands Along a Channel. Wetlands along a channel can be classified as fringe or nonfringe based upon the ratio of wetland width to channel width. Fringe wetlands cumulatively (both sides of the channel) occupy less than three times the width of the channel on a line perpendicular to the flow. Nonfringe wetlands cumulatively occupy more than three times the width of the channel on a line perpendicular to flow.

   a. Delineating the boundary. Identify common points of hydrologic change. These are defined as a point where the channel/floodplain narrows to one-third, or less, the width of the widest upstream or downstream channel/floodplain. (See Figure 1.)

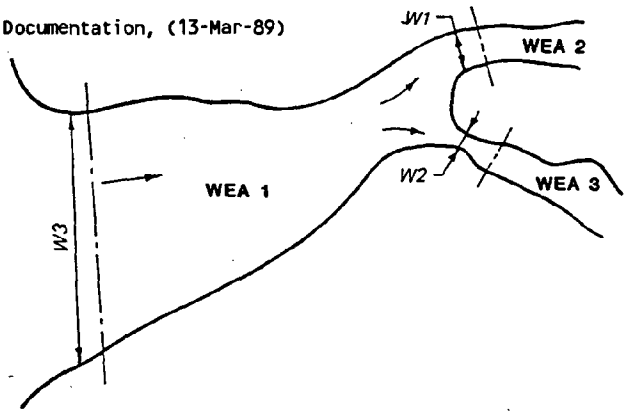


Figure 1. Examples of constrictions on a channel.

b. Fringe Wetlands on a Channel. If the wetland to be evaluated is a fringe wetland (cumulatively occupies less than three times the width of the channel), delineate the WEA to include wetlands on one side of the channel. Upstream and downstream boundaries of the WEA should be drawn at points of hydrologic change. (See Figure 2.a.)

c. Nonfringe Wetlands on a Channel. If the wetland to be evaluated is a nonfringe wetland (cumulatively occupies more than three times the width of the channel), delineate the WEA to include wetlands on both sides of the channel as well as the channel itself. Upstream and downstream boundaries should be drawn at points of hydrologic change. (See Figure 2.b.)

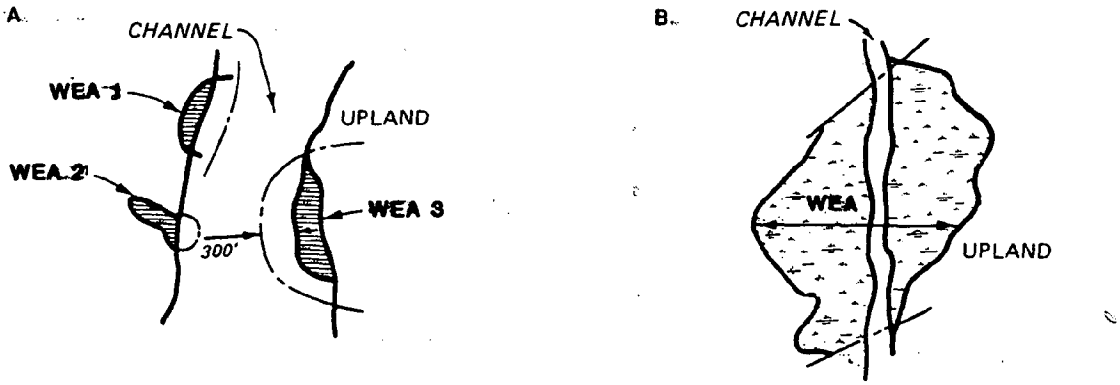


Figure 2. a. Fringe wetlands on a channel. and b. Nonfringe wetlands on a channel.

3. Wetlands On a Standing Body of Water. Wetlands on standing bodies of water (e. g., lakes, ponds, estuaries, etc.) can be classified as fringe and nonfringe based on the ratio of wetland to surface area of the body of water. Fringe wetlands cumulatively occupy less than one-third the surface area of the body of water. Nonfringe wetlands cumulatively occupy more than one-third the surface area of the body of water.

a. Delineating the boundary. Constrictions on a standing body of water are defined as a point where the wetland width is one-tenth or less, of the widest, adjacent wetlands. (See Figure 3.)

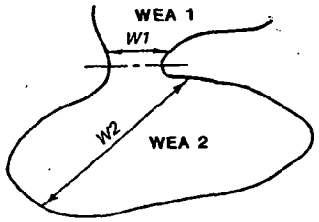


Figure 3. Example of constriction on a standing body of water.

a. Fringe Wetlands on a Standing Body of Water. Fringe wetlands on a body of water may be separated from other fringe wetlands by constrictions, peninsulas, or other conditions such as prevailing winds. In this situation, identify the fringe wetland that contains the area of interest. Delineate the WEA to include the fringe wetland. (See Figure 4. a.)

b. Nonfringe Wetlands on a Standing Body of Water. If the area of interest is in a nonfringe wetland, delineate the WEA to include all wetlands on the standing body of water. If coves or constrictions are present, separate

WEA's may be delineated. (See Figure 4. b.)

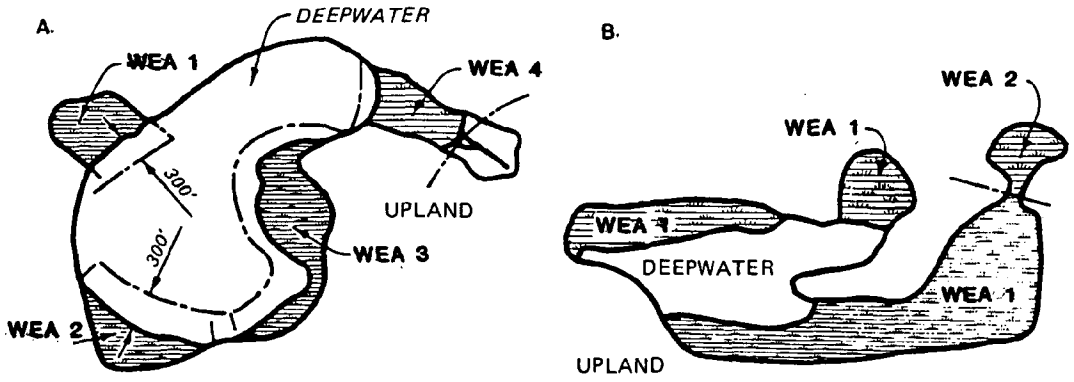


Figure 4.a. Fringe wetland on a standing body of water. and b. Nonfringe wetland on a standing body of water.

4. Large Wetlands. In areas of extensive wetland there may be no obvious point of hydrologic change within a practical distance. In this situation it may be desirable to evaluate a representative subsample of the WEA. The following guidelines are suggested. For wetlands along a channel, draw upstream and downstream boundaries of the WEA to include contiguous wetlands within 1/2 mile of the area of interest. Draw lateral boundaries to include contiguous wetlands within 1/2 mile of the channel. For wetlands on a standing body of water, draw the WEA boundary to include wetlands within 1/2 mile of the area of interest. (See Figure 5.)

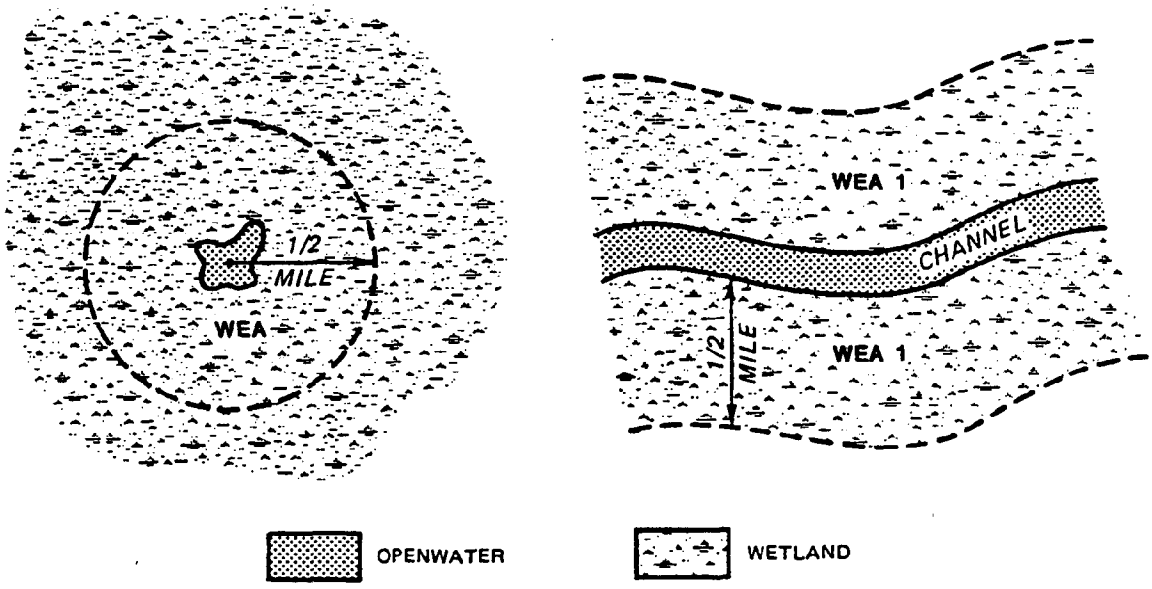


Figure 5. Delineation of the WEA in large wetlands.

Delineation of the Watershed

Guidelines for delineating the WEA watershed for are as follows:

1. The WEA watershed of fringe wetlands on large lakes (i. e., greater than 10 square miles), includes the area upslope of the WEA from which water flows into the WEA, or until a dam is reached. It does not include the watershed of contiguous wetlands which are not in the WEA.

2. The WEA watershed of all other wetlands includes the area upslope of the WEA from which water flows into the WEA, or until a dam is reached. Estimate the size of the total watershed in square miles.

How to Fill Out the Evaluation Form

Any data and other information collected and assumptions made while filling out the evaluation form should be noted in the "Comments" column next to the appropriate question.

The following paragraphs are keyed to the introductory information at the top of the first page of the evaluation form.

1. "Wetland ID number" is the number assigned to the wetland by the Snohomish County Planning Division. The ten digit number begins with six digits indicating the section, township, and range that the wetland is primarily located in. The last four digits are a relative indication of the location of the wetland within the section. This location number is found by dividing the section into a grid of 100 units by 100 units. The first two digits of the locus identify the wetland's north-south coordinate. The second two digits are the east-west coordinate. For example, wetland number 022704-5025 is located in Section 2 of Township 27 North, Range 4 East W. M. (Willamette Meridian), half way from the north boundary to the south boundary of the section (50 out of 100 units) and one-quarter of the way east from the west boundary (25 out of 100 units).

2. "Wetland size" is the size of the Wetland Evaluation Area (see page 1).

3. The "Evaluation date" is the date upon which the wetland was visited in the field for the purposes of the evaluation. If the form is being filled out entirely in the office with data collected at another time and/or another person besides the evaluator, this information should be noted in the heading.

4. The "Snohomish County wetland class" is the class assignment that results from the use of this evaluation form and rating process. It's inclusion in the heading is for ease of reference. The tally sheet for the evaluation and breakdown of rated scores will be found on the last page of the evaluation.

5. "Evaluated by" and 6. "Title" are to identify the person or persons filling out the evaluation form and their credentials.

7. The "Smallest functional watershed name" is the name of the smallest hydrologically closest watershed unit that contains fish habitat. Thus, ditches connecting a wetland to a stream system but containing no fish habitat would not be considered the watershed unit. The stream the wetland is connected to by the ditches would be the watershed unit.

8. "Upslope watershed size", 9. "Upslope wetland size", and 10. "Upslope wetland percent" are based on the smallest functional watershed. Note whether the acreage was determined through the use of a planimeter or by visual estimation.

11., 12., and 13. "Alteration" means any activity including clearing, grading, draining, filling, or other disturbance to an aquatic system which results in a decrease or loss of functional values. Each question should be answered based on the wetland in its condition on the date of the evaluation. In the case of a recently altered wetland, the wetland may be evaluated and classified based on reasonable assumptions of what the conditions were prior to the alteration. The assumptions used for the pre-alteration evaluation should be noted in the "Comments" column next to the appropriate question.

Indicators of Automatic Class I Status

1. Does the wetland contain habitat verified by a State or Federal resource management agency as being utilized by a species recognized by the U. S. Fish and Wildlife Service, the Washington State Department of Wildlife, or the Washington State Department of Natural Resources to be Endangered or Threatened?

The presence of an Endangered or Threatened species in a particular wetland would be found either through actual observation by qualified Planning Division or other personnel or through the Washington State Department of Wildlife's (WDW) Special Species List (for animals) and the Washington State Department of Natural Resources' (DNR) Locations of Significant Natural Features in Snohomish County (for vascular plants) or by written notification from any of the aforementioned agencies. The U. S. Fish and Wildlife Service (USFWS), WDW, and DNR maintain lists of animal and vascular plant species considered by each of these agencies to be Endangered and Threatened. There is also a list of species that are proposed for listing (see Appendix A: Endangered and Threatened Species List). (The Planning Division is receiving these lists of locations and quarterly updates to the listing to aid in answering this question.) If one of these species is thought to occur on a site not previously identified, State and/or Federal resource management agencies will be notified and the identification of the species will be verified.

Endangered means a species is "in danger of extinction or extirpation throughout all or a significant part of its range". Threatened means a species is "likely to become endangered in the near future because of various threats to its populations" (Washington State Department of Wildlife 1987).

Although extinction and extirpation occur as natural processes in evolution, the rate of extinction in recent history has occurred at a rate dramatically higher than what would be expected to naturally occur under the climactic conditions present. In geologic history only three previous extinction rates have equaled the present rate of extinction. These occurred in conjunction with each of the Ice Ages, periods of extreme climactic upheaval. The present extinctions and extirpations have been caused by human disturbances, such as over-exploitation, the loss of habitat, and the degradation of remaining habitat (Washington State Department of Wildlife 1987).

When a species becomes extinct, the exchange of genetic material is no longer possible. This loss affects people by limiting the options available in the future. For example, many tropical plants are presently being examined for useful drugs such as cancer-inhibitors and other medicinals, while over 40 million acres of tropical forests and numerous species are being eliminated daily (Cauffield 1985). The numbers of varieties of the major American food crops are very

limited, making them more susceptible to enormous losses due to disease or unusual climactic occurrences, such as the corn blight of the 1970's that wiped out 75% of the corn crop in the United States. Interbreeding with wild species is being undertaken to increase disease resistance and susceptibility.

Extirpation, on the other hand, limits the availability of genetic material in that portion of the species' range where it is no longer found. Specific genetic adaptations will be lost and, while individuals of the species will still exist in other portions of the range, fragmentation and genetic isolation will occur much more readily, thereby making the remaining populations more vulnerable.

2. Is the wetland a sphagnum bog (or fen); climax community forested wetland with spruce, cedar, or lodgepole pine associations; or estuarine wetland?

Certain habitat types occur in very limited quantities in Snohomish County. These wetland habitat types are sphagnum bogs (or fens); climax community forested wetlands; and estuaries. They support unique plants and animals by providing a niche unlike those found in surrounding areas. Loss of these types of habitat would decrease the species that are dependent upon them for their survival. These types of wetlands have developed over a very long period of time and are thus impossible to replace.

Sphagnum bogs or fens are characterized by the presence of sphagnum moss (Sphagnum spp.) and a preponderance of sphagnum peat (Kunze pers. comm.). Since the impounded waters have a low pH (5.5 or less) and low dissolved oxygen, decomposition of organic materials is slowed down severely causing the accumulation of peat (Niering 1985). In western Washington it takes an average of 41 years for one inch of peat to accumulate (Rigg 1958). The high acidity also results in low nutrient availability. Bog ponds are typically bounded at least on one side by sphagnum peat. Often mats of sphagnum will slowly extend out over the surface of the water, perhaps even eventually covering the surface entirely. These conditions create a unique habitat for a variety of plants and animals. Typical plants associated with sphagnum bogs include Carex cusickii, Rhynchospora alba, Kalmia occidentalis, Ledum groenlandicum, Spirea douglassi, Pinus contorta, Tsuga heterophylla, and Pinus monticola (see Appendix B: Descriptions of Low Elevation Sphagnum Bog Communities).

Climax community forested wetlands are unique wooded communities dominated by western red cedar (Thuja plicata), sitka spruce (Picea sitchensis), and lodgepole or shore pine (Pinus contorta). Once common in river valleys of the Puget Trough, these diverse communities have dwindled, now existing only in remnant stands, for example, on Otter Island.

Estuarine wetlands are a unique and important ecosystem that provide a transition between terrestrial, freshwater, and marine environments. Thus they contain many edges and ecotones, supporting a diverse array of plants and animals. Estuaries are nursery areas for many commercially or recreationally important species of fishes and shellfishes. They also provide important wintering and migration areas for large numbers of waterfowl and shorebirds. The primary productivity of estuaries is far greater than terrestrial systems. Nanaimo Estuary in British Columbia has been found to produce 9.1 tons/acre/year and Netarts Bay, Oregon, tideflats yielded 11.9 tons/acre/year, while corn yields an average of 2.3 tons/acre/year and rice 2.2 tons/acre/year (Brown 1985a). It is estimated that 90% of the original Snohomish River estuaries have been lost (Boule' et al. 1983).

Water Quality and Hydrology
(adapted from Adamus et al. 1987)

1. (Sediment stabilization) Rate the wetland's ability and opportunity to prevent erosion of stream banks and shorelines.

   1 = little or no erosive forces present (no flowing water or open water (fetch) >100 feet) OR less than 10 feet of erect or submerged vegetation perpendicular to the shoreline providing erosion protection

   3 = some potential erosive forces present and at least 10 feet of vegetation

   5 = potential erosive forces present and at least 20 feet of vegetation

   N/A If no stream channel or shoreline is present.

Determine the magnitude of erosive forces present and measure the width of erect or submerged vegetation growing between the erosive force and the stream bank or shoreline, i. e., upland.

Wetlands rated HIGH must be characterized by one of the following: erosive forces present, deep water area greater than shallow water and saturated soil areas, ditches or canals present that confine water, high water velocity, evidence of long-term erosion, or water table influenced by upstream impoundment. One of the following must also be present: gravel or rubble substrate, protection of nearby shorelines, greater than 20 foot width of erect or submerged vegetation, presence of forest or scrub/shrub, or good water to vegetation interspersion.

The only wetland considered LOW is one in which there is no flowing water, no boat wakes, no open water (fetch) wider than 100 feet, and no eroding areas abutting the wetland (approximately 100 yards up or down steam), as well as having neither erect or submerged vegetation nor rubble substrate.

2. (Sediment retention) Rate the wetland's ability to settle suspended sediments from the water column by adequately reducing stream or run-off velocities.

   1 = absence of potential sediment sources AND no depositional environment

   3 = some potential sediment sources and small channels in wetland with only occasional overbank flows OR constricted outlet

   5 = sediment sources present AND depositional environment evident

Determine the magnitude of upstream sediment sources, note the type of outlet and inlet, and examine the wetland for signs of overbank flows and deposition.

Wetlands rated HIGH for sediment retention are those areas that physically trap and retain the inorganic sediments generally damaging to aquatic life, on a net annual basis. Wetlands considered HIGH for sediment trapping include ones with no outlets, ones that are impounded, ones where it has been demonstrated that outlet waters have less inorganic particulate matter than inlet waters, and ones with basically depositional environments with erect vegetation wider than 20 feet.

Other indicators of HIGH ability to settle suspended sediments include constricted outlets, no flow or slow velocity flow, depth greater than 6 feet and long duration and extent of seasonal flooding. Sediment sources include any of several sources of sediment including row crops, soil-slope conditions enhancing erosion, dumps, fields or roadways that may supply sediment.

Indicators of LOW sediment retention include areas of high water velocity, areas of minimal vegetation interspersion, and wetlands fringing the channel immediately downstream of an impoundment. Wetlands that have large, fast-flowing stream channels with short residence times are of LOW value for sediment retention. "Absence of sediment sources" includes forested or well vegetated upslope watershed not larger than 5 times the wetlands size.

3. (Toxicant retention) Rate the wetland's ability to remove toxic materials based on the wetland's soil type.

   1 = less than 3 points in question 2 above

   5 = depositional environment evident OR 3 or more points and any one of the following: clay or clay loam or histosol

Determine the type of soil present in the wetland either by examination of the soil in the field or by use of the Soil Survey of Snohomish County Area Washington (United States Department of Agriculture 1983). Find the amount of clay and organic matter in that soil type by referring to Table 14 in the Soil Survey book, pages 183-188.

For a wetland's soils to have the opportunity to remove toxic materials from the water column, the velocity of the water must be reduced enough for the process to occur. Therefore, a wetland must rate 3 points or more in question 2. Once it is determined that the wetland has the opportunity to remove toxicants its ability to do so must then be examined by determining the type of soil present.

In general, organic matter and clay particles in soils are known to bind with toxicants and remove them from the water column (Horner pers. comm, Donahue et al. 1977, Mitsch and Gosselink 1986).

4. (Nutrient uptake or transformation) Rate the wetland for the beneficial uptake of water-borne nutrients.

   1 = less than 3 points in question 2 above OR no upstream point or nonpoint nutrient sources inferred

   3 = 3 or more points AND with moderately productive plant growth AND wetland cumulatively occupies less than 3 times the channel width at most points perpendicular to the channel AND point or nonpoint nutrient source inferred

   5 = 3 or more points AND significant vegetation AND wetland occupies more than 3 times the channel width AND point or nonpoint nutrient source inferred

Determine the presence of upstream nutrient sources, note the productivity of the vegetation, and the size of the wetland as compared to the channel.

HIGH nutrient removal or transformation ratings are in those wetland which retain or transform inorganic phosphorus and/or nitrogen into their organic forms (or transform nitrogen to its gaseous form) on either a net annual basis or during the growing season. A wetland rated HIGH for sediment retention may be similarly rated for nutrient removal or transformation. Conditions conducive to sediment trapping, such as presence of inlets with constricted or no outlets, indicate a HIGH probability for this function. Other indicators of HIGH include low water velocity or the presence of significant vegetation; fine mineral soils; high plant diversity; presence of nutrient sources; and permanently flooded or saturated. Areas with point or nonpoint sources of nutrients are indicators of HIGH function.

Indicators of LOW values for this function are the same as low for sediment trapping. Other indicators amy be anoxic water column conditions and areas of dead vegetation or no woody or floating-leaved vegetation. Small watersheds, absence of potential nutrient sources, or permeable soils are also indicators of LOW function (Adamus et al. 1987).

5. (Pollution reduction) Rate the opportunity for pollutant inflow to the wetland based on observed or potential loading.

   1 = no visible discharges OR no potential upslope sources (forested or sparsely populated)

   3 = probable discharges OR wetland downslope from developed watershed (<50% cover by trees or shrubs)

   5 = visible discharge (grey water, fungal hyphae in channel, signs of water quality stress)

Examine the wetland for evidence of pollutant inflow and note the potential for pollutant discharge from the upslope watershed.

A wetland receiving pollutants or in a potential situation to receive pollutants is more likely to have a HIGH function in the reduction of pollutants.

6. (Flood flow alteration opportunity) Rate the wetland's opportunity for flood flow alteration based on the physical features of its upslope basin.

   1 = upslope wetlands comprise >5% of upslope watershed AND watershed >50% trees or shrubs AND upslope soils in hydrologic soil group A or B

   3 = upslope soils in hydrologic soil group A or B OR upslope wetlands comprise >5% of upslope watershed OR watershed >50% trees or shrubs

   5 = two or more of the following: upslope wetlands comprise <5% of upslope watershed or soils in watershed in hydrologic soil group C or D or upslope watershed <50% trees or shrubs

Determine the percent of upslope wetlands in the watershed by comparing the amount of known wetlands, including the wetland under evaluation, to the total area of upslope watershed. Estimate the amount of forested and scrub/shrub area in the upslope watershed by examining aerial photographs. Determine the hydrologic soil group. If soils information has not been supplied or is unknown, determine the soil type through use of the SCS Soil Survey maps. Note method of estimation and sources of information in "Comments" section.

A wetland rates HIGH for the opportunity to alter flood flows when there are proportionately fewer upslope wetlands that may provide the opportunity to store floodwater. As upslope storage decreases, downslope storage becomes increasingly important. If the basin has soils that are impervious or have a slow infiltration rate (hydrologic soil groups C or D) then downslope wetlands become more important for moderating watershed discharges, since more water will runoff. Low forest and scrub/shrub cover in the upslope watershed provides little opportunity to intercept precipitation, thus decreasing the amount of evaporation, transpiration, and infiltration occurring in upslope areas and allowing greater runoff.

In areas where there is a relatively high ratio of upslope wetlands to upslope watershed and the upslope watershed is generally in a natural condition (>50% forest or scrub/shrub cover) with pervious soils the wetland would rate LOW.

7. (Flood flow alteration ability) Rate the wetland's ability to alter flood flows based on its physical features.

   1 = no existing or apparent ponding AND outlet unconstricted or fringe wetland

   3 = existing or apparent ponding AND unconstricted outlet or fringe wetland

   5 = evidence of expansive flooding AND any one of the following: in 1-year floodplain with constricted outlet or wetland with no permanent outlet or with unconstricted inlet and constricted outlet

Examine the wetland for signs of expansive flooding, determine the type of inlet and outlet present, and whether the wetland is a fringe wetland.

This question examines the ability of a wetland to attenuate downstream flooding by analyzing the configuration of the outlet of the wetland, it's proximity to the floodplain of a stream and evidence of flooding . Wetlands function for flood flow attenuation by temporarily storing water, reducing velocities, and subsequently reducing downstream flood volumes and peaks.

Wetlands located adjacent to or within high frequency floodplains of streams, or that receive point discharges of stormwater, are provided the highest opportunity for intercepting floodwaters. To be effective, the wetland must also be able to either temporarily or permanently store the water. Wetland configurations effective for flood flow storage have depressions capable of holding water (ponding), and either have no outlets at all or have restricted outlets that cause a temporary backup and slow release of the floodwater. Ponding is any temporary (24 hours or more), frequent flooding where surface waters expand to more than 3 times their average area. Expansive flooding occurs where surface waters expand to more than 3 times their average area for more than 25 days during an average year.

8. (Stream base flow contribution potential) Rate the wetland's potential effectiveness for contributing to stream base flow based on its location in the basin.

   1 = wetland is located in lower basin

   2 = lower middle

   3 = middle

   4 = upper middle

   5 = upper

For the purposes of this evaluation the wetland basin is the same as the basin of the hydrologically closest stream that contains fish habitat. To determine the location of the wetland in the basin draw a straight line from the mouth of the stream to the furthest point in the basin. Divide the line into 5 equal parts and label the section closest to the mouth "lower", the next higher section "lower middle", etc.

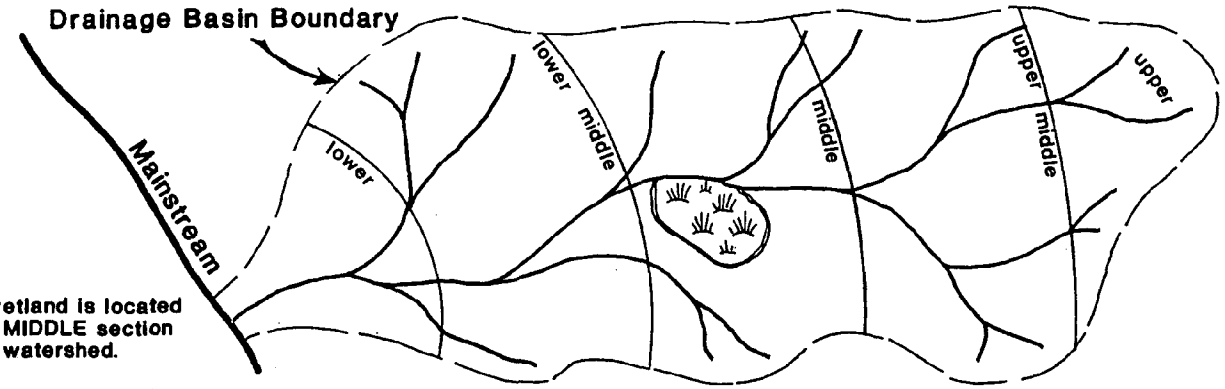


Figure 6. Location in stream basin.

This question examines the ability of a wetland to aid in sustaining downstream flows by determining its location within the stream basin. Wetlands aid in maintaining stream base flows by first storing and then slowly releasing water. Wetlands which are located in the upper portions of the stream basin rate HIGH because they provide water to a larger portion of the downstream basin area than wetlands located in the lower part of the basin. Therefore, wetlands in the upper basin are potentially more important than those located in the lower basin.

9. (Stream base flow contribution ability) Rate the wetland's ability to contribute to stream base flow based on its surface water continuity with a stream.

   1 = recharge rated high OR wetland without permanent outlet OR wetland not contiguous

   3 = contiguous OR with permanent constricted outlet

   5 = recharge rated low OR either of the following: wetland contiguous or with permanent outlet to stream AND one of the following: permanently flooded wetland or outflow greater than inflow or local topography which favors discharge

Determine the type of hydrological connection present between the wetland and the hydrologically closest stream.

In order to be effective in contributing to the base flow of a stream the wetland must be hydrologically connected to the stream system and discharging more water on a net basis than it recharges. The wetland can only rate HIGH if it is contiguous to a stream or has a permanent constricted outlet to a stream. It also must also be topographically located such that discharge is implied. Favorable topography for discharge exists for wetlands located at the base of slopes greater than 20 percent. The rationale is that it is assumed that the hydraulic head or upward water movement will be higher for these wetlands, therefore precluding, on a net basis, the opportunity for recharge. Further evidence for discharging wetlands, are wetlands that are continually flooded or have outflow volumes greater than inflow.

A wetland rates LOW if it does not have a permanent outlet or is not contiguous even though there may be a subsurface connection.

10. (Groundwater recharge) Rate the wetland's value for groundwater recharge.
    1 = base flow rated high OR wetland with constricted outlet and no constricted inlets and impermeable strata underlying wetland OR local topography does not favor recharge

    5 = wetland with constricted inlet and no permanent constricted outlet OR inflow greater than outflow OR local topography favorable to recharge OR permeable strata underlying wetland

Determine the type of outlet the wetland has and the infiltration ability of the underlying soils.

Relatively few of the Puget trough lowland wetlands will be rated high for recharge. This is primarily due to the pres-

ence of relatively impermeable layers of compact glacial till restricting downward water morement. A wetland that shows evidence of rapid infiltration rates HIGH for groundwater recharge. Certain types of local topography are not favorable for discharge but favor recharge, e. g., an upslope watershed gradient lower than downslope gradient.

Wetlands that are underlain by impermeable strata (i. e., soils in hydrologic group C or D and bedrock) will be LOW for groundwater recharge.

Wildlife Habitat

Washington State has an especially varied and rich variety of wildlife habitat types. This abundance of habitat types gives us an exceptionally rich variety of vertebrate wildlife species. Our state's inland terrestrial fauna numbers approximately 475 species. With about 75 more species of inland freshwater and anadromous fishes, the marine mammals, and the 350 or so fish species in marine waters the total is nearly 930 species of vertebrates. If multi-cellular invertebrates are added the total easily exceeds 15 or 20 times this number.

Washington's tremendous variety in wildlife habitats is mirrored here in Snohomish County. From 10,500 foot high Glacier Peak down into the foothills, through large river valleys that flow into estuaries and out to Puget Sound, approximately 360 species of inland vertebrate wildlife occur in our County. This represents nearly 75 percent of all wildlife species which occur in the entire state.

Of all habitat types which occur in the state, streams and wetlands receive a disproportionate share of usage by more than 90 percent of all wildlife species (Brown 1985a, 1985b). In fact, there are no habitat types on earth which are more important to wildlife than streams and wetlands (Cohen, 1985).

When examining a wetland area for wildlife habitat potential it must be recognized that the majority of wildlife species are raccoon-sized or smaller. Besides small size, their secretive nature often makes them, or sign of their presence, difficult to locate without a detailed inspection of the site. Above all it should be realized that wildlife is much more than just the large and more spectacular animals such as deer, elk, or black bear, and that size or visibility has very little to do with the relative importance or value of any animal species.

1. (Habitat diversity) Rate the habitat diversity of the wetland community by answering only ONE of the parts below:
   A. If the wetland is primarily palustrine emergent and open water, then rate the percentage of open water in the wetland.

      1 = less than 10%

      3 = 10% to 40% OR 61% to 90%

      5 = 41% to 60%

   If the wetland is not palustrine emergent and open water, go to B. If the wetland is primarily palustrine emergent without open water, go to C.

   B. If the wetland is primarily palustrine forested or scrub/shrub, then rate the level of structural diversity.

      1 = nearly monotypical

      3 = some variety in canopy

      5 = high variety in canopy

      If the wetland is not palustrine forested or scrub/shrub go to C.

   C. Denote the number of FWS classes the wetland contains.

      1 = 1 class

      3 = 2 classes

      5 = 3 or more classes

Question 1A examines the habitat diversity of wetlands containing palustrine emergent and open water area. This ratio can be estimated from infield observations or measured on aerial photographs. Bellrose (1976) has shown that when this type of habitat contains approximately even ratios of open water to emergent vegetation, that it has HIGH value to most waterfowl which nest in Snohomish County. The USFWS Habitat Suitability Index (HSI) models for marsh wren, muskrat and mink generally agree with this ratio (Gutzwiller and Anderson 1987; Allen and Hoffman 1984; Allen 1986).

Question 1B examines the habitat diversity of palustrine forested and scrub/shrub habitats through the assessment of structural diversity. Although direct field observations are obviously preferable, this parameter can be estimated in the office by examination of aerial photographs for homogeneity of the canopy's surface. Structural diversity is a major aspect of overall diversity in forested and scrub/shrub wetlands. Foliage height diversity (a major component of structural diversity) is used in a number of USFWS HSI models to index the diversity of habitats available for birds in a given area (Schroeder 1982). This level of diversity is generally HIGH in mixed coniferous-hardwood forests and old-growth stands, but is MODERATE or LOW in most shrub communities. However, according to Cowardin, et al. (1979) up to 29% areal tree cover can occur in scrub/shrub wetlands. A situation such as this could easily produce enough variation in the canopy to result in a rating of HIGH for a scrub/shrub wetland.

Question 1C examines all other types of wetland habitat. Determine the number of classes contained in the wetland. The word "classes" refers to the number of different classes within different systems and subsystems. For example, if a wetland contains R2RB and R3RB; where the system is riverine (R), the subsystems are lower perennial (2) and upper perennial (3), and the class is rock bottom (RB); it contains 2 classes of wetlands (R2RB and R3RB) rather than 1 class (rock bottom). The larger the number of classes of habitat available in a wetland the greater its diversity, thus it would receive a HIGH rating when 3 or more classes are present.

Species richness generally increases as habitat diversity increases (Brown 1985a, 1985b; Odum 1975). Additionally, the maintenance of ecological diversity is thought to be directly related to community stability and will help to insure the system against disaster (Odum 1971). Evaluating habitat worth solely on it's diversity, and thus it's potential for highest levels of species richness, is not always appropriate. Whenever possible, the presence of uncommon or unique plant or animal species should also be taken into account. This is addressed in Wildlife Habitat questions #8 and #9.

Wildlife habitat is the place where an organism lives (Odum 1971). More specifically it is the arrangement of food, cover and water required to meet the biological needs of one or more individuals of a species (Thomas 1979). Niches are specific arrangements of food, water and cover which meet the needs of a particular species. The density, diversity and structure of the vegetation, the abundance and variety of quality food, and the presence of readily available water means that more niches are provided in wetlands and riparian zones than in any other type of habitat (Brown 1985a, 1985b). In western Washington, as in other areas worldwide, wildlife use wetland and riparian zones disproportionately more than other habitats (Brown 1985a, 1985b). Nearly 90% of all wildlife species in western Washington are either totally dependent on wetlands or riparian zones or utilize them more than other habitats (Brown 1985a, 1985b). Many species, such as the raccoon, can survive outside riparian zones and wetlands, but reach their maximum densities in this type of habitat. Thus, habitat alterations in wetlands and streams will affect wildlife far more than indicated by the proportion of total area which is disturbed.

2. (Travel corridor) Rate the habitat value of the wetland in relation to its proximity to a stream, river or slough.

    1 = 1/4 mile or greater

    3 = within 1/4 mile but not adjacent

    5 = conjoint or adjacent

This question is designed to evaluate the increased value of wetlands connected by riparian travel corridors to other natural areas. In the field the distance of the wetland to the nearest moving water body can be noted, then measured on maps and aerial photographs. Wetland habitats close to moving water features rate HIGH because of their advantages over wetland habitats removed from these areas. Riparian areas are excellent travel corridors and nearly 90% of all western Washington animals make use of them (Brown 1985). Migratory waterfowl use bodies of water for navigation and thus wetlands in close proximity to streams are more likely to be found and used (Bellrose 1976; Cohen 1985).

The presence of most species of waterfowl in wetlands of a western Washington stream corridor was attributed to movement into the area along a stream corridor (Greer 1982 in Cohen 1985). Mink and river otter are known to use even very small wetlands when they occur in close proximity to streams (USFWS HSI models). Because of increased levels of protection from development activities often afforded riparian areas, it is also much less likely that a wetland will become geographically isolated when it occurs close to a river or stream. One has only to look at aerial photographs to notice the relatively unbroken swaths of vegetation which mark riparian corridors. These connections become more important as areas surrounding a wetland experience increasing development.

3. (Plant food quality) Rate the food quality of the predominant plants available in the wetland.

    1 = low

    3 = moderate

    5 = high

Identify the ten dominant species in the wetland. Assign values of high, moderate, or low to each of the species noted (see Appendix C: List of Food Plants and Their Value to Wildlife). (If any of the dominant species are not listed in Appendix B, make an assumption on its value and note it in the "Comments" section and in your copy of the appendix. This value for the species should be used throughout your evaluations until better information is available.) The overall plant food value for this question will then correspond to the food values of the majority of the plants on the list. For example, if the majority of the plants are of high food value, then assign 5 points to this question; 3 points if the majority are of moderate value and so forth. Values of moderately low (2) or moderately high (4) may also be achieved. Do not average the values. To do so may mean that this question would be averaged down and would too often receive scores which are artificially low.

The food quality of the predominant plants in and around the wetland will affect the numbers and diversity of the animals using the wetland. While there are 3500 to 5000 species of vascular plants which occur in Snohomish County values for only about 40 plants are presented because documentation of actual food value to wildlife is scarce. Information has been gathered from available literature including Martin et al. (1951), Adamus et al. (1987), and Bellrose (1976), and through personal communications with resource management agencies.

Certain plants with apparently low direct food value (i. e., edible matter which is produced directly by the plant, e. g., fruits, nuts, leaves, shoots, etc.), such as the black cottonwood, Populus trichocarpa, are rated high for food value. The large surface area provided by the tree's highly textured bark, relatively complex growth form and large

size translates into a large habitat area available for insects. Thus, the tree has high indirect food value for animals, primarily birds such as chickadees, nuthatches and kinglets, which glean insects from vegetation.

4. (Disturbance reduction) Rate how well the surrounding upland and wetland vegetation or land use reduces visual disturbances to wildlife in the wetland.

   1 = <50% visual occlusion

   3 = 50% to 75% occlusion

   5 = >75% occlusion

   (NOTE: Those portions of the wetland boundary which are bordered by farmland, pasture, meadow, grassland or idle land which is 400 feet or greater in width are considered to be >75% visually occluded.)

Figure 7. Percent visual occlusion.

To estimate visual occlusion in the field refer to the illustrations above while standing at representative points within the wetland and looking towards the boundaries. Visual occlusion may be provided by vegetation, topography, or any other physical barriers. In the office this parameter can be estimated by looking at aerial photos and judging the heights and types of the vegetation and land use adjacent to the edge of the wetland.

In many instances, portions of the wetland's boundary will not be well vegetated at eye level and there will be little or no actual visual occlusion. Surrounding land use must then be examined. Farmland, pastures, open meadows, parkland, grassland or other relatively idle lands, if there is sufficient separation from visual disturbance, will provide adequate buffers against disruption to wildlife. Lands of this type are comparable to >75% occlusion if they are at least 400 feet in width when measured from the wetland's edge.

In most cases, noise is not a big disturbance. Most wildlife will quickly accommodate to human-caused noise, such as airplane or automobile traffic, as long as there is adequate visual screening or separation from the disturbance.

5. (Special habitat features) Rate the number and variety of special habitat features available on or near the wetland.

   1 = low

   3 = moderate

   5 = high

In the area visible from the wetland, or within about 500 feet, the following special habitat features should be noted, scored according to the point value in the table below, and the total points (to a maximum of 5 points) tallied. The number of points scored is the number of points that is to be entered on the evaluation form. The wetland rates HIGH when it has a greater number of special habitat features.

Table 1. Point Values of Special Habitat Features

(From Brown 1985a, 1985b; Thomas 1979; King County 19 .)

Feature	Value
Snags greater than 18 inches dbh, greater than 25 feet high	3
Snags greater than 18 inches dbh, less than 25 feet high	2
Snags less than 18 inches dbh, greater than 25 feet high	2
Snags less than 18 inches dbh, less than 25 feet high	1
Perches	1
Fallen Logs	1
Rock Outcrops	1

The value of snags, perches (e. g., broken or dead-top, live trees), fallen logs and rock outcrops for wildlife is well documented (Brown 1985a, 1985b; Thomas 1975; Maser and Trappe 1984). West of the Cascades in Washington and Oregon, nearly 100 species of wildlife use snags. More than 50 species are dependent upon snags as a food source (insects) and for nesting cavities. In forested areas, cavity-nesting birds can comprise 30 to 45 % of the population (Brown 1985a, 1985b). Snag densities do not have to be very high in order to provide maximum potential for wildlife usage. For example, snag densities which would provide 60% population potential for the 5 woodpecker species which are most common in Snohomish County's lowlands is only 1.8 per acre. A density of only 3 snags per acre would be enough to provide for maximum (100%) potential (Brown, 1985a, 1985b).

For woodpeckers, wood ducks, and raccoons, etc., larger snags (i. e., greater than 18 inches dbh (diameter at breast height)) are always better for nesting or shelter. For other cavity users such as chickadees and swallows, however, snags can be 4 inches or less dbh. Insects are also attracted to small decaying snags which are too small to furnish nesting cavities or refuge for larger animals but still valuable for feeding activities.

Dead and down woody materials (i. e., fallen logs and stumps) are also very important because they furnish cover and serve as sites for feeding, reproduction and resting. Nearly 150 wildlife species in western Washington and Oregon are known to use these materials either as a primary or secondary component of their habitat requirements (Brown 1985a, 1985b).

6. (Edge) Rate the extent of edge within and around the wetland.

   1 = low

   3 = moderate

   5 = high

Compare the wetland and adjacent upland area to the diagrams below to determine its edge value. If the wetland is adjacent or conjoint with a stream or other body of water, add 1 point to the value shown by the graphic, except that the total value cannot exceed 5 points, and enter this score on the evaluation form. In general, the greater the amount of edge the higher the rating for the wetland.

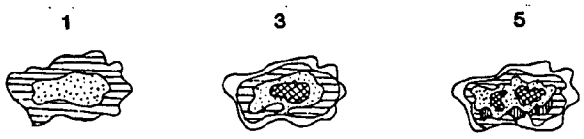


Figure 8. Edge within and around the wetland.

"Edge" is defined as the place where plant communities meet or where successional stages or vegetative conditions within plant communities come together (Thomas 1979). The edge effect is present even within the same forested or shrubby canopy if adjacent or nearby trees or shrubs vary in their respective heights. For example, in a stand of cottonwoods and red alders where all the trees present are the same age, e. g., due to past logging activity, the cottonwoods will be taller than the nearby red alders and an edge effect will be present. This should be considered when comparing sites with the illustrations above.

The value of edges and "ecotones" (the areas influenced by the edge) in promoting species richness is well known and documented (Odum, 1971; Thomas, 1979; Brown 1985a, 1985b). Edges and their ecotones are usually richer in numbers of species of wildlife than the adjoining plant communities or stand conditions and thus are very important in wildlife habitat considerations (Brown 1985a, 1985b).

Wetlands which incorporate water bodies as part of their edge have enhanced value because studies of waterfowl have shown that breeding populations of waterfowl are more highly correlated with total length of wetland edge (shoreline) than total acreage of wetlands (Weller 1979 in Adamus et al. 1987).

7. (Total habitat area) How many total acres of wetland and upland wildlife habitat are connected by vegetated corridors?

   1 = less than 1 acre

   3 = 1 to 2 acres

   5 = greater than 2 acres

Determine the number of total acres of wetland and upland habitat by examining the area in the field and measuring the acreage on an aerial or map.

Small preserves connected by an undisturbed corridor to larger wild areas can support a greater diversity of birds than preserves without such connections (MacClintock et al. 1977). This is undoubtedly true of other fauna as well. Although urban development of all types can interrupt travel corridors, roads should not ordinarily be considered barriers. Only well-traveled and very busy roads such as freeways, state highways and major county arterials become fairly substantial obstructions to wildlife movement between vegetated habitat areas. Even then, traffic is at a low enough density at night, when much wildlife movement occurs, that few of these well-travelled roads present much of a barrier. Also, nearly 70% of our vertebrate fauna are birds, for which roads are really no barrier at all.

8. (Observed species usage) Rate the observed or known concentrations of fish and/or wildlife species on this site.

   1 = low

   3 = moderate

   5 = high

   N/A If weather conditions, time limitations, time of day, etc., are not conducive to wildlife observations.

Note the number of animals seen on this site. Also use species occurrence information available for this site.

It is difficult to provide precise guidance as to what numbers of individuals constitutes high, medium or low concentrations of wildlife because this will vary widely among the 360 or so species of fauna that may occur and thus one set of numbers cannot be justifiably used. The guiding principle should be: "In the best professional judgement of the observer, do wildlife species occur in expected diversity and concentrations.

These factors should be examined: Do concentrations occur during the seasons in which they are expected to occur? During the appropriate season, do concentrations occur in habitat which would be suitable? Information such as seasonal occurrence, concentrations (i. e., home range densities, minimum habitat area per breeding pair), and types of habitat which individual species should be expected in, may be found in Appendix 8 of Brown (1985b). For specific information on seasonal occurrence and habitat usage by birds, Wahl and Paulsen (1987) is another very useful source. Alternatively, local organizations such as Pilchuck Audubon Society and the Snohomish Wetlands Alliance, or resource agencies and knowledgeable individual citizens often maintain very credible, complete and up-to-date species lists for certain areas such as the Snohomish River Estuary.

It is difficult to adequately inventory wildlife in a given area under the limited time available (generally a single visit). Thus, if high concentrations of wildlife are not observed, it does not mean that the area is not being used by expected concentrations of wildlife. If data is too limited to be of value, i. e., because of limited time available for observation or because weather conditions were too poor for observation, this question should be answered "N/A" rather than assigning the lower point value.

9. (Known site usage) Is the site known to contain seasonally important nesting, resting, spawning, breeding, feeding, or rearing habitat for fish and/or wildlife?

   1 = no

   5 = yes

   N/A If no information is available.

Examine the site and note signs indicating wildlife usage.

This question examines signs of animal usage rather than relying on direct wildlife observation as in question # 8 above. These signs include nests, redds, animal tracks, animal scat, raptor pellets, browse marks, rodent tunnels and runways, etc. Significant evidence of any of these signs would mean a HIGH rating for this wetland.

10. (Sensitive and Monitor species presence) Are any Sensitive or Monitor species of animal or plant known to occur in the wetland?

   1 = no

   3 = species proposed for listing present

   5 = yes

The presence of a Sensitive or Monitor species in a wetland would be substantiated either through actual observation or be listed on the WDW Special Species List (for animals) and the DNR Locations of Significant Natural Features in Snohomish County (for vascular plants).

This question evaluates the presence of species on the State list of Sensitive and Monitor species (see Appendix D: Species of Concern List). Species listed as State or Federal Endangered or Threatened species are enumerated under the Automatic Class 1 Indicator questions.

The term Sensitive refers to a species with "small populations, or localized distribution within the state, that is not presently Endangered or Threatened, but whose populations and habitats will be jeopardized if current land use practices continue" (Washington State Department of Natural Resources 1987). Species given Monitor status fall under one of three groups:

"1) taxa requiring further field investigation;
2) taxa with unresolved taxonomic problems; and
3) taxa which are more abundant and/or less threatened in Washington than previously assumed" (Washington State Department of Natural Resources 1987).

Species in group 1 are monitored to determine if they merit placement on Sensitive, Threatened , or Endangered lists. Those in groups 2 and 3 are periodically assessed for changes in populations that will necessitate placement on Sensitive, Threatened, or Endangered lists.

A HIGH rating is given for the presence of a listed species. Consideration for listing is given points since it means the species is experiencing enough problems to merit attention.

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CHAPTER IV APPENDICES

Appendix A: Endangered and Threatened Species List
Appendix B: Descriptions of Low Elevation Bog Communities
Appendix C: List of Food Plants and Their Value to Wildlife
Appendix D: Species of Concern List

Appendix IV-A: Endangered and Threatened Species List

The following list was compiled from publications prepared by the Washington State Department of Wildlife (1987), the Washington State Department of Natural Resources (1987), and the U. S. Fish and Wildlife Service. The animal species listed are those found in the state. The plant species listed are vascular plants found in western Washington. Presently, there is no protection status for non-vascular plants. Common names followed by an asterisk (*) denote species that are likely to be found in Snohomish County. Various sources were consulted to determine distribution and occurrence (Wahl and Paulson 1987; Wydoski and Whitney 1979; etc.).

(Status: FE = Federal Endangered, FT = Federal Threatened, SE = State Endangered, ST = State Threatened, any of the above preceded by a P = proposed for listing at that level, changes in status are updated when the information is received from the various agencies)

Common Name	Scientific Name	Status
Adder's-tongue*	Ophioglossum vulgatum	
Thickglume Reedgrass*	Calamagrostis crassiglumis	
Choriso Bog-orchid*	Platanthera chorisiana	PST
Golden Indian-paintbrush	Castilleja levisecta	
Twayblade*	Liparis loeselii	
Coast Microseris	Microseris bigelovii	
Giant Columbia River Limpet	Fisherola nuttalli	PSE
Giant Columbia River Spire Snail	Lithoglyphus columbiana	PSE
Columbia River Tiger Beetle	Cicindela columbica	PSE
Oregon Silverspot Butterfly	Speyeria zerene hippolyta	FT, ST
Mardon Skipper	Polites mardon	PST
Chinquapin Hairstreak	Habrodais grunus	PST
Larch Mountain Salamander	Plethodon larselli	PST
Green Sea Turtle	Chelonia mydas	FT, ST
Leatherback Sea Turtle	Dermochelys coriacea	FE, SE
Loggerhead Sea Turtle	Caretta caretta	ST
Western Pond Turtle*	Clemmys marmorata	ST
Common Loon*	Gavia immer	PST
American White Pelican	Pelecanus erythrorhynchos	SE
Brown Pelican*	Pelecanus occidentalis	FE, SE
Aleutian Canada Goose*	Branta canadensis leucopareia	FE, SE
Bald Eagle*	Haliaeetus leucocephalus	FT, ST
Ferruginous Hawk	Buteo regalis	ST
Peregrine Falcon*	Falco peregrinus anatum	FE, SE
(2 subspecies)	Falco peregrinus tundrius	FE, SE
Sandhill Crane*	Grus canadensis	SE
Snowy Plover	Charadrius alexandrinus	SE
Upland Sandpiper	Bartramia longicauda	SE
Yellow-billed Cuckoo	Coccyzus americanus	PST
Spotted Owl*	Strix occidentalis (caurina)	FT, SE
Streaked Horned Lark	Eremophila alpestris strigata	PST
Townsend's Big-eared Bat	Plecotus townsendii	PST
Pygmy Rabbit	Sylvilagus idahoensis	ST
Northern Pocket Gopher	Thomomys talpoides douglasi	PSE
(2 subspecies)	Thomomys talpoides limosus	PSE
Western Pocket Gopher	Thomomys mazama couchi	PST
(4 subspecies)	Thomomys mazama glacialis	PSE
	Thomomys mazama louiei	PSE
	Thomomys mazama tumuli	PSE
Wolf*	Canis lupis	FE, SE
Grizzly Bear*	Ursus arctos horribilis	FT, SE
Sea Otter	Enhydra lutris	FT, SE
Sperm Whale	Physeter macrocephalus	SE
Gray Whale*	Eschrichtius robustus	SE
Fin Whale*	Balaenoptera physalus	SE
Sei Whale	Balaenoptera borealis	SE
Blue Whale	Balaenoptera musculus	SE
Humpbacked Whale*	Megaptera novaeangliae	SE
Right Whale	Balaena glacialis	SE
Bowhead Whale	Balaena mysticetus	FE, SE
Columbian White-tailed Deer	Odocoileus virginianus leucurus	FE, SE
Woodland Caribou	Rangifer tarandus caribou	SE

Appendix IV-B: Descriptions of Low Elelvation Sphagnum Bog Communities (from "Preliminary Classification of Puget Trough Freshwater Impounded Wetlands")

A sphagnum bog is characterized by the presence of sphagnum moss species (Sphagnum spp.) and a preponderance of sphagnum peat. Bogs have low pH and, as a result, have low nutrient availability. They typically develop in cold drainage basins. This set of conditions gives rise to an unusual flora, many species of which are unique to sphagnum bogs.

Bog Pond: Typically these are small bodies of water bounded on at least one side by sphagnum peat. The pH of the water is 5.5 or less. The water is usually brown to red brown in color. Often these ponds are surrounded by mats of sphagnum which slowly extend out over the water's surface and finally fill in the basin. These ponds frequently overlay sedge, woody, and sphagnum peat.

Carex cusickii/Sphagnum spp. community: This community occurs on sphagnum peat or a combination of sphagnum and sedge peat which are supersaturated. It appears to be one of the bog communities which colonizes open water. It is most frequently found along the edge of the sphagnum mat adjacent to open water, but may also form large floating mats.

Typical species:

Carex cusickii	25-45%
Potentilla palustris	2-20%
Agrostis scabra	
Hypericum anagalloides	
Menyanthes trifoliata	

Other species:

Carex interior complex	Ledum groenlandicum
Carex leptalea	Mentha arvensis
Carex rostrata	Rhynchospora alba
Carex sitchensis	Scirpus acutus
Drosera rotundifolia	Spiraea douglasii
Eriophorum chamissonis	Typha latifolia
Galium trifidum	Vaccinium oxycoccos
Kalmia occidentalis	Viola cf palustris

Rhynchospora alba/Sphagnum spp. community: This community occurs on supersaturated sphagnum peat and moss. It is typically found in a band along the quaking margin of a sphagnum mat adjacent to open water or just inland of the Carex cusickii community. Rhynchospora alba is the most characteristic plant species, though a large number of species may occur in the community. Shrub species, when found in this community, have a short growth form.

This community also includes small areas dominated by Eriophorum chamissonis. These areas typically have very thin layers of floating peat and few other species associated with them.

Typical species:

Rhynchospora alba	15-60%
Vaccinium oxycoccos	1-35%
Drosera rotundifolia	5-15%
Kalmia occidentalis	1-10%
Cladina rangiferina	1-5%

Other species:

Carex leptalea	Lycopus uniflorus
Carex rostrata	Lysichitum americanum
Eriophorum chamissonis	Menyanthes trifoliata
Ledum groenlandicum	Tofieldia glutinosa

Kalmia occidentalis/Sphagnum spp. community: The K. occidentalis/Sphagnum spp. community may be predominant over large areas or, more frequently, it forms a mosaic with the short form of the Ledum groenlandicum/Sphagnum spp. community. It forms a low growing, open shrub bog over firm, relatively dry, sphagnum peat, but also extends onto the supersaturated portion of the quaking bog mat.

Typical species:

Kalmia occidentalis	25-45%
Ledum groenlandicum	1-25%
Vaccinium oxycoccos	2-25%

Drosera rotundifolia 1-5%

Other species:

Carex canescens	Potentilla palustris
Carex cusickii	Pteridium aquilinum
Carex sitchensis	Rhamnus purshiana
Cladina rangiferina	Rhynchospora alba
Eriophorum chamissonis	Spiraea douglasii
Gaultheria shallon	Trientalis arctica
Lysichitum americanum	Tsuga heterophylla
Menyanthes trifoliata	Typha latifolia
Pinus contorta	Viola palustris
Pinus monticola	

Ledum groenlandicum/Sphagnum spp. community: This community typically occurs on firm, at least seasonally dry, sphagnum and woody peat. It has two forms. The first has a low growth form (2-4 feet tall), has about 60% cover of L. groenlandicum, and has a large number of associated species. The second has a tall growth form, (6-10 feet tall), has about 100% cover of L. groenlandicum.

Included within this community is a L. groenlandicum/Carex rostrata phase which occurs in wet pockets and in the transition zone between non-sphagnum and sphagnum wetlands.

Typical species:

Ledum groenlandicum	50-90%
Gaultheria shallon	1-50%
Carex rostrata	0-25%
Kalmia occidentalis	0-10%

Other species:

Carex canescens	Pinus monticola
Carex interior complex	Pteridium aquilinum
Carex leptalea	Pyrus fusca
Cladina rangiferina	Spiraea douglasii
Drosera rotundifolia	Thuja plicata
Empetrum nigrum	Tsuga heterophylla
Eriophorum chamissonis	Vaccinium oxycoccos
Picea sitchensis	Vaccinium parvifolium
Pinus contorta	

Spiraea douglasii/Sphagnum spp. community: This community occurs on terraces composed of a mixture of sphagnum, sedge, and woody peat. Spiraea douglasii has a short growth form (2-4 feet tall). The terraces are typically elevated above a pond and are probably seasonally flooded. A large number of plant species co-occur with the S. douglasii. Gentiana sceptrum is an indicator species.

Typical species:

Spiraea douglasii	50-90%
Carex sitchensis	5-10%
Carex obnupta	1-10%
Gentiana sceptrum	1-5%

Other species:

Carex rostrata	Menyanthes trifoliata
Carex vesicaria	Nuphar polysepalum
Dulichium arundinaceum	Pyrus fusca
Kalmia occidentalis	Salix spp.
Ledum groenlandicum	Trientalis arctica

Pinus contorta/Ledum groenlandicum/Sphagnum spp. community: This community grades from open shrublands with the low growth form of L. groenlandicum and scattered P. contorta, to very dense stands of P. contorta and the tall growth form of L. groenlandicum. It occurs on dry, firm sphagnum substrates to quaking bog mats.

Typical species:

Pinus contorta	20-50%
Ledum groenlandicum	30-75%
Gaultheria shallon	2-20%

Other species:

Cladina rangiferina	Pyrus fusca
Drosera rotundifolia	Spiraea douglasii

Empetrum nigrum	Thuja plicata
Eriophorum chamissonis	Trientalis arctica
Kalmia occidentalis	Tsuga heterophylla
Lysichitum americanum	Vaccinium oxycoccos
Pteridium aquilinum	Vaccinium parvifolium

Tsuga heterophylla/Sphagnum spp. community: This community is a later successional stage for Tsuga heterophylla/Ledum groenlandicum/Sphagnum spp. bogs. It occurs on deep sphagnum peat with the water table about one foot below the surface. The canopy is nearly closed. There is almost no understory except where there are breaks in the canopy. Trees that are 12-14 inches in diameter at breast height (DBH) may be over 300 years old.

Typical species:
- Tsuga heterophylla 80%
- Ledum groenlandicum 2-5%
- Gaultheria shallon 2-5%

Other species:

Kalmia occidentalis	Vaccinium parvifolium
Maianthemum dilatatum	Vaccinium oxycoccos
Trientalis arctica	

Tsuga heterophylla/Ledum groenlandicum/Sphagnum spp. community: This is a common sphagnum bog community which occurs on relatively dry sphagnum peat. It resembles the L. groenlandicum/Sphagnum spp. community except for the percent cover of T. heterophylla. The T. heterophylla is usually quite short near open water, increasing in height inland. Height is not necessarily correlated with age.

Typical species:
- Tsuga heterophylla 15-20%
- Ledum groenlandicum 30-60%
- Gaultheria shallon 15%

Other species:

Carex canescens	Picea sitchensis
Cladina rangiferina	Pinus monticola
Cornus canadensis	Pteridium aquilinum
Kalmia occidentalis	Spiraea douglasii
Lysichitum americanum	Thuja plicata
Maianthemum dilatatum	Trientalis arctica
Menziesia ferruginea	Vaccinium oxycoccos

Carex sitchensis/Sphagnum spp. community: This community occupies very small areas and may be ecotonal. It typically occurs on firm substrates, but also may be found on quaking mats. It either forms dense monospecific stands or species rich swards. It is usually found intermixed, or in a mosaic, with the Carex cusickii or Spiraea douglasii bog communities. Soils are a mixture of sedge and sphagnum peat, and are seasonally flooded.

Typical species:
- Carex sitchensis 30-70%
- Carex cusickii 15-20%
- Potentilla palustris 5-30%

Other species:

Equisetum fluviatile	Menyanthes trifoliata
Galium sp.	Nuphar polysepalum
Kalmia occidentalis	Spiraea douglasii
Ledum groenlandicum	Vaccinium oxycoccos
Lysichitum americanum	Viola palustris
Mentha arvensis	

Pinus monticola/Ledum groenlandicum/Sphagnum spp. community: This is a very rare community although it once may have been more common. It has been nearly eradicated through disease, timber harvest, and manipulation of its habitat. Remnant examples have scattered P. monticola and a tall, but open, shrub layer. This community occurs mostly in the southern Puget Trough region.

Typical species:
- Pinus monticola 10-15%
- Ledum groenlandicum 50-80%
- Spiraea douglasii 5-10%

Other species:

- Carex canescens
- Eriophorum chamissonis
- Gaultheria shallon
- Kalmia occidentalis
- Lysichitum americanum
- Pinus contorta
- Pseudotsuga menziesii
- Pteridium aquilinum
- Tsuga heterophylla
- Vaccinium oxycoccos
- Vaccinium parvifolium

Appendix IV-C: List of Food Plants and Their Value to Wildlife

The following list was compiled from various sources such as Martin et al. (1951).

Common Name	Scientific Name	Value
Alder	Alnus spp.	moderate
Algae	primarily Chlorophyta	moderate
Black Cottonwood	Populus trichocarpa	high
Blackberry	Rubus spp.	high
Bulrush	Scirpus spp.	high
Burreed	Sparganium spp.	high
Buttercup	Ranunculus spp.	moderate
Cattail	Typha spp.	high
Cherry	Prunus spp.	high
Dock	Rumex spp.	low
Douglas Fir	Pseudotsuga menziesii	moderate
Duckweed	Lemna spp.	moderate
Eelgrass	Zostera spp.	high
Elderberry	Sambucus spp.	high
Ferns	Phylum Pterophyta	low
Glasswort	Salicornia spp.	high
Grasses (except reed canary)	Family Graminae	high
Hardhack	Spirea spp.	moderate
Horsetail	Equisetum spp.	high
Maple	Acer spp.	moderate
Mountain-ash	Sorbus spp.	high
Pigweed	Amaranthus spp.	high
Pondweed	Potamogeton spp.	high
Red-osier Dogwood	Cornus stolonifera	high
Reed Canary Grass	Phalaris arundinacea	low
Rose	Rosa spp.	moderate
Rush (native species)	Juncus spp.	moderate
Salal	Gaultheria shallon	moderate
Sedge	Carex spp.	high
Skunk Cabbage	Lysichitum americanum	low
Smartweed	Polygonum spp.	high
Soft Rush	Juncus effusus	low
Spikerush	Eleocharis spp.	high
Spruce	Picea spp.	moderate
Water Milfoil	Myriophyllum spp.	low
Western Red Cedar	Thuja plicata	moderate
Willow	Salix spp.	high

Appendix IV-D: Species of Concern List

The following list was compiled from publications prepared by the Washington State Department of Wildlife (1987) and the Washington State Department of Natural Resources (1987). The animal and vascular plant species listed are those found in western Washington. Presently, there is no protection status for non-vascular plants. Common names followed by an asterisk (*) denote species that are most likely to be found in Snohomish County. (Sources consulted to determine distribution and occurrence: Wahl and Paulson 1987; Wydoski and Whitney 1979; etc.).

(Status: S = Sensitive, M = Monitor, any of the above preceded by a P = proposed for listing at that level, if blank assume the species is proposed for Monitor status; changes in status are updated when the information is received from the various agencies)

Common Name	Scientific Name	Status
Treelike Clubmoss*	Lycopodium dendroideum	
Bog Clubmoss*	Lycopodium inundatum	
Nuttall's Quillwort*	Isoetes nuttallii	
Lance-leaved Grape Fern*	Botrychium lanceolatum	PS
Moonwort*	Botrychium lunaria	
Victorin's Grape-fern*	Botrychium minganense	
Mountain Moonwort*	Botrychium montanum	PS
St. John's Moonwort*	Botrychium pinnatum	PS
Calironia Sword-fern	Polystichum californicum	
Chain-fern	Woodwardia fimbriata	
Blunt-leaved Pondweed*	Potamogeton obtusifolius	
Curved Woodrush	Luzula arcuata	
Yellow-flowered Sedge	Carex anthoxanthea	
Erect Blackened Sedge	Carex atrata var. erecta	
Buxbaum's Sedge*	Carex buxbaumii	
Coiled Sedge	Carex circinata	
Bristly Sedge*	Carex comosa	PS
Dense Sedge	Carex densa	
Green-fruited Sedge*	Carex interrupta	
Large-awn Sedge*	Carex macrochaeta	
Blunt Sedge	Carex obtusata	
Few-flowered Sedge*	Carex pauciflora	PS
Poor Sedge	Carex paupercula	
Several-flowered Sedge	Carex pluriflora	
Russet Sedge	Carex saxatilis	
Canadian Single-spike Sedge	Carex scirpoidea var. scirpoidea	
Long-styled Sedge*	Carex stylosa	PS
Gray's Bluegrass	Poa grayana	
Loose-flowered Bluegrass	Poa laxiflora	
Wheeler's Bluegrass	Poa nervosa	
Alaska Alkaligrass*	Puccinellia nutkaensis	
Pink Fawn Lily*	Erythronium revolutum	
Black (Indian Rice) Lily*	Fritillaria camschatcensis	PS
Small-flowered Trillium	Trillium parvifolium	
Giant Helleborine*	Epipactis gigantea	
Golden Chinquapin	Chrysolepis chrysophylla	
Branching Montia	Montia diffusa	
Pacific Lance-leaved Springbeauty	Claytonia lanceolata var. pacifica	
Tall Bugbane*	Cimifuga elata	
Spleenwort-leaved Goldenthread*	Coptis asplenifolia	PS
Cooley's Buttercup*	Ranunculus cooleyae	PS
White Meconella*	Meconella oregana	
Scurvygrass	Cochlearia officinalis	
Golden Draba	Draba aurea	
Lance-leaved Draba	Draba lanceolata	
Sharpfruited Peppergrass	Lepidium oxycarpum	
Erect Pygmy-weed	Tillaea erecta	
Northern Grass-of-Parnassus	Parnassia palustris	
Pygmy Saxifrage*	Saxifraga debilis	PS
Yellow Mountain-avens*	Dryas drummondii	PS
Queen-of-the-forest	Filipendula occidentalis	
Menzies' Burnet	Sanguisorba menziesii	
Least Bladdery Milk-vetch	Astragalus microcystis	
Torrey's Peavine*	Lathyrus torreyi	
Sticky Crazyweed	Oxytropis viscida	
Western Yellow Oxalis	Oxalis suksdorfii	
Bulb-bearing Water Hemlock*	Cicuta bulbifera	

Bear's-foot Sanicle	Sanicula arctopoides	
Clubmoss Cassiope*	Cassiope lycopodioides subsp. cristapilosa	
Alpine Azalea*	Loiseleuria procumbens	
Fringed Pinesap*	Pleuricospora fimbriolata	
Few-flowered Shooting Star*	Dodecatheon pulchellum var. watsonii	PS
Swamp Gentian*	Gentiana douglasiana	
Glaucous Gentian	Gentiana glauca	
Great Polemonium*	Polemonium carneum	
Southern Mudwort	Limosella acaulis	
False-pimpernel	Lindernia anagallidea	
Rosy Owl-clover	Orthocarpus bracteosus	
Mt. Rainier Lousewort	Pedicularis rainierensis	
Cut-leaf Synthyris	Synthyris pinnatifida var. lanuginosa	
Pine Broomrape*	Orobanche pinorum	
Fl;at-leaved Bladderwort*	Utricularia intermedia	PS
Alaska Plantain	Plantago macrocarpa	
Boreal Bedstraw	Galium kamtschaticum	
Alaska Harebell*	Campanula lasiocarpa	PS
Water Lobelia*	Lobelia dortmanna	PS
Tall Agroseris	Agroseris elata	
White-top Aster*	Aster curtus	
Rush Aster*	Aster junciformis	
Arctic Aster	Aster sibiricus var. meritus	
Tall Bitter Fleabane	Erigeron aliceae	
Thompson's Wandering Daisy	Erigeron peregrinus subsp. peregrinus var. thompsonii	
Northern Microseris*	Microseris borealis	
Beller's Ground Beetle*	Agonum belleri	
Pygmy Whitefish	Prosopium coulteri	
Olympic Mudminnow	Novumbra hubbsi	
Sand Roller	Percopsis transmontana	
Reticulate Sculpin*	Cottus perplexus	
Cope's Giant Salamander	Dicamptodon copei	
Dunn's Salamander	Plethodon dunni	
Van Dyke's Salamander	Plethodon vandykei	
Ring-necked Snake	Diadophis punctatus	
Pacific Gopher Snake*	Pituophis melanoleucus catenifer	
Sharp-tailed Snake	Contia tenuis	
Horned Grebe*	Podiceps auritus	
Red-necked Grebe*	Podiceps grisegena	
Western Grebe*	Aechmophorus occidentalis	
Brandt's Cormorant*	Phalacrocorax penicillatus	
Great Blue Heron*	Ardea herodias	
Great Egret*	Casmerodius albus	
Green-backed Heron*	Butorides striatus	
Black-crowned Night-heron*	Nycticorax nycticorax	
Turkey Vulture*	Cathartes aura	
Osprey*	Pandion haliaetus	
Northern Goshawk*	Accipiter gentilis	
Swainson's Hawk*	Buteo swainsoni	
Golden Eagle*	Aquila chrysaetos	
Merlin*	Falco columbarius	
Gyrfalcon*	Falco rusticolus	
Prairie Falcon*	Falco mexicanus	
Black-necked Stilt	Himantopus mexicanus	
Long-billed Curlew	Numenius americanus	
Caspian Tern*	Sterna caspia	
Arctic Tern*	Sterna paradisea	
Forster's Tern	Sterna forsteri	
Black Tern	Chlidonias niger	
Marbled Murrelet*	Brachyrhamphus marmoratus	
Snowy Owl*	Nyctea scandiaca	
Barred Owl*	Strix varia	
Great Gray Owl*	Strix nebulosa	
Black Swift*	Cypseloides niger	
Lewis' Woodpecker	Melanerpes lewis	
Three-toed Woodpecker*	Picoides tridactylus	
Pileated Woodpecker*	Drycopus pileatus	
Purple Martin*	Progne subis	
Boreal Chickadee	Parus hudsonicus	
Western Bluebird*	Sialia mexicana	
Sage Thrasher	Oreoscoptes montanus	

Loggerhead Shrike	Lanius ludovicianus
Sage Sparrow	Amphispiza belli
Pacific Water Shrew*	Sorex bendirei
Yuma Myotis*	Myotis yumanensis
Long-eared Myotis*	Myotis evotis
Long-legged Myotis*	Myotis volans
Western Gray Squirrel	Sciurus griseus
Northern Bog Lemming	Synaptomys borealis
Fisher*	Martes pennanti
Wolverine*	Gulo gulo
Killer Whale*	Orcinus orca
Harbor Porpoise*	Phocoena phocoena

STREAM EVALUATION FORM

OBSTRUCTIONS - Natural and Man-made

*Type	River Mile	Dimensions			Pool Depth	Length to Negotiate
		Length	Width	Height		

*waterfall (WF); subsurface flow (SF); cascade (C); velocity chute (V); log or debris jam (J); beaver impoundment (B); culvert, blocked, collapsed, or improperly aligned (CVS); bridge(BR); dam (DM); diversion dam (DD); other - please state in 1st column.

CHANNEL AND STREAMBANK ALTERATIONS - Natural and Man-made

*Type	River Mile	LB/RB	Dimensions		
			Length	Width	Height

*culvert, arched(CVA), box(CVB), round(CVR); bridge causing bank cutting &/or in danger of failure (BS); mine tailings in channel(T); gravel removal operation(GR); channel alignment or rechannelization(A); slide area(SL); channel encroachment by roadbank(R); clearing/grading(CC); riprap(RR); bulkhead(BH); sluiceway(SW); clearcut(CC); water pumping facility(WP); other--state in 1st column.

OBSERVERS _____

S-T-R ___ ___ ___

SNO.CO.ID _____

1. STREAM #: ___ ___ ___ ___ ___ ___ ___ 2. DATE: ___ ___ ___ ___

3. STREAM NAME: TIME ___ ___ ___ ___

TRIBUTARY TO:

5. CONFLUENCE AT (RM): ___ ___ . ___ ___

SURVEY ENTRY/EXIT POINTS:

RIVER MILES SURVEYED: 6. ___ ___ . ___ ___ TO 7. ___ ___ . ___ ___

8. EST. FLOW (CFS): velocity ___ ___ . ___

9. MEDIAN CHANNEL WIDTH ___ ___ . ___ 12. MEDIAN WETTED PERIMETER WIDTH ___ ___ . ___

10. RANGE ___ ___ . ___ TO 11. ___ ___ . ___ RANGE 13. ___ ___ . ___ TO 14. ___ ___ . ___

15. MEDIAN STREAM DEPTH ___ ___ . ___ 18. MEDIAN POOL DEPTH ___ ___ . ___

RANGE 16. ___ ___ . ___ TO 17. ___ ___ . ___ RANGE 19. ___ ___ . ___ TO 20. ___ ___ . ___

POOL: RIFFLE (%): 21. P ___ ___ 22. R ___ ___

BOTTOM COMP (%): 23. B ___ ___ 24. R ___ ___ 25. G ___ ___ 25. S ___ ___

27. GRADIENT (%): ___ ___ . ___

ABUNDANCE OF:	NONE OBSERVED	FEW	COMMON	ABUNDANT
28. PERIPHYTON/ATTACHED MACROPHYTES —	4	3	2	1
MAJOR GROUP(S) PRESENT:				
29. BENTHOS —	4	3	2	1
MAJOR GROUP(S) PRESENT:				
30. FISH (JUVENILE/ADULTS):	4	3	2	1
MAJOR GROUP(S) PRESENT:				

LAND USE ADJACENT TO STREAM (#; %):

DOMINANT 31. #___ 32. ___ ___%

SUB DOMINANT 33. #___ 34. ___ ___%

OTHERS PRESENT 35. #___ 36. ___ ___%

1. Forest or natural vegetation
2. Park or golf course
3. Roadside (Highway/Street)
4. Pasture—unfenced
5. Pasture—fenced
6. Cultivated field
7. Residential—scattered
8. Residential—continuous
9. Industrial/Commercial
10 Clearcut

37. VEGETATIVE BANK COVER:

[1] Over 90% of streambank surface covered by vegetation in vigorous condition. Any bare or sparsely vegetated areas are small and evenly dispersed. A deep, dense root mat is inferred. Streambank surface protected from erosion.

[2] 76-90% of streambank surface covered by vegetation. Few open areas with unstable vegetation evident. Less dense, deep root mat inferred. Minor erosion of streambank surface possible.

[3] 50-75% of streambank surface covered by vegetation. Bare or sparsely vegetated areas are evident. Somewhat shallow and discontinuous root mat inferred. Vegetative cover provides limited protection from erosion.

[4] <50% of stream bank surface covered by vegetation. Many bare or sparsely vegetated areas obvious. Poor, discontinuous, shallow root mat inferred. Vegetation provides streambank surface little protection from erosion.

WIDTH OF VEGETATIVE COVER (%):	<30 ft.	>30 ft
RB	38 ___ ___	39 ___ ___
LB	40 ___ ___	41 ___ ___

BANK VEGETATION TYPES: DOMINANT 42 ___ SUB DOMINANT 43 ___ OTHERS PRESENT 44 ___

1. GRASSES 2. SHRUBS 3. BLK BRY BUSHES 4. TREES 5. OTHER _____

45. OVERHEAD CANOPY:
[1] 76-100% of stream surface shaded by trees or overgrown with grasses, shrubs, brush. Openings in canopy evenly dispersed and small (larger/slightly larger than the space resulting from loss of mature individual).
[2] 51-75% of stream surface shaded. Trees, other overhead vegetation evenly dispersed along streambank (openings in canopy larger than space resulting from the loss of several mature individuals).
[3] 26-50% of stream surface shaded. Trees, other overhead vegetation scattered or in occasional clumps. Overhead canopy thin, discontinuous.
[4] 0-25% of stream surface shaded. Riparian vegetation, low-trees, other overhead vegetation essentially absent.

46. FISH HABITAT:
[1] Very diverse and complex instream habitat. Instream cover and/or low overhanging vegetation abundant and evenly dispersed.
[2] Moderate diversity and abundance of instream habitat and/or low overhanging vegetation (at least 3 of the habitat types listed below present in moderate quantities).
[3] Little diversity and abundance of instream habitat (only one or two of the habitat types present or predominant). Instream cover and/or low overhanging vegetation sparse and discontinuous.
[4] Almost no diversity or abundance of instream habitat (at most, one of the habitat types present). Instream cover and/or low overhanging vegetation essentially absent.

FISH COVER TYPES: DOMINANT 47 ___ SUB DOMINANT 48 ___ OTHERS PRESENT 49 ___
1. ROCKS 2. LOGS 3. DEBRIS 4. UNDERCUT BANKS 5. BANK VEG. 6. OTHER_____
7 RIFFLES

50. CHANNEL CAPACITY:
[1] Stream flows through or adjacent to marsh/wetland area. Overbank flows natural, common.
[2] Appears able to contain present peak flows. Flows pattern with little cutting, deposition or other evidence of bank deterioration.
[3] Appears adequate to contain most peak flows. Flows may be creating minor bank and substrate erosion at outcurves and constructions. Evidence of overbank flows rare (e.g., sediment deposited on bank. Debris suspended or deposited on bank vegetation; bank vegetation matted down).
[4] Appears to barely contain present peak flows. Flows creating noticeable erosion. Considerable sediment (esp. fine sediment) accumulating behind instream obstruction and/or occasional evidence of overbank flows.
[5] Inadequate. Channel subject to severe erosion-channel may be widening or migrating. Extensive deposits of sediment present and/or evidence of overbank flows common.

51. ARTIFICIAL BANK PROTECTION:
[1] Little, if any bank protection material present (<10% of bankline). Streambank almost entirely in natural state.
[2] Occasional stretches of bank protection material present (10-25% of bankline). Streambanks mostly in natural state.
[3] Bank protection material common (26-50% of bankline) and/or much of natural streambank configuration altered.
[4] Extensive stretches of bank protection material present (>50% of bankline) and/or majority of natural streambank configuration altered.

52. STREAMBANK STABILITY:
[1] Streambanks stable or only slightly altered. Bank protection material-natural, artificial or combination of both. Infrequent raw banks-less than 10% of streambank being altered.
[2] 10-25% of streambank receiving minor-moderate alteration. At least 75% of streambank in natural, stable condition.
[3] 26-50% streambanks receiving major alterations. As much as 50% broken down or eroding. Root mat overhangs and sloughing evident.
[4] Streambanks being severely altered. Less than 50% of streambank in stable condition. Over 50% of streambank broken or eroding. Failure of overhangs and sloughing frequent.

53. SUBSTRATE CONSOLIDATION:
[1] Substrate loose assortment easily moved with boot heel.
[2] Substrate moderately packed/cemented. Substrate difficult to move with boot heel.
[3] Substrate tightly packed/cemented. Substrate difficult to dislodge with kicking. May include areas of bedrock or hardpan.
[4] Substrate consists of/ covered by sand, clay or organic muck.

DIRECT DISCHARGES TO STREAM - Artificial

*Type	River Mile	LB/RB	Dimensions		Estimated Flow	**Instream Effect
			Width	Depth		

*: culvert (CV); swale (S); ditch (D); pipe (P); other - please state in last column
**: none (N); erosion (E); deposition (D); pollution (P); other please state in last column

TRIBUTARIES TO STREAM - Natural Direct Discharges Including Side Channels

River Mile	LB/RB	Dimensions		Estimated Flow	Surveyed? Yes/No
		Width	Depth		

STREAM CHANNEL CONFIGURATION: Circle most appropriate letter. Indicate LB/RB if necessary.

A. B. C. D.

WEATHER: Cloud cover_____ Wind_____ Precip_____

TEMPERATURE, °C or °F: Air_____ Water_____

TURBIDITY: Visual level (H,M,L)_____

Measured level (in or cm)_____

GENERAL COMMENTS: diagrams, notes, public contacts, etc.

UPPER BANKS	EXCELLENT		GOOD		FAIR		POOR	
LAND USE/ SLOPE	BANK SLOPE GRADIENT < 30%	(2)	BANK SLOPE GRADIENT 30-40%	(4)	BANK SLOPE GRADIENT 40-60%	(6)	BANK SLOPE GRADIENT 60%+	(8)
Mass Wasting or Failure (existing or potential)	No evidence of past or any potential for future mass wasting into channel.	(3)	Infrequent and/or very small. Mostly healed over. Low future potential.	(6)	Moderate frequency and size, with some raw spots eroded by water during high flows.	(9)	Frequent or large, causing sediment nearly yearlong OR imminent danger of same.	(12)
Debris Jam Potential (floatable objects)	Essentially absent from immediate channel area.	(2)	Present but mostly small twigs and limbs.	(4)	Present, volume and size are both increasing.	(6)	Moderate to heavy amounts, predominantly larger sizes.	(8)
Vegetative Bank Protection	90% + plant density. Vigor and variety suggests a deep, dense, soil binding, root mass.	(3)	70-90% density. Fewer plant species or lower vigor suggests a less dense or deep root mass.	(6)	50-70% density. Lower vigor and still fewer species form a somewhat shallow and discontinuous root mass.	(9)	< 50% density plus fewer species & less vigor indicate poor, discontinuous, and shallow root mass.	(12)
LOWER BANKS								
Channel Capacity	Ample for present plus some increases. Peak flows contained. Width to Depth (W/D) ratio less than 7.	(1)	Adequate. Overbank flows rare. W/D ratio 8 to 15.	(2)	Barely contains present peaks. Occassional overbank floods. W/D ratio 15 to 25.	(3)	Inadequate. Overbank flows common. W/D ratio > 25.	(4)
Bank Rock Content	65% + with large, angular boulders 12"+ numerous.	(2)	40-65%, mostly small boulders to cobbles 6-12".	(4)	20-40%, with most in the 3-6" diameter class.	(6)	< 20% rock fragments of gravel sizes, 1-3" or less.	(8)
Obstructions Flow Deflectors Sediment Traps	Rocks and logs firmly embedded. Flow pattern without cutting or deposition. Pools and riffles stable.	(2)	Some present, causing erosive cross currents and minor pool filling. Obstructions and deflection newer & less firm.	(4)	Moderately frequent, moderately unstable obstructions & deflectors move with high water causing bank cutting and filling.	(6)	Frequent obstructions and deflectors cause bank erosion yearlong. Sediment traps full, channel migration occurring.	(8)
Cutting	Little or none evident. Infrequent raw banks less than 6" high generally.	(4)	Some, intermittently at outcurves and constrictions. Raw banks may be up to 12".	(8)	Significant. Cuts 12-24" high. Root mat overhangs and sloughing evident.	(12)	Almost continuous cuts, some over 24" high. Failure of overhangs frequent.	(16)
Deposition	Little or no enlargement of channel or point bars.	(4)	Some new increase in bar formation, mostly from coarse gravels.	(8)	Moderate deposition of new gravel & coarse sand on old and some new bars.	(12)	Extensive deposits of predominatly fine particles. Accelerated bar development.	(16)
BOTTOM								
Rock Angularity	Sharp edges and corners, plane surfaces roughened.	(1)	Rounded corners and edges, surfaces smooth and flat.	(2)	Corners & edges well rounded in two dimensions.	(3)	Well rounded in all dimensions, surfaces smooth.	(4)
Brightness	Surfaces dull, darkened, or stained. Generally not bright.	(1)	Mostly dull, but may have up to 35% bright surfaces.	(2)	Mixture 50-50% dull & bright.	(3)	Predominantly bright, 65%+ exposed or scoured surfaces.	(4)
Consolidation of Particle Packing	Assorted sizes tightly packed and/or overlapping.	(2)	Moderately packed with some overlapping.	(4)	Mostly a loose assortment with no apparent overlap.	(6)	No packing evident. Loose assortment, easily moved.	(8)
Bottom Size Distribution & % Stable Materials	No change in sizes evident. Stable materials 80-100%	(4)	Distribution shift slight. Stable materials 50-80%	(8)	Moderate change in sizes. Stable materials 20-50%	(12)	Marked distribution change. Stable materials 0-20%	(16)
Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	(6)	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	(12)	30-50% affected. Deposits & scour at obstructions, constrictions, and bends. Some filling of pools.	(18)	More than 50% of the bottom in a state of flux or change nearly yearlong.	(24)
Clinging Aquatic Vegetation (Moss & Algae)	Abundant. Growth largely moss like, dark green, perennial. In swift water too	(1)	Common. Algal forms in low velocity & pool areas. Moss here too & swifter waters.	(2)	Present but spotty, mostly in backwater areas. Seasonal blooms make rocks slick.	(3)	Perennial types scarce or absent. Yellow-green, short term bloom may be present.	(4)
	COLUMN TOTALS							

ADD VALUES IN EACH COLUMN FOR A TOTAL REACH SCORE: _____ SCORE RANGE: (38 Excellent; 39-76 Good; 77-114 Fair; 115+ Poor)

STREAM REACH INVENTORY & CHANNEL STABILITY EVALUATION FORM

Channel W	Wetted W	Stream Depth

Calcs (W x D x (ft/sec)) = CFS

Pool Depths -

Pool:Riffle ratio -

Bottom Composition	1	2	3	4	5	6	7
P or R							
B >10"							
R 4-10"							
G 2mm-4"							
S <2mm							
Total							

Fish seen	Live	Dead	Redds
Spp			

FISHERY HABITAT FEATURES - Existing and Potential

*Type	River Mile	LB/RB	Dimensions Length	Dimensions Width	Remarks

* fish passage facility or operation (F); spawning area, channel or pond (SA); rearing area, channel or pond (RA); gravel cleaning or replacement (GC); streamside incubation site (I); streambank improvement (SB); stream channel rehabilitation or improvement (SC); riparian area rehabilitation or improvement (RI); lake reclamation(LR); lake or stream fertilization(LF); fish stocking(FS); other--

STREAM REACH CLASSIFICATION

To classify a stream reach the classification criteria, transferred from the stream survey data form, must be converted to standardized point values using the conversion equations in Table 1 below. The equations for slippage potential and channel stability produce a point value range of 10 to 30. The equation for habitat quality produces a point value range of 0.5 to 1.0.

Table 1: Classification Criteria Conversion Equations

Classification Criteria	Conversion Equation
Slippage Potential (S)	(S score - 3) x 1.18 + 10 = pv[1]
Habitat Quality (H)	(H score - 16) x -0.05 + 0.5 = pv
Channel Stability (C): if C field score = 39 to 75 use:	(C score - 39) x 0.19 + 10 = pv
:if C field score = 76 to 103 use:	(C score - 76) x 0.25 + 16.7 = pv
:if C field score = 104 to 152 use:	(C score - 104) x 0.14 + 23.4 = pv

[1]pv = point value, for use in classification and buffer formulas.

After the Classification Criteria scores have been converted to standardized point values, the following classification formula is used:

$$(S + C) \times H = \text{Class Score}$$

Where:
S = Soil Slippage Potential point value
C = Channel Stability point value
H = Habitat Quality point value

The resulting Class Score is compared to Table 2. The range that the score falls within determines the class of the corresponding reach (see Example 1).

Table 2: Class Score Ranges and Corresponding Stream Reach Classes.

Stream Reach Class	Class Score Range
Class I	44 - 60
Class II	27 - 43
Class III	10 - 26

Example 1: Stream Reach Classification

Stream Name.....Swamp Creek
River Mile.....8.98 to 9.50
Reach Number.....35

Channel Stability score (C).....71
from Table 1: C point value = 15.9
Slippage Potential score (S).....16
from Table 1: S point value = 25.2
Habitat Quality score (H).....6
from Table 1: H point value = 0.95

(S + C) x H = Class Score
(25.2 + 15.9) x 0.95 = 39.3

from Table 2: 39.3 = Class II

V.

DRAFT WETLAND AND STREAM BUFFER ALTERNATIVE METHODOLOGIES

Various approaches and methods are available in determining appropriate stream and wetland buffers. The attached alternative methods are provided to illustrate the relative degree of complexity associated with the type and number of variables that could be considered in buffer width determination. These alternatives are less complex than those now proposed in Title 30.

DRAFT
ALTERNATIVE WETLAND BUFFER METHODOLOGIES

11-22-88

Alternative 1 - Variable = WETLAND SIZE

30.24.120 Wetland Buffer Width.

(1) The width of required wetland buffers shall be dependent upon the size of the wetland and the slope characteristics of surrounding properties. Buffer widths stated in Table 1, Wetland Buffer Widths shall be applied to individual development proposals, unless modified by other provisions of this title.

(2) The buffer widths specified by Table 1 shall be increased by twenty five percent (25%) on any project site where at least 50 percent of the site contains slopes averaging 25 percent or greater.

Table 1
Wetland Buffer Widths

Wetland Size (in acres)	Buffer Width (in feet)
0 to 1	?
>1 and <10	?
10 and larger	?

Alternative 2 - Variable = WETLAND CLASS

30.24.120 Wetland Buffer Width.

(1) The width of required wetland buffers shall be dependent upon the character of the wetland and the slope characteristics of surrounding properties. Buffer widths stated in Table 1, Buffer Width by Wetland Classification shall be applied to individual development proposals, unless modified by other provisions of this title.

(2) The buffer widths specified by Table 1 shall be increased by twenty five percent (25%) on any project site where at least 50 percent of the site contains slopes averaging 25 percent or greater.

Table 1
Buffer Width by Wetland Classification

Wetland Classification	Buffer Width (in feet)
Class I	?
Class II	?
Class III	?

Alternative 3 Variables = WETLAND CLASS AND SIZE

30.24.120 Wetland Buffer Width.

(1) The width of required wetland buffers shall be dependent upon the character and size of the wetland, and the slope characteristics of surrounding properties . Buffer widths stated in Table 1, Buffer Width by Wetland Classification shall be applied to individual development proposals, unless modified by other provisions of this title.

(2) The buffer widths specified by Table 1 shall be increased by twenty five percent (25%) on any project site where at least 50 percent of the site contains slopes averaging 25 percent or greater.

Table 1
Buffer Width by Wetland Classification
(in feet)

Wetland Classification	Wetland Size (in acres)		
	0 - 1	>1 - 10	>10
Class I	?	?	?
Class II	?	?	?
Class III	?	?	?

Alternative 4 - Variable = LAND USE

30.24.120 Wetland Buffer Width.

(1) The width of required wetland buffers shall be dependent upon the maximum development potential and slope characteristics of surrounding properties. Maximum development potential for any project site shall be determined by the current land use designation applied to the site by the Snohomish County Comprehensive Land Use Plan. Buffer widths stated in Table 1, Wetland Buffer Widths shall be applied to individual development proposals dependent upon the applicable plan designation and land use category as specified in Table 1-A, Land Use Designation Categories, unless

modified by other provisions of this title.

(2) Any project site irrespective of plan designation shall be subject to a twenty five percent (25%) increase in buffer width requirements when at least 50 percent of the site contains slopes averaging 25 percent or greater.

(3) Any nonresidential activity proposed on residential designated properties shall be subject to Urban land use category buffer width requirements unless it can be demonstrated that the run-off coefficient for the proposed development does not exceed 4.0, in which case the Suburban buffer width requirements shall apply.

(4) In those cases where the existing project site zoning allows a more intensive land use than the plan designation for the site, the zoning shall be used to determine buffer width requirements consistent with the buffer width requirements for the plan designation for which the zoning was intended to implement.

Table 1
Wetland Buffer Widths
(in feet)

Land Use Category	Buffer Width
Rural	?
Suburban	?
Urban	?

Table 1-A
Land Use Designation Categories

RURAL

Agriculture
Critical Watershed
Forestry
Low Density
Open Space/Parks
Parks
Residential Estate
Rural
Rural Conservation
Rural Diversification
Rural Reserve
Rural 5
Secondary Agriculture
Watershed/Site Sensitive (Where project density is 2 du/acre or less)
Wetlands

SUBURBAN

Master Planned Community
Medium Density
Suburban
Urban (where project density is 7 du/acre or less)
Watershed/Site Sensitive (Where project density is greater than 2 du/acre)

URBAN

Business Park
Community Business
Freeway Service
General Commercial
Heavy Industry
High Density
High Urban
Industrial
Industrial Park
Light Industry
Multiple Residential
Neighborhood Business
Planned Community Business
Planned Neighborhood Business
Urban (where project density is greater than 7 du/acre)

Alternative 5 - Variables = WETLAND SIZE AND LAND USE

30.24.120 Wetland Buffer Width.

(1) The width of required wetland buffers shall be dependent upon the size of the wetland and the maximum development potential and slope characteristics of surrounding properties. Maximum development potential for any project site shall be determined by the current land use designation applied to the site by the Snohomish County Comprehensive Land Use Plan. Buffer widths stated in Table 1, Wetland Buffer Widths shall be applied to individual development proposals dependent upon the applicable plan designation as specified in Table 1-A, Comprehensive Plan Designations and Wetland Buffer Width, unless modified by other provisions of this title.

(2) Any project site irrespective of plan designation shall be subject to a twenty five percent (25%) increase in buffer width requirements when at least 50 percent of the site contains slopes averaging 25 percent or greater.

(3) Any nonresidential activity proposed on residential designated properties shall be subject Urban land use category buffer width requirements unless it can be demonstrated that the run-off coefficient for the proposed development does not exceed 4.0, in which case Suburban buffer width requirements shall apply.

(4) In those cases where the existing project site zoning allows a more intensive land use than the plan designation for the site, the zoning shall be used to determine buffer width requirements consistent with the buffer width requirements for the plan designation for which the zoning was intended to implement.

Table 1
Wetland Buffer Widths
(in feet)

Land Use Category	Wetland Size (in acres)		
	0 - 1	>1 - 10	>10
Rural	?	?	?
Suburban	?	?	?
Urban	?	?	?

Table 1-A
Land Use Designation Categories

RURAL

Agriculture
Critical Watershed
Forestry
Low Density
Open Space/Parks
Parks
Residential Estate
Rural
Rural Conservation
Rural Diversification
Rural Reserve
Rural 5
Secondary Agriculture
Watershed/Site Sensitive (Where project density is 2 du/acre or less)
Wetlands

SUBURBAN

Master Planned Community
Medium Density
Suburban
Urban (where project density is 7 du/acre or less)
Watershed/Site Sensitive (Where project density is greater than 2 du/acre)

URBAN

Business Park
Community Business
Freeway Service
General Commercial
Heavy Industry
High Density
High Urban
Industrial
Industrial Park
Light Industry
Multiple Residential
Neighborhood Business
Planned Community Business
Planned Neighborhood Business
Urban (where project density is greater than 7 du/acre)

DRAFT
ALTERNATIVE STREAM BUFFER METHODOLOGIES

Alternative 1 - Variable = STREAM CHANNEL WIDTH

30.28.160 Stream Buffer Width.

(1) The width of required stream buffers shall be dependent upon the size of the stream channel and slope characteristics of surrounding properties. Buffer widths stated in Table 2, Buffer Width by Stream Classification shall be applied to individual development proposals, unless modified by other provisions of this title,

(2) The buffer widths specified in Table 2 shall be increased by twenty five percent (25%) on any project site in which at least 50 percent of the site contains slopes averaging 25 percent or greater.

Table 2
Stream Buffer Widths

Stream Channel Width (in feet)	Buffer Width (in feet)
0 - 5	?
>5 and <10	?
10 and larger	?

Alternative 2 - Variable = STREAM CLASS

30.28.160 Stream Buffer Width.

(1) The width of required stream buffers shall be dependent upon the character of the stream and slope characteristics of surrounding properties. Buffer widths stated in Table 2, Buffer Width by Stream Classification shall be applied to individual development proposals, unless modified by other provisions of this title,

(2) The buffer widths specified in Table 2 shall be increased by twenty five percent (25%) on any project site in which at least 50 percent of the site contains slopes averaging 25 percent or greater.

Table 2
Buffer Width by Stream Classification

Stream Classification	Buffer Width (in feet)
Class I	?
Class II	?
Class III	?

Alternative 3 - Variable = LAND USE

30.28.160 Stream Buffer Width. The width of required stream buffers shall be dependent upon the maximum development potential and slope characteristics of surrounding properties. Maximum development potential for any project site shall be determined by the current land use designation applied to the site by the Snohomish County Comprehensive Land Use Plan as specified in Table 2-A. Buffer widths stated in Table 2, Stream Buffer Widths shall be applied to individual development proposals, unless modified by other provisions of this title, and shall be applied in accordance with the following:

(1) The buffer widths specified in Table 2 shall be increased by twenty five percent (25%) on any project site in which at least 50 percent of the site contains slopes averaging 25 percent or greater.

(2) In those cases where the existing project site zoning allows a more intensive land use than the plan designation for the site, the zoning shall be used to determine buffer width requirements consistent with the land use category of Table 2-A and the land use designation for which the zoning was intended to implement.

Table 2
Stream Buffer Widths
(in feet)

Land Use Category	Buffer Width
Rural	?
Suburban	?
Urban	?

Table 2-A
Land Use Designation Categories

RURAL

Agriculture
Critical Watershed
Forestry
Low Density
Open Space/Parks
Parks
Residential Estate
Rural
Rural Conservation
Rural Diversification
Rural Reserve
Rural 5

Alternative 3 - Variable = LAND USE

30.28.160 Stream Buffer Width. The width of required stream buffers shall be dependent upon the maximum development potential and slope characteristics of surrounding properties. Maximum development potential for any project site shall be determined by the current land use designation applied to the site by the Snohomish County Comprehensive Land Use Plan as specified in Table 2-A. Buffer widths stated in Table 2, Stream Buffer Widths shall be applied to individual development proposals, unless modified by other provisions of this title, and shall be applied in accordance with the following:

(1) The buffer widths specified in Table 2 shall be increased by twenty five percent (25%) on any project site in which at least 50 percent of the site contains slopes averaging 25 percent or greater.

(2) In those cases where the existing project site zoning allows a more intensive land use than the plan designation for the site, the zoning shall be used to determine buffer width requirements consistent with the land use category of Table 2-A and the land use designation for which the zoning was intended to implement.

Table 2
Stream Buffer Widths
(in feet)

Land Use Category	Buffer Width
Rural	?
Suburban	?
Urban	?

Table 2-A
Land Use Designation Categories

RURAL

Agriculture
Critical Watershed
Forestry
Low Density
Open Space/Parks
Parks
Residential Estate
Rural
Rural Conservation
Rural Diversification
Rural Reserve
Rural 5

Secondary Agriculture
Watershed/Site Sensitive (Where project density is 2 du/acre or less)
Wetlands

SUBURBAN

Master Planned Community
Medium Density
Suburban
Urban (where project density is 7 du/acre or less)
Watershed/Site Sensitive (Where project density is greater than 2 du/acre)

URBAN

Business Park
Community Business
Freeway Service
General Commercial
Heavy Industry
High Density
High Urban
Industrial
Industrial Park
Light Industry
Multiple Residential
Neighborhood Business
Planned Community Business
Planned Neighborhood Business
Urban (where project density is greater than 7 du/acre)

Alternative 4 - Variables = STREAM CLASS AND CHANNEL WIDTH

30.28.160 Stream Buffer Width.

(1) The width of required stream buffers shall be dependent upon the character of the stream (class and channel width) and slope characteristics of surrounding properties. Buffer widths stated in Table 2, Buffer Width by Stream Classification shall be applied to individual development proposals, unless modified by other provisions of this title,

(2) The buffer widths specified in Table 2 shall be increased by twenty five percent (25%) on any project site in which at least 50 percent of the site contains slopes averaging 25 percent or greater.

Table 2
Buffer Width by Stream Classification
(in feet)

Stream Class	Stream Channel Width (in feet)		
	0 - 5	>5 - 10	>10
Class I	?	?	?
Class II	?	?	?
Class III	?	?	?

Alternative 5 - Variables = STREAM CHANNEL WIDTH AND LAND USE

30.28.160 Stream Buffer Width. The width of required stream buffers shall be dependent upon the width of the stream channel and the maximum development potential and slope characteristics of surrounding properties. Maximum development potential for any project site shall be determined by the current land use designation applied to the site by the Snohomish County Comprehensive Land Use Plan. Buffer widths stated in Table 2, Stream Buffer Widths shall be applied to individual development proposals, unless modified by other provisions of this title, and shall be applied in accordance with the following:

(1) Buffer widths specified by Table 2 shall be based upon the average stream channel width for that portion of the stream that lies within or abuts a project site, and upon the specific land use designation of the site as denoted by the rural, suburban, or urban land use categories listed in Table 2-A.

(2) The buffer widths specified in Table 2 shall be increased by twenty five percent (25%) on any project site in which at least 50 percent of the site contains slopes averaging 25 percent or greater.

(3) In those cases where the existing project site zoning

allows a more intensive land use than the plan designation for the site, the zoning shall be used to determine buffer width requirements consistent with the land use category of Table 2-A and the land use designation for which the zoning was intended to implement.

Table 2
Stream Buffer Widths
(in feet)

Land Use Category	Stream Channel Width (in feet)		
	0 - 5	>5 - 10	>10
Rural	?	?	?
Suburban	?	?	?
Urban	?	?	?

Table 2-A
Land Use Designation Categories

RURAL

Agriculture
Critical Watershed
Forestry
Low Density
Open Space/Parks
Parks
Residential Estate
Rural
Rural Conservation
Rural Diversification
Rural Reserve
Rural 5
Secondary Agriculture
Watershed/Site Sensitive (Where project density is 2 du/acre or less)
Wetlands

SUBURBAN

Master Planned Community
Medium Density
Suburban
Urban (where project density is 7 du/acre or less)
Watershed/Site Sensitive (Where project density is greater than 2

du/acre)

URBAN

Business Park
Community Business
Freeway Service
General Commercial
Heavy Industry
High Density
High Urban
Industrial
Industrial Park
Light Industry
Multiple Residential
Neighborhood Business
Planned Community Business
Planned Neighborhood Business
Urban (where project density is greater than 7 du/acre)

Alternative 6 - Variables = STREAM CLASS AND LAND USE

30.28.160 Stream Buffer Width. The width of required stream buffers shall be dependent upon the character of the stream (stream class) and the maximum development potential and slope characteristics of surrounding properties. Maximum development potential for any project site shall be determined by the current land use designation applied to the site by the Snohomish County Comprehensive Land Use Plan as specified by Table 2-A. Buffer widths stated in Table 2, Stream Buffer Widths shall be applied to individual development proposals, unless modified by other provisions of this title, and shall be applied in accordance with the following:

(1) The buffer widths specified in Table 2 shall be increased by twenty five percent (25%) on any project site in which at least 50 percent of the site contains slopes averaging 25 percent or greater.

(2) In those cases where the existing project site zoning allows a more intensive land use than the plan designation for the site, the zoning shall be used to determine buffer width requirements consistent with the land use category of Table 2-A and the land use designation for which the zoning was intended to implement.

Table 2
Buffer Width by Stream Classification
(in feet)

Stream Class	Land Use Category		
	Rural	Suburban	Urban
Class I	?	?	?
Class II	?	?	?
Class III	?	?	?

Table 2-A
Land Use Designation Categories

RURAL

Agriculture
Critical Watershed
Forestry
Low Density
Open Space/Parks
Parks
Residential Estate
Rural
Rural Conservation
Rural Diversification
Rural Reserve
Rural 5
Secondary Agriculture
Watershed/Site Sensitive (Where project density is 2 du/acre or less)
Wetlands

SUBURBAN

Master Planned Community
Medium Density
Suburban
Urban (where project density is 7 du/acre or less)
Watershed/Site Sensitive (Where project density is greater than 2 du/acre)

URBAN

Business Park
Community Business

Freeway Service
General Commercial
Heavy Industry
High Density
High Urban
Industrial
Industrial Park
Light Industry
Multiple Residential
Neighborhood Business
Planned Community Business
Planned Neighborhood Business
Urban (where project density is greater than 7 du/acre)

VI.

DRAFT CODE AMENDMENTS

LOT SIZE AVERAGING -- TITLE 18

PRD OPEN SPACE AND DENSITY -- TITLE 18

LANDSCAPE REQUIREMENT REDUCTION --TITLE 18

SETBACKS FROM WATER BODY -- TITLE 18

BUILDING HEIGHT -- TITLE 18

PURPOSE SECTIONS --TITLES 19 & 20

VARIANCE AUTHORITY -- TITLE 18

ZONING AUTHORITY -- TITLE 18

SEPA POLICIES -- TITLE 23

The proposed code amendments provide necessary cross-referencing for Title 30 and include elements to allow design flexibility for development proposals which encounter aquatic systems.

Code Amendment - Lot size averaging (18.42.085) 11-22-88

(Existing - to remain)

18.42.080 Lot size averaging. In formal subdivisions approved subsequent to the effective date of this section, the minimum lot area of the zone in which the subdivision is located shall be deemed to have been met if the area in lots, plus areas dedicated for permanent and generally usable common open space or recreational uses, if any, divided by the total number of lots is not less than the minimum lot area of the zone in which the property is located; PROVIDED, that:

A. This section shall only apply within zones having a minimum lot area requirement of twelve thousand five hundred (12,500) square feet or less;

B. In no event shall any single lot be less than six thousand (6,000) square feet in area;

C. Not more than a twenty-five percent (25%) increase over required minimum lot area for any single lot shall be credited in computing average lot area;

D. Lots with less than the prescribed minimum lot area for the zone in which located shall have a minimum lot width of not less than sixty (60) feet;

E. Preliminary plats approved utilizing lot averaging shall not be recorded by divisions unless such divisions individually or together as cumulative, contiguous parcels satisfy the requirements of this section.

Proposed new section:

18.42.085 Lot size averaging - aquatic system present.

A. Where all or a portion of an aquatic system is located within a small lot subdivision approved on, or after the effective date of this section, the minimum lot area of the zone in which the subdivision is located shall be deemed to have been met if the area in lots, plus areas dedicated for permanent and generally usable common open space or recreational uses, plus areas dedicated for common open space that contain an aquatic system and its required buffer as specified in Title 30 SCC, divided by the total number of lots is not less than the minimum lot area of the zone in which the property is located: PROVIDED, that:

1) This section shall only apply within zones having a minimum lot area requirement of one (1) acre or less;

2) In no event shall any single lot be less than six thousand (6000) square feet in area within any zone having a minimum lot size of twelve thousand five hundred (12,500) square feet or less;

3) In no event shall the area of any single lot be less than fifty percent (50%) of the minimum lot size required within any zone having a minimum lot size greater than twelve thousand five hundred (12,500) square feet;

4) Not more than a twenty-five percent (25%) increase over required minimum lot area for any single lot shall be credited in computing average lot area;

5) Lots with less than the prescribed minimum lot area

for the zone in which located as allowed by Section 18.42.085 (2) shall have a minimum lot width of not less than sixty (60) feet;

6) Lots with less than the prescribed minimum lot area for the zone in which located as allowed by Section 18.42.085 (3) shall have a minimum lot width of not less than seventy percent (70%) of the minimum lot width required by the zone, but in no case shall the minimum lot width be less than 60 feet; and

7) The aquatic systems and their buffers are designated as native growth protection areas or common open space tracts owned in undivided and equal shares by the owners of all lots within the subdivision.

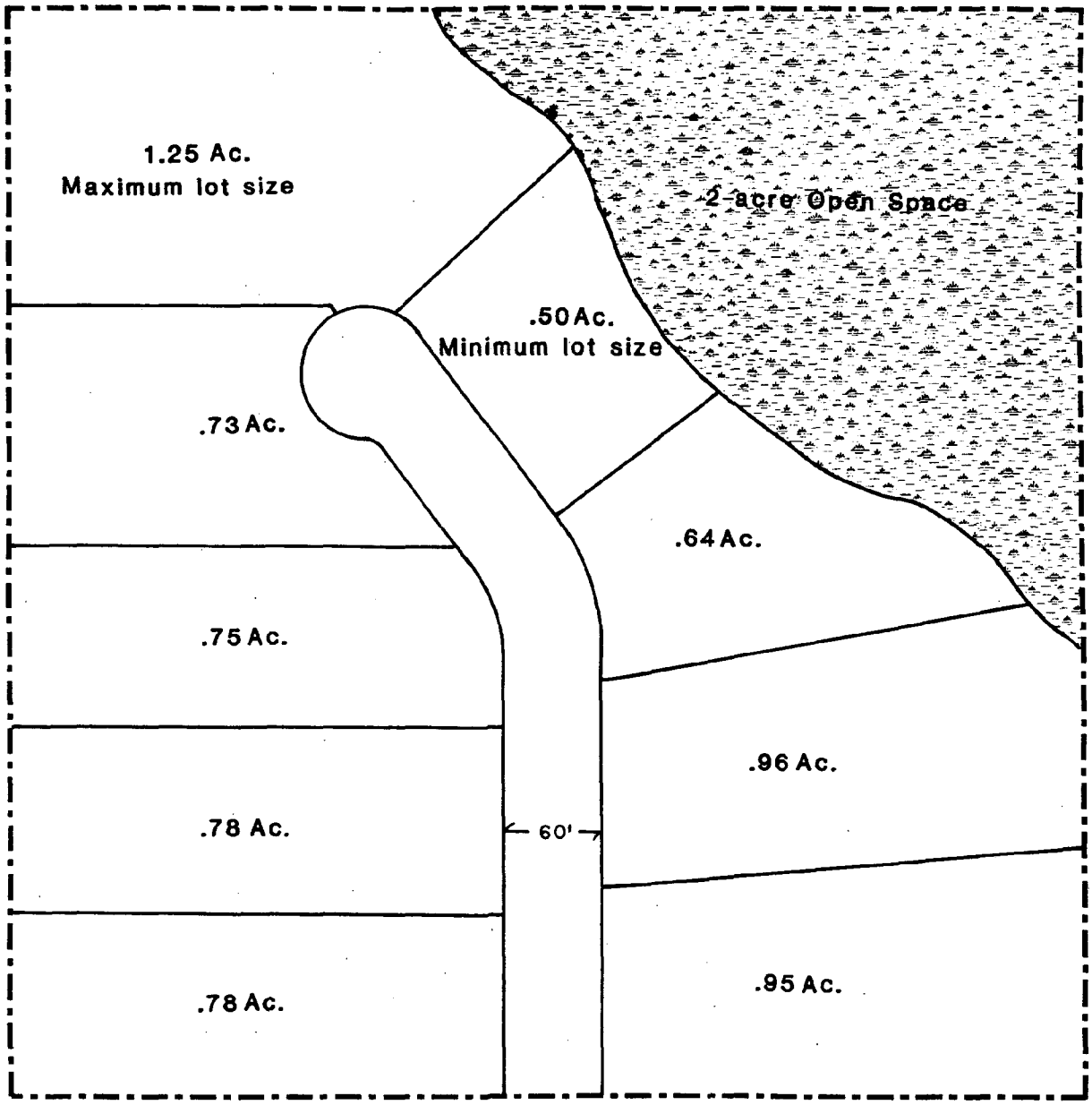
B. In short subdivisions approved subsequent to the effective date of this section in which an aquatic system or portion of an aquatic system comprises at least ten percent (10%) of the project site, lot size averaging will be allowed subject to the conditions of subsection 18.45.085 (A)(1) through (7).

Amend Title 19 Sec 19.22.040 f. to read as follows:

f. The average lot size and the size of the smallest proposed lot; lot average calculation if Sections 18.42.080 or 18.42.085 of the Snohomish County Zoning Code are applicable;

LOT SIZE AVERAGING
with Aquatic System Present

(Proposed amendment to 18.42.085)



10 ACRE PARCEL
(SA 1 Acre Zoning)

This figure is NOT part of the proposed ordinance. For review purposes only.

Wetland Area

Parcel Boundary

Code amendment - PRD open space and density (18.51.050), 11-22-88

Amend 18.51.050 B to read as follows:

B. Open space and recreation. Twenty percent (20%) of the net development area shall be established as common open space and community recreational facilities. Up to one half of the common open space land may consist of unbuildable land upon a showing that such land can and will be utilized in a specific recreational use: Provided, however, that if an aquatic system and/or its buffers as defined and regulated by Title 30 SCC, is located on the project site and retained as common open space, up to seventy five percent (75%) of the required open space may consist of the aquatic system and/or its buffers.

Amend 18.51.050 A to read as follows:

A. Number of dwelling units. The maximum number of dwelling units permissible shall be one hundred twenty percent (120%) of the maximum computed density of the underlying zone, unless subsection 18.51.050 (A) (4) is applicable, derived as follows:

Amend 18.51.050 A (4) to read as follows:

4) (a) Mulitiply the resulting number of units by 1.2 or,

(b) Where forty percent (40%) or more of the net development area consists of an aquatic system and/or its buffers as defined and regulated by Title 30 SCC, multiply the resulting number of units by 1.3;

(for purposes of net development area computation, aquatic systems and their buffers shall be considered buildable area, except where surface water exists year-round, slopes exceed 35 percent, and/or peat deposits are greater than 4 feet in depth)

Code Amendment - Landscape requirement reduction (18.43.080)
11-22-88

Add new section to read as follows:

18.43.080 Alternative Landscape Area Provisions for Properties Containing Aquatic Resources. Notwithstanding the provisions of SCC 18.43.050, above, the reduction in the total area of required landscaping for properties containing aquatic systems that are subject to regulation pursuant to Title 30 SCC may be applied for on the the following basis:

1) For Uses allowed in the zones included in the Landscaping Requirement Matrix of 18.43.050, aquatic systems and/or their buffers, as defined by Title 30 SSC, may be substituted for required landscaping at property boundaries abutting residentially designated property;

2) For Uses allowed in the LI and HI zoning categories in the Landscaping Requirements Matrix of 18.43.050, aquatic systems and/or their buffers may be substituted for required landscaping at property boundaries abutting commercially designated property;

3) The landscaped area substitution shall be designed so as to not adversely affect traffic sight distances, fire safety, aesthetic views, or utilities;

4) An alternative landscape area plan designed and certified by a registered landscape architect shall be submitted with a filing fee of $175.00 to the county

5) The alternative landscape area plan shall be subject to the review and approval procedure specified in 18.43.070(A)(5).

LANDSCAPING REQUIREMENTS

Location \ Zone	RU	NB	CB	GC	LI	HI	PCB	BP	IP
Abutting residentially designated property or use if not a parking or display area.		10 feet II	10 feet II	10 feet II	20 feet III	20 feet III	10 feet II	25 feet II	25 feet II
Between R/W or private access road and building or parking areas.							5 feet III	30 feet III	30 feet III
Outside storage or waste areas.		I	I	I	I or 5 feet II	I or 5 feet II	I	I	I
Public R/W frontage if not a parking or display area.		10 feet III	10 feet III	10 feet III	20 feet III	20 feet III	5 feet III	30 feet II	30 feet III
Between residential and non-residential uses or designations.	I or 5 feet II								
Abutting commercially designated property.					20 feet III	20 feet III			

Code Amendment - Setbacks from water body (18.42.020 - bulk matrix and footnotes)

11-22-88

Amend 18.42.020 A. Bulk Matrix (pg 42-2), Setback Requirements section, setbacks from water bodies to read 25 feet for all zones.

Amend 18.42.020 B. 12) to read as follows:

12) These setbacks shall be measured from the ordinary high water mark and shall apply to all buildings irrespective of their position relative to the water body.

Zone	Maximum Building Height (ft)	Minimum Lot Area	Lot Dimensions (ft)		Setback Requirements From: (ft)					Maximum Lot Coverage [8]
			Minimum Lot Width	Minimum Corner Lot Width	Public R/W under 60' [10]	Public and Private R/W [9]	Commercial Properties [11]	Residential Properties [11]	Water Bodies # [12]	
F	45 [6]	20ac [3]	300	300	100 [13]	100 [13]	100 [13]	100 [13]	25 [13]	35%
F&R	25 [7]	200,000sf [2]	100	100	50	20	5	5	25	35%
A-10	45	10ac	none	none	50	20	5	5	25	none
R-5	45	200,000sf [2]	165	165	50	20	5	5	25	35%
RC	35	100,000sf	165	165	50	20	5	5	25	35%
RR	35	100,000sf [19]	165 [19]	165 [19]	50	20	5	5	25	35%
RD	45	100,000sf	165	165	50	20	5	5	25	35%
SA-1	35	43,560sf	150	150	50	20	5	5	25	35%
RU	35	see 18.42.150	60	65	50	20	5	5	25	35%
R-20,000	25	20,000sf	85	90	50	20	5	5	25	35%
R-12,500	25	12,500sf	75	80	50	20	5	5	25	35%
R-9,600	25	9,600sf	70	75	50	20	5	5	25	35%
R-8,400	25	8,400sf	65	70	50	20	5	5	25	35%
R-7,200	25	7,200sf	60	65	50	20	5	5	25	35%
WFB	25	7,200sf	60	65	50	20	5	5	25	35%
T	see 18.53	see 18.53	see 18.53	see 18.53	50 [14]	20 [14]	5 [14]	5 [14]	25 [14]	see 18.53
LDMR	35	7,200sf [4]	60	70	55 [15]	25 [15]	see 18.42.020(15)		25 [15]	30%
MR	35	7,200sf [5]	60	70	55 [15]	25 [15]	see 18.42.020(15)		25 [15]	40%
FS	35	none	none	none	55	25	5/15 [16]	25	25	none
NB [1]	25	none	none	none	55	25	UBC	10	25	35%
PCB [1]	40	5ac	none	none	70	40 [18]	UBC	25	25	none
CB [1]	35	none	none	none	55	25	UBC	10	25	50%
GC [1]	45	none	none	none	55	25	UBC	10	25	50%
IP	65	none	none	none	30 [17]	30 [17]	UBC [17]	25 [17]	25	50%
BP	50	4ac	none	none	30	30	UBC	25	25	35%
LI	50	none	none	none	55	25	UBC	50	25	none
HI	65	none	none	none	55	25	UBC	50	25	none

Greater setbacks than those listed may apply to areas subject to Shoreline Management Master Program jurisdiction.

Some uses have special setbacks, see 18.42.100 for specifics.

Code amendment - Building height (18.42.020 - bulk matrix and
11-22-88 footnotes) for multifamily and commercial use

Amend 18.42.020 A. Bulk Matrix (pg 42-2), maximum building height section by adding a footnote to LDMR, MR, FS, PCB, and CB zones allowing a 45 feet maximum building height, a footnote to BP and LI allowing a 65 feet maximum building height, and a footnote to NB allowing a 35 feet maximum.

Amend 18.42.020 B. as follows:

Add:

20) The building height specified may be increased up to a maximum of 45 feet, PROVIDED that:

a) An aquatic system as defined by Title 30 is located on the project site;

b) The building setback required by this chapter, except setbacks from public and private roadways, is increased by one (1) foot for each additional foot of height above that otherwise specified by this chapter where the adjacent property is zoned or designated for residential use;

c) The increased building height allowed by this section must be approved by the agency responsible for fire protection for the proposed structure;and

d) For Multiple Residential (MR) and Low Density Multiple Residential (LDMR) zoning classifications section 18.42.020 (20) (b) shall apply only where adjacent property is zoned or designated for single family residential development.

21) The building height specified may be increased up to a maximum of 35 feet, PROVIDED that:

a) An aquatic system as defined by Title 30 SCC is located on the project site; and

b) The building setback required by this chapter, except setbacks from public and private roadways, is increased by one (1) foot for each additional foot of height above that otherwise specified by this chapter where the adjacent property is zoned or designated for residential use.

22) The building height specified may be increased up to a maximum of sixty five (65) feet, PROVIDED that:

a) An aquatic system as defined by Title 30 SCC is located on the project site; and

b) The building setback required by this chapter, except setbacks form public and private roadways, is increased by one (1) foot for each additional foot of height above that otherwise specified by this chapter where the adjacent property is zoned or designated for residential use.

DRAFT

Zone	Maximum Building Height [ft]	Minimum Lot Area	Lot Dimensions [ft]		Setback Requirements From: [ft]					Maximum Lot Coverage [8]
			Minimum Lot Width	Minimum Corner Lot Width	Public R/W under 60' [10]	Public and Private R/W [9]	Commercial Properties [11]	Residential Properties [11]	Water Bodies # [12]	
F	45 [6]	20ac [3]	300	300	100 [13]	100 [13]	100 [13]	100 [13]	25 [13]	35%
F&R	25 [7]	200,000sf [2]	100	100	50	20	5	5	25	35%
A-10	45	10ac	none	none	50	20	5	5	25	none
R-5	45	200,000sf [2]	165	165	50	20	5	5	25	35%
RC	35	100,000sf	165	165	50	20	5	5	25	35%
RR	35	100,000sf [16]	165 [19]	165 [19]	50	20	5	5	25	35%
RD	45	100,000sf	165	165	50	20	5	5	25	35%
SA-1	35	43,560sf	150	150	50	20	5	5	25	35%
RU	35	see 18.42.150	60	65	50	20	5	5	25	35%
R-20,000	25	20,000sf	85	90	50	20	5	5	25	35%
R-12,500	25	12,500sf	75	80	50	20	5	5	25	35%
R-9,600	25	9,600sf	70	75	50	20	5	5	25	35%
R-8,400	25	8,400sf	65	70	50	20	5	5	25	35%
R-7,200	25	7,200sf	60	65	50	20	5	5	25	35%
WFB	25	7,200sf	60	65	50	20	5	5	25	35%
T	see 18.53	see 18.53	see 18.53	see 18.53	50 [14]	20 [14]	5 [14]	5 [14]	25 [14]	see 18.53
LDMR	35 [20]	7,200sf [4]	60	70	55 [15]	25 [15]	see 18.42.020[15]		25 [15]	30%
MR	35 [20]	7,200sf [5]	60	70	55 [15]	25 [15]	see 18.42.020[15]		25 [15]	40%
FS	35 [20]	none	none	none	55	25	5/15 [16]	25	none	none
NB [1]	25 [21]	none	none	none	55	25	UBC	10	none	35%
PCB [1]	40 [20]	5ac	none	none	70	40 [18]	UBC	25	none	none
CB [1]	35 [20]	none	none	none	55	25	UBC	10	none	50%
GC [1]	45	none	none	none	55	25	UBC	10	none	50%
IP	65	none	none	none	30 [17]	30 [17]	UBC [17]	25 [17]	none	50%
BP	50 [22]	4ac	none	none	30	30	UBC	25	none	35%
LI	50 [22]	none	none	none	55	25	UBC	50	none	none
HI	65	none	none	none	55	25	UBC	50	none	none

Greater setbacks than those listed may apply to areas subject to Shoreline Management Master Program jurisdiction.

Some uses have special setbacks, see 18.42.100 for specifics.

Code amendment - Title 19, Subdivision Ordinance - purpose section (19.04.020)
11-22-88

Amend section 19.04.020 as follows:

19.04..020 Purpose. The purpose of this title is to regulate the subdivision of land to promote the public health, safety and general welfare in accordance with established standards to prevent the overcrowding of land; to lessen congestion in the streets and highways; to provide for adequate light and air; to provide adequate public and private streets, easements, water supply, utilities, parks and recreation areas, open spaces, and sites for schools and other public requirements; to ensure that adequate drainage facilities are provided in developing parts of the county; to ensure that aquatic systems are afforded adequate protection through appropriate design consideration, to promote coordination of land development; to conserve natural beauty; and to require uniform monumenting of land subdivisions and conveyance by accurate legal description.

Code amendment - Title 20, Short Subdivision Ordinance - Purpose section (20.04.020)

Amend section 20.04.020 as follows:

20.04.020 Purpose. The purpose of this resolution is to regulate the division of land into four (4) or less lots, parcels, sites, or subdivisions, and to promote the public health, safety, and general welfare; to further the goals and objectives of the comprehensive plan; to prevent the over-crowding of land; to lessen congestion in the streets and highways; to provide for adequate light and air; to facilitate adequate provisions for water, sewerage, parks and recreation areas; to ensure that aquatic systems are afforded adequate protection through appropriate design consideration; to provide for proper ingress and egress; and to require conveyancing by accurate legal description.

Code amendment - variance authority (18.72.010) and reference in Title 18 to administrative variance process of Chapter 30.28

11-22-88

Amend 18.72.010 to read as follows:

18.72.010 Granting variances. Upon application therefor, the hearing examiner shall have the authority to consider a variance from the provisions of this title when the conditions as set forth in SCC 18.72.020 have been found to exist, and the examiner may grant a variance and impose conditions when the request is found to be in harmony with the general purpose and intent of this title. Variances may also be granted from the provisions of Chapters 18.42 and 18.43 pursuant to Title 30 SCC, "Aquatic Resource Protection".

Code amendment - Purpose section of Title 18, County Zoning Code 11-22-88

Amend 18.11.030 to read as follows:

18.11.030 Authority and Applicability. This title is adopted pursuant to the county's powers as a home rule charter county under the Constitution and laws of the State of Washington. The provisions of this title shall be applicable to all land within unincorporated Snohomish County except as allowed by law.

Code amendment - Title 18, County Zoning Code, repeal reference to state statute

Repeal existing section 18.12.010 now written as follows:

18.12.010 Conformance to state statutes. Use zones shall be establised, modified and amended as provided in RCW 36.70 as it now exists or may be hereafter amended.

Amend 18.12.020 to read as follows:

18.12.020 Zoning designations. All unincorporated land in Snohomish County is divided into the following use zones:...

Code amendment - Title 23 (23.36.030)

Amend section 23.36.030 (3) SCC as follows:

(3) The county adopts by reference the policies contained in the following county ordinances, resolutions and plans as currently adopted or as hereafter amended:

(1) Snohomish County Comprehensive Plan and Subarea Plans
(2) Shoreline Managment Master Program (Title 21)
(3) Agricultural Preservation Plan
(4) Zoning Code (Title 18)
(5) Drainage and Grading Ordinance (Title 24)
(6) Road Ordinance (Title 26B)
(7) Flood Hazard Ordinance (Title 27)
(8) Noise Ordinance (Title 10.01)
(9) Subdivision Ordinance (Title 19)
(10) Short Subdivision Ordinance (Title 20)
(11) SR 527 Traffic Impact Mitigation Policy
(12) Aquatic Resource Protection Ordinance (Title 30)

VII.

DRAFT ENFORCEMENT PROVISIONS

CERTAIN SECTIONS OF THE FOLLOWING DRAFT ENFORCEMENT PROVISIONS HAVE BEEN INCOPORATED INTO VARIOUS CHAPTERS OF TITLE 24. OTHER PROVISIONS ARE STILL UNDER CONSIDERATION FOR INCORPORATION INTO TITLE 28, SCC. DECISIONS MUST STILL BE REACHED ON THE FINAL TREATMENT OF TITLE 28 ENFORCEMENT PROVISIONS.

WORKING DRAFT

ENFORCEMENT PROCEDURES

With the adoption of Motion 87-039 the County Council provided clear direction to improve upon the enforcement procedures associated with County land use codes. This action was in response to the public's desire to have County's current procedures improved to provide better protection to aquatic systems. The Position paper that was adopted as an implementation schedule and action directive for motion 87-039 included the following:

Phase I actions were to include the development of an environmental bond procedure that would allow the County the option of providing immediate corrective action if aquatic resource damages were caused by permitted land use activities. The development of enforcement reporting procedures was also directed.

Phase II actions were to include revisions of all county land use codes to ensure that stream and wetlands received consistent treatment.

Phase III actions call for a "consolidated" approach for the aquatic resource protection program.

Attached are draft enforcement procedures designed to meet the above objectives. The following provisions are included:

- Establishes rational for permit fees.
- Establishes security and abatement procedures consistent with Phase I directions.
- States the obligations of persons performing work.
- Formalizes inspection procedures and clearly states their authority.
- Establishes reporting requirements for finished work providing the county with a complete record of installed drainage systems.
- Establishes stop work and corrective action procedures that will benefit aquatic resources.
- Clarifies Civil and Criminal penalties.

Perhaps the most significant aspect of this approach is that inspectors will have the authority to issue written notices of violation and directives for corrective actions immediately. This step will enable the county to prevent irreparable damage to streams or wetlands due to improper construction practices which can occur in a matter of hours. Under our current procedures corrective actions generally are not initiated for up to two weeks or longer.

Staff is currently reviewing the following draft code amendments and working with the DPA office to determine whether or not to recommend that the amendments be included into Title 24, Title 28, and/or Title 30
The following enforcement discussion is in draft form and is provided to illustrate how several enforcemnt issues may be approached:

ENFORCEMENT

The violation of or failure to comply with any provisions of this chapter is declared to be unlawful. The remedies provided in this section, whether civil or criminal, shall be cumulative and shall be in addition to any other remedy provided by law. The cumulative effects of a failure to abide by clearing and grading regulations , or failure to comply with approved drainage plans,is detrimental to the health, safety, and welfare of County residents and it is the desire and intent of the Council that the penalties contained in this section be strictly enforced without suspension and deferrals of sentences except as may be necessary under exceptional circumstances to achieve substantial justice.

Definitions

Person: includes any natural person, organization, corporation or partnership and their agents representative or assigns.

Work: any activity outside of any habitable structures which contribute to soil or geologic structure stability, control of drainage, habitat restoration or temporary/permanent erosion control, and shall include, but not be limited to site clearing and grubbing, excavation, fill import of structural fill, export and disposal of unsuitable material, retaining wall, rockeries, surface and subsurface drainage system, storm water detention systems, curbs, gutters, paving, restoration of vegetation, surface treatment of slopes, habitat (including streams, wetlands, and lakes) restoration and enhancement plantings.

XX.XX.XXX Permit Fees

Before accepting a set of plans and specifications for checking, the County shall collect a permit fee. Such fee shall be determined according to a standard fee schedule approved by the county council, which may be administratively adjusted for inflation on an annual basis effective the first of each year. Such annual adjustment shall be based on increased administrative costs associated with permit processing and the September to September Consumer Price Index for this region,

and rounded to the nearest five dollars or any other administrative expense associated with permit processing. Such revised permit fee schedule shall be distributed to the County council ten days before the fee schedule is published.

xx.xx.xxx Expiration of Permits and Applications

The expiration of clearing and grading permits and applications shall follow the same specifications as for building permits and applications therefore and now or hereinafter amended provided, however, that the County may set specific limits to the permit for project initiation and/or completion if for environmental reasons or for coordination with other permitted site work If the County finds it is advisable to do so. The County shall provide the applicant with written notice of nonstandard permit expiration dates at the date of permit issuance.

xx.xx.xxx Security

A. Performance and Abatement Security

For all grading permits and detailed drainage plans, the County shall require the applicant to establish a performance and abatement security. The Security shall be in an amount determined by the permit authority to be sufficient to reimburse the County should it become necessary for the County to correct and/or eliminate hazardous conditions relating to soil stability, flooding, erosion, restoration of vegetation, streams or wetlands, water quality control, modification of drainage patterns, or any other purpose authorized herein.

Should the County, at any time during the course of construction, find it necessary to expend any portion of the security to correct any work not in accordance with the approved plans and specifications, or abate conditions as stated above, a stop work order shall be issued to the permittee, prohibiting any additional work until the original amount of the security has been reestablished by the permittee.

Said security shall be in a form as specified in Section zz.zz.zzz.

xx.xx.xxx Obligation of Persons Performing Work

Every contractor or other person performing or directing the

performance of any work requiring a permit under this chapter shall have a copy of said permit on the work site during all phases of the work, and shall further have a duty to comply with the terms and conditions of the permit and approved plans and specifications. Failure to comply with this provision will result in penalties as described in the enforcement section.

xx.xx.xxx Project Inspection Procedures

A. General

All projects which require clearing and grading and drainage plans shall be subject to inspection by the permit authority or his/her designee. The permit authority shall be granted unlimited right of entry to the work sight by the applicant for the purposes of making inspections to determine that the requirements of the plans and permits are being complied with and for the purposes of taking corrective measures of an emergency nature. The cost of such corrective measures shall be borne by the applicant as determined by performance requirements established in the abatement security. The permit authority may require inspection and testing by an approved testing agency at any stage of the application or project. Said inspection and testing shall be at minimum schedules as listed in the development standards (yet to be developed by us), (or as published by the permit authority in the procedures manual)..

B. Permittee's Notice Responsibilities

It shall be the permittee's responsibility to notify the permit authority and his designee, if applicable, at least twenty-four hours prior to the time required for inspection. specifications, and permit as approved. All inspections and testing required shall be determined prior to issuance of the permit except those that may be required when conditions exist that were not covered in the documents submitted when requesting a permit. The permit authority may require additional inspection or testing if conditions are found to be different than those presented in the plans or supporting documents; however, if and when conditions change, it shall be the responsibility of the applicant or the professional consultants who submitted the plans or documents to provide the permit authority with recommended changes in procedures for its review and approval.

C. Suspension of Permits

Whenever the permit authority determines that the act or intended act of clearing, grading, excavation or fill has become or will constitute a hazard to life and limb, or endangers property, or adversely effects the safety, use or stability of a public right of way, drainage channel, stream, wetland, or surface water, including siltation and sedimentation therein, the permit authority shall immediately suspend the clearing and grading permit. The permit authority shall provide written notice as described in section 4 of the Special Enforcement Section.

The permittee or other person or agent in control of the property, upon receipt of notice from the permit authority shall, within the period specified therein, terminate such clearing, grading, excavation, embankment or fill, or eliminate the same from the development plans, or modify the plans, as may be required so as to eliminate the hazard and be in conformance with the requirements of this code.

The permittee shall also be required to take measures to correct the damages caused to adjacent and/or downstream or upstream properties, under the direction of the permit authority, or if not accomplished during the time frame directed by the inspector, the County shall do so using security provided as part of the clearing and grading permit under which the work was done; in the case of damages to aquatic resources the permit authority shall direct immediate corrective action.

xx.xx.xxx Final Reports

Upon completion of the work, a reproducible as-built drawing of the storage, conveyance and discharge elements of the detention system and the newly constructed downstream components of the storm drainage system shall be submitted to the permit authority prior to final inspection. The permit authority may require additional information on significant deviations from the approved plans, specifications and/or reports as presented.

xx.xx.xxx Notification of Completion

The Permittee or his agent shall notify the permit authority or his designee when the clearing and grading operation at each stage is ready for final inspection. Final approval shall not be given until all work including installation of all drainage facilities and their protective devices and all erosion control measures have be been completed in accordance with the final approved project plan.

x.x.xxx Stop Work Orders

Whenever any work is being done contrary to the provisions of this chapter or requirements of the permit authority, the permit authority may order the work stopped by notice in writing served on any persons engaged in doing or causing such work to be done and/or conspicuously posted upon the site; such notice shall be provided immediately by the Permit Authority or his designee as described in Enforcement: additional enforcement procedures. All persons so notified shall forthwith stop such work until authorized by the permit authority to proceed with the work. As used herein the term "work" shall include all clearing, grading and other construction activities on the site which the permit authority deems reasonably necessary to stop in order to prevent further violation of this chapter or to secure compliance therewith.

xx.xx.xxx Civil Remedies.

1. Any structures, works, facilities, excavation, land fills or other activities which are constructed, reconstructed, operated, or performed without a permit required by this chapter or in violation of any lawful order or requirement of the permit authority made in accordance with the provisions of this chapter shall be deemed to be a public nuisance and may be abated in the manner provide by this chapter.

2. Injunction proceedings or other appropriate action may be initiated in a court of competent jurisdiction against any person who violates or fails to comply with any provision of this chapter, or against any person who performs an unlawful clearing or grading operation or the owner of the property on which the unlawful operation is conducted, to prevent, enjoin, abate or terminate violations of this chapter and/or to restore the property to its original condition.

xx.xxx.xxx Civil Penalties

1. The violation of or failure to comply with any of the provisions of this chapter or any lawful order or requirement of the permit authority made in accordance with the provisions of this chapter is a civil violation. Each day during which any violation of or failure to comply with any of the provisions of this chapter is committed, continues or permitted constitutes a separate offense. Penalties are as follows:

a. Violations of permit conditions established by this code shall result in penalties of $500 per day except in those situations where aquatic resources are adversely af-

fected which shall result in penalties of $1000 per day.

b. Failure to obtain a permit required by this chapter shall result in a fine of $1000 when aquatic resource are affected and $500 in all other circumstances. Furthermore, individuals fined for failure to obtain a permit shall restore the site as detailed in section 3 below.

xx.xx.xxx Criminal Penalties

1. The failure to comply with any abatement actions required by the permit authority is a misdemeanor. Each violation of or failure to comply with any of the provisions of this chapter is considered a separate offense. Upon conviction of an offense, the violator shall be punished as follows:

a. Failure to comply with directives of the permit authority as specified in the Civil Penalties section shall result in a fine of $1,000 for each day of non compliance.

b. Any additional convictions thereafter, of a violation of this chapter within any five-year period, by a fine of $1,000 and in addition, if the repeat offense includes a failure to obtain a permit required required by this chapter, by imprisonment not exceeding thirty days.

2. It shall not be a defense to the prosecution for failure to obtain a permit required by this chapter that a contractor, subcontractor, person with responsibility on the site, or person authorized or directing the work believed a permit had been issued to the property owner or any other person unless that belief was verified in writing by the permit authority prior to commencement of the work.

3. In addition, any person convicted of a violation or violations of this chapter shall be required to abate any conditions on the subject property in a manner which will achieve full compliance with this chapter and/or restore such property to its original condition.

4. Penalties will provide the county compensation for time and materials associated with enforcement and corrective actions. Penalties collected beyond these costs shall be provided to the Snohomish County "Habitat Conservation Trust Fund" (which does not exist) and be used to recover damages to the county's natural resources.

c. Additional Enforcement Provisions

1. Any conditions not properly abated or otherwise cor-

rected within ten days after conviction of a violation or issuance of a lawful order providing therefor, may be abated or corrected by the county, and the costs thereof charged to the violator or person(s) given notice of abatement. Such charges shall constitute a judgement and no future permits under this chapter shall be issued to any person liable until such lien is paid in full. Corrective action by the County authorized by this subsection shall be in addition to the county's authority to use cash escrow accounts or letters of credit or other security pursuant to Section xx.xx.xxx of this chapter. Neither the county or its agents shall be liable for any damage to property when corrective action is taken under this section.

2. The county shall have authority to issue immediate notices of violations for civil penalties and citations for criminal penalties on or off a job site charging a violation(s) of this chapter to any person(s) authorizing, directing, or committing such violation(s). Said notices or citations may, to the extent consistent with orders or directions of a court of competent jurisdiction, specify an amount of bail and a time by which such bail must be posted. A personal appearance at a trial or hearing is not required provided that a cash bail is posted and forfeited in the maximum amount of the fines prescribed in this section for the particular offense(s) cited and provided that the person cited has not previously been convicted of a violation of this chapter or previously disposed of a citation thereunder by forfeiting bail.

3. The permit authority shall have the authority to withhold issuance of a permit or revoke a permit already issued, to any contractor or other person cited for performing work in violation of this chapter and to not issue or reissue permits for further clearing or grading upon the site unless all security deemed necessity by the permit authority and authorized by Section xx.xx.xx(Security) of this chapter is established or reestablished.

4. The permit authority shall have the authority to issue expedited order to cease or immediate notice of violations of this code that adversely affect aquatic resources. The county Inspector shall document the nature of the problem on a citation form or violation notice form and provide the violator with a copy of the documentation. Furthermore the permit authority shall specify immediate corrective action requirements; establish time frames for completion of the corrective action; and establish a time for a secondary inspection.

If the county determines that corrective action required to protect the aquatic resource is not complete as directed the county

or its agent may, at the violators expense, complete necessary corrective actions at the violators expense. If the violator refuses to pay expenses, the county shall file a lien against the property which must be paid before any sale occurs and, the county shall suspend all permits for additional work until the corrective action costs are paid.

xx.xx.xxx Enforcement Appeals

A. Civil Violations

Persons desiring to appeal civil violations issued pursuant to this code may request a hearing from of the County Hearing Examiner within 15 days from the notice of violation. Any person wishing to appeal the Hearing Examiner's decision may forward their appeal to District Court for disposition; All costs, fees and expenses in connection with such action shall be assessed as damages against the violator. Moneys collected pursuant to this section shall be used to pay for County time and materials and to restore affected areas; penalties collected in excess to the aforementioned costs shall be provided to the Snohomish County Habitat Conservation trust.

B. Criminal Violations

Individuals desiring to appeal criminal violations may appeal to the Snohomish county District Court within 15 days from notice of violation. All costs, fees and expenses in connection with such action shall be assessed as damages against the violator. Moneys collected pursuant to this section shall be used to pay for County time and material and to restore affected areas; penalties collected in excess to the aforementioned costs shall be provided to the Snohomish County Habitat Conservation trust.

11-13-88 TM