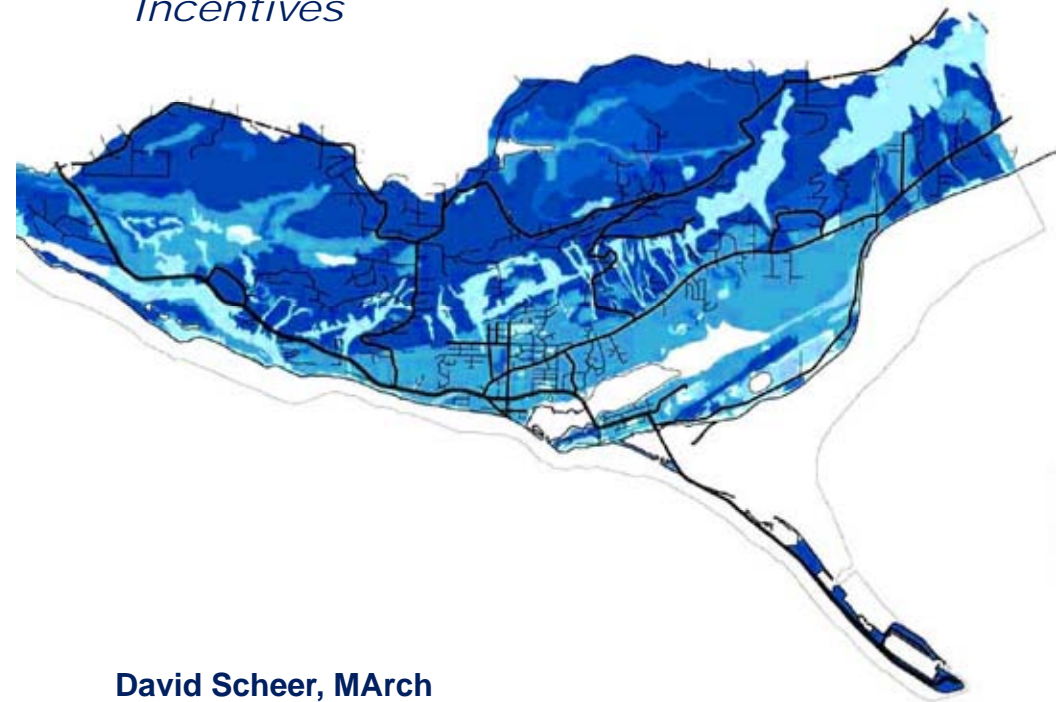


Landscape Suitability Map

*Best Stewardship Practices
Development Certification for
Incentives*



David Scheer, MArch
Allegra Bukojemsky, RLA, ASLA, LEED AP
Homer Soil and Water Conservation District

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August 2008

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Introduction

The Homer Soil & Water Conservation District, in partnership with DnA Design, and with funding and support from the US EPA and US Fish and Wildlife Service and The National Park Service Rivers Trails and Conservation Assistantship, has created the **Homer Suitability Map** to help guide future development in Homer to enhance public and private benefits. The **Landscape Suitability Map** identifies lands within the City that may provide “Green Infrastructure” (GI) functions such as slope stabilization, stormwater management, habitat and recreation, and landscape connectivity, if developed in a way that minimizes impacts to these valuable functions. The accompanying **Development Suitability Map** identifies lands most suitable for development in areas of moderate slopes, valuable amenities and good infrastructure.

Suitability for development was determined based on physical features affecting construction costs (such as drainage, topography, soil type) and landscape amenities affecting property values (such as views and proximity to infrastructure, trails and parklands). Importance for providing green infrastructure was identified based on both physical and cultural features, including hydrologic functions, wildlife uses, trail connectivity, and aesthetic qualities. Mapping the overlap of these two categories (suitability for development, importance as green infrastructure) provides a planning tool that can help inform site design strategies to improve both economic and ecological value during development of mapped properties.

For lands identified as *both* highly developable *and* important as green infrastructure, we’ve identified **best stewardship practices** that can be used during development to protect valuable natural

functions and maintain the connectivity of larger landscape systems across property boundaries. To encourage development projects of any scale to integrate these best stewardship practices where appropriate, we are proposing a number of **incentives**, which include expedited permitting, low interest rate loans, tax benefits and land trades.

Incentives will be available through the **Developer Certification Program** for projects that follow the requirements of the Developer Certification for Incentives. These handbooks guide participants in using the Landscape Suitability Map to select stewardship practices most applicable for their projects. The expectation is that developers wanting to take advantage of incentives must first be certified through this program. The following document and the zone handbooks describe the practices and methods that should be used to become eligible for financial and procedural incentives to support your development project.

The primary purpose of the maps is to inform and encourage consideration of functional land features that extend beyond the boundaries of a single ownership parcel. For this reason, eligible projects include any development proposed on parcels with mapped GI features. Parcels in areas identified as highly suitable for development, but with no notable green infrastructure functions, will not be eligible for incentives. However, incentives may be requested if 'like-kind' trades are done, and land is set aside outside the project area, and within the same greater watershed, in either a conservation easement or with a deed restriction. Community projects may also be supported through the incentive program for the designation of a trail, park, greenway, or other open space zone that crosses multiple property boundaries.

YOUR COMMENTS AND SUGGESTIONS – This project is a work in progress and we welcome your thoughts about the Homer Landscape Suitability Map, best stewardship practices, incentives, and the Developers Certification Program. Your input is needed to make sure this project will be relevant and useful to citizens, land managers, and developers of Homer. Feel free to share this information with your friends and neighbors. For your convenience we have included a feedback form in this booklet.

Please provide comments to:

Tara Schmidt, District Manager
Homer Soil and Water
Conservation Service
4014 Lake Street
Homer, AK 99603

tara@homerswcd.org
907-235-8177 ex 5
907-235-2364 fax

Eligibility Guidelines

General Instructions

To become eligible for incentives, any project with one or more Green Infrastructure features anywhere on the property, according to the Landscape Suitability Zone Maps and on-site demarcation, are required to follow the guidelines in the All Sites section below, and in each of the Zone applicable to the property.

Each Zone contains Prerequisite items and Optional Credit items. Eligible projects will be required to fulfill all prerequisites and 4 credits in the **All Sites** section. Eligible projects will also be required to fulfill all prerequisites and the minimum number of credits noted for each zone within the eligible GI zone. This will assure the minimum design standards required to preserve GI function, while allowing the flexibility necessary to meet project design goals. **There is a checklist at the end of the Booklet.**

In many cases, prerequisites and/or credits are similar or complementary in one or more zone types. Therefore if your property contains more than one GI zone, multiple requirements or credits may be satisfied by the same design consideration. In other cases, there may be more prerequisites and/or credits for properties with multiple zone types than for those with fewer zone types present. In any case, all prerequisites and at least 3 credits must be met for each zone type on the property.

Compliance can always be met in one of two ways, either by integrating GI functions into the site plan, or by setting aside areas delineated with GI features in the Zone Maps and on-site demarcation. Techniques for integrating GI functions are described in the Zone Booklets and Low Impact Development supplements available from the incentives manager. This option usually allows more land area to be developed and will often make a development more valuable or less expensive to develop. Setting aside GI features can be done with a conservation easement or replat with deed restrictions on the GI

parcel. The boundaries of any such set-aside should be negotiated with the incentives manager.

As this program is still under development, innovative solutions to meeting the intent of preserving the mapped GI function will always be considered by the incentives manager. Like-kind trades to preserve similar GI functions on property off-site, but within the same general watershed (see map), will also be considered.

Submission Requirements

Step One: Determine the areas of Green Infrastructure that intersect the property.

Using the four 'Zone Maps', locate the property that is proposed for development and note which zones intersect any portion of the parcel. For additional information, each 'Zone Map' has a number of sub-maps that describe land features in more detail, such as slopes, watersheds, wetlands, drainages, viewsheds, trails, etc. These submaps can be used to identify specific valuable features that may be present on your site. Please refer to the Eligibility Guidelines section below.

Step Two: Map or get an on-site delineation of GI land features. The current maps were created based 'remote sensing' data created from aerial images, radar scanning, or satellite imagery, and from field collected data. The maps are only as accurate as the original information, and are current for the date that the data was collected. For this reason, an on-site delineation of actual GI features should be done to verify mapped features and delineate boundaries more precisely. This can be done by the certifying agency (SWCD), or documented by the owner or developer through a site plan and accompanying photographs. It will sometimes be the case that a property proves to have no eligible GI lands and therefore does not qualify for incentives.

Step Three: Integrate or Preserve.

To certify your development, you may either integrate your development plan with the GI features by following the Development Certification requirements in the handbooks for your GI Zone(s), or you may certify your development by simply setting aside the GI portion of your property entirely. You may do this by placing a conservation easement on the portions of the property delineated with GI Zones, or you may subdivide the property and place a deed restriction on the GI parcel (this simply requires that any development on that parcel must follow the certification requirements in the appropriate GI Zone Handbook, and does not otherwise restrict future development).

Step Four: Prepare a certified development plan.

After determining which GI Zones the property contains and what specific landscape features to preserve and protect, complete the appropriate 'GI Zone' checklist and required submissions described below and in the appropriate GI handbooks. All checklist items will specify what to consider in the development plan and the documentation to submit to meet the requirement. In some cases submittals will include lists or letters, but in most cases there will be something that you should consider when laying out your site development plan. See below for more information on how to use the checklists and the required and optional points.

To standardize the submissions, four site plans or maps are required for project eligibility. In many cases these are plans and maps that are already required for development submittals such as Homer zoning permit applications, or Army Corps permits, etc. Other site information can be found in one of the Landscape Suitability submaps. It is not necessary to create separate plans for GI certification if the information requested is clearly identified in other plan pages prepared for other submissions.

All projects must submit at minimum the 4 plans described below. Additional information may be requested based on the points that are selected to qualify the project. The plans should clearly show all actions taken to preserve the landscape functions as determined by the Suitability map and selected credits.

Site Analysis Plan

This map should show existing pre-development land characteristics, including:

- Existing structures and roads/driveways
- Soil types from NRCS, Suitability Map or Geotech report
- Slopes on site, including tops of slopes, toes of slopes, high points and low points, or other notable slope break-lines.
- Drainage channels and directions.
- Drainage features, including ditches, creeks, swales, wetlands, etc, either wet or dry.
- Vegetation communities such as spruce forest, birch forest, mixed forest, willow or alder scrub, open grassland, low shrubs and mosses. These can be depicted in general areas or clumps according to types depicted on the Suitability Map vegetation map.
- Existing trees or areas of trees over 6 inches in diameter. Map all trees on the property line or immediately adjacent to property line on the neighboring property.
- Map any existing trails on site or connecting along any property line.

For more information, please refer to the Draft Pre-design Site Assessment Checklist in the Sustainable Sites Initiative Standards & Guidelines: Preliminary Report.

Most of the necessary information and guidance will also be available from the City of Homer Planning & Zoning office or the Homer Soil & Water Conservation District office, including aerial photographs and other maps referred to in this booklet.

Site Context Map

This map will show how your property fits into the surrounding context. It should include an area at least as large as the extent of the watersheds that intersect the property shown on the Small Watersheds Suitability Map. Most of this information can be generated directly from Suitability Map submaps by the certification manager or online.

This map should include:

- General drainage patterns in the surrounding area. Make note what areas drain to your site, and where any runoff from your site drains to.
- General vegetation types such as forest, meadow, cultivated/mown lands. This can most often be derived directly from the Suitability Map Vegetation Map.
- Trails in the surrounding area. Mark the trail with any known destination points outside the map area.
- Roads within the mapped area, with surface type and general width.

Development Site Plan.

This plan can be used for the City of Homer Zoning Permit, Drainage Plan and for part of the submittals that may be required by the Army Corps of Engineers and others.. This plan should be created in consideration of the guidelines in the GI Zone booklets.

This plan should show the proposed development, including:

- Location of utilities (trenches and drains)
- Driveways
- Buildings
- Proposed garden/mowed areas
- Areas of cut and fill, with quantities or depths from native ground.
- Drainage plan (direction of drainage, swales, ditches after development)
- Trails
- Any key connections to GI features beyond your property line
- Any other key element determined by credits being pursued

Construction Plan

This plan is intended to prevent disturbance of more area than is necessary for site development and construction. It will include demolition/clearing and staging plan as well as erosion control measures. This should be prepared by or with your contractor, or should be part of your bid package when hiring a contractor. This plan can also be used for the City of Homer Storm Water Plan submission and/or a required EPA SWPPP.

This should include:

- Structures to be removed
- Trees to be removed and trees to be preserved
- Protective fencing or staking delineating vegetation or other sensitive areas not to be disturbed.
- Silt fencing or other construction erosion control measures
- Staging area. This is where construction equipment and delivered materials will be stored on site (this is where you will stack lumber, gravel, soil, piping, sheetrock, etc.)
- Extent of grading
- Areas to be re-vegetated for erosion control.
- Any other post-construction erosion control measures such as straw blankets or wattles.

All Sites

4 credits required

Prerequisites

A - P1	Do not plant any invasive plant species
Prerequisite	

Get a list of local invasive species and species of concern from the Homer Soil and Water Conservation District. Ensure none of these plants or their seeds are included in any planting or seed mix – including erosion control seeding.

Submission: A list of plants and seeding mixes to be used and their source.

A – P2	Meet all construction erosion control requirements in the City of Homer Standards for a Development Activity Plan (DAP) for any size development, and meet EPA requirements applicable to the site
Prerequisite	

Construction activities can create increased stormwater runoff. The bare and disturbed soils are likely to be eroded, negatively impacting local drainages, wetlands and water bodies. All erosion control such as silt fencing, straw wattles, and temporary impoundment areas must be in place before any grading or trenching occurs. If the site is cleared of vegetation, the erosion control must be in place immediately after clearing. Construction erosion control must be inspected at least monthly and after significant storm events to ensure it is still in place and working properly. Inspections can be the responsibility of the contractor, owner or anyone else familiar with the control measures.

If grading more than an acre a Notice of Intent is required to be filed with the EPA. The EPA also requires the preparation of a Storm Water Pollution Prevention Plan (SWPPP) for project of this size to protect the area during construction activities. (Note: The City of Homer also requires a post-construction Storm Water Plan (SWP) for projects of a certain size. This requirement applies to post-construction, and is not intended to control construction activities like the DAP or SWPPP.)

After the site is graded, erosion control seeding should be planted immediately, and/or erosion blankets should be placed on bare slopes according to manufacturers specifications. If the site is being constructed in phases it is important to stage

erosion control accordingly and install temporary measures when slopes are to be undisturbed for more than a month.

Submission: A construction plan that includes construction storm water and erosion control measures. Specification or installation details of erosion control measures such as straw wattle, erosion control fencing, etc. The seed mix and source of any erosion control mix. A copy of the DAP and/or SWPPP. The city inspector must be notified when erosion control is in place and either before or on the first day of construction; advanced notice is preferable if a staging date is set.

Resources:

*City of Homer Zoning Code – DAP, SWP
Environmental Protection Agency - SWPPP*

A – P3	Meet all requirements for long term stormwater control and mitigation as specified by the City of Homer SWP and the EPA
Prerequisite	

This requirement is simply a restatement of City of Homer Zoning Code and EPA regulations and applies only to projects of the type described by the applicable section of HCC and/or EPA regulations. Please refer to the Homer Stormwater Manual for more information on integrated stormwater management and runoff calculation techniques.

Submission: a copy of the project Storm Water Plan (development plan with permanent post-construction stormwater management features clearly demarcated) and appropriate sections or details of stormwater management elements along with calculations of pre- and post-runoff volumes.

A – P4	Do not grade (cut or fill) within drip line of trees on neighboring properties, trees within one foot of property line or trees to be preserved (except for internal boundaries that are part of a multi-parcel development plan).
Prerequisite	

Any trees on the property line or immediately adjacent to the property line will have roots that cross into your property. It is important not to disturb the root zone of these trees, and can be a violation of City Code by negatively affecting the neighboring lot. The area under the extent of the tree branches or canopy (the drip line) is usually considered a good approximation of the extent of primary root systems and should not be disturbed. Disturbance includes fill. Plan a naturalistic grade to these areas to avoid significantly disturbing subsurface hydrology. If any retaining walls are planned near preserved trees or the property line, carefully consult with the contractor and engineer to ensure the required excavation does not disturb or soil on property line or neighbors' property. Most of all, talk to your neighbors and maybe even create a multi-parcel development plan that may work better with existing natural boundaries.

Submission: Construction plan showing extent of grading. If construction is planned close to protected areas and/or driplines, show protective fencing to be installed. If trees are on property line or adjacent property, clearly mark them on the site inventory plan, construction plan and development plan. Photos may also be included.

A – P5	Do not cut or fill right up to the property line
Prerequisite	

Stormwater runoff, soil settling, and potential erosion or slope failure can occur on both cut and fill slopes. For this reason all grading should stop at least 5 feet from the property line, or a distance such that slopes will be less than 1 in 3, to allow for natural processes and stormwater management that will not impact neighboring properties. Avoiding negative impacts to neighboring properties will avoid future conflicts, and is also a requirement of City code.

Submission: Construction plan showing extent of grading and protective fencing if planned. Clearly show any applicable slopes and the direction of drainage at property boundaries.

Credits

4 credits required

A – 1	Scrape and stockpile topsoil and/or vegetation mat for reuse on site or off site.
1 CREDIT	

Topsoil is the top layer of soil that contains organic material. Topsoil is critical for establishment of plants and vegetation as sub-soils are usually poorly draining and have no organic matter. Topsoil takes decades to be formed in Alaska and is often a very thin layer. Therefore, the topsoil and surface vegetation on your site should be considered a valuable amenity. Try to avoid mixing topsoil and subsoil when excavating areas. Take a light pass first with a dozer, scraper or excavator and put aside this soil for future use before excavating to the desired depth. This will improve your plant establishment and erosion control and reduce your cut volume, and will save significant costs for fill and/or final landscaping. Do not stockpile soils in wetlands, drainage paths, or under trees.

Exception: if your site has existing areas of invasive species do not preserve and re-use this soil as topsoil. When possible, surface soils with invasive species and seed stock should be placed at the bottom of any fill areas.

Submission: Construction plan that includes a note requiring the stockpile of topsoil and a demarcation of areas to be scraped and where it should be stored on site. Your contractor will likely help you develop this plan. Provide a copy to excavation contractor.

A - 2	Protect areas not being developed with fencing, flagging or other means to prevent vehicle and equipment traffic on soils to prevent compaction
1 CREDIT	

Soil structure is delicate. Topsoil is a carefully balanced structure of organic material, air and water pore space, microscopic roots, invertebrates, fungi and bacteria. Vehicular traffic, heavy foot traffic, materials storage, etc. can compact soils changing the structure especially the availability of air and water, and the ability of plant roots and other organisms to penetrate the soil. Therefore, areas of the property where existing vegetation is to be preserved, wetlands or drainage ways, or areas where you may want to plant after construction should be protected to preserve the health and function of the soil. This is especially important where there is vegetation and large trees on the property line or on neighboring properties that may be affected by construction activities on your site.

Do not stockpile materials such as lumber, piping, excavated soils, etc in these areas. For smaller sites with few contractors this may be as simple as a construction site plan with protection areas outlined and a quick overview of the site with the contractor at the beginning of site prep. For larger sites and sites that may have multiple contractors, protective fencing, staking or other measures may be required.

Submission: Construction plan with areas to be protected clearly demarcated. On plan or in additional documentation include method for protection such as fencing or staking, and any additional measures proposed such as contractor orientation or proposed supplemental information.

A - 3	Transplant at least 50% of sizeable [see below] shrubs, trees and other plants such as ferns on site for replanting on site.
1 CREDIT	

Germination and growth of desirable species such as ferns, spruce, elderberry and willow is slow in the Homer environment. Many of these species, such as spruce, elderberry and willow can easily be transplanted and even stored for some time. These plants can be used to revegetate for erosion control post grading/construction and either used for informal or formal garden design, reducing landscaping costs and recovery time. Even alders are great screening plants, are fast-growing and are very important in soil building, wildlife habitat, and for erosion control. Existing plants will establish in new location on site quickly since they are used to the soils and climate, and they are free. Have your contractor excavate plants and either transplant them immediately, or store them in an easily reached location on site where they can be watered or cared for until replanting. Flag them prior to site construction and/or work closely with your contractor to choose and transplant specimens.

Submission: Construction plan marked with vegetation to be transplanted and temporary nursery area identified if needed. Flag specimens if needed. Photos of vegetation areas may also be included but are not required.

Note: *'Sizeable' has different meanings on different sites. In this case it means plants and plant communities that are established, but still small enough to transplant. The goal is to preserve native vegetation near where it has naturally established. Work with your certification reviewer or make a reasonable case for your plan.*

A - 4	Mulch or leave as 'nurse' logs, 80% of cleared trees and vegetation on site. Use for erosion control, soil amendment, etc.
1 CREDIT	

Trees and shrubs felled on site are a good source of organic material to use for soil building and erosion control. Top soil is built by decomposing plant material, and this material can help slow and retain rainwater and speed recovery of topsoil on site and in place. After felling trees and stripping logs, and/or clearing brush such as alders, chip or shred branches, leaves and roots on site. You may want to stockpile the shredded material for use after construction. In areas being cleared but not being constructed on leave root-wads in place for soil stability and natural decomposition.

Submission: Construction plan marked with areas where mulch will be spread. After construction, a signed letter or invoice from the contractor or equipment rental company verifying that material was mulched.

A - 5	Collect and retain stormwater from roofs on site with a domestic collection system, downspout sump, and/or install green roof.
1 CREDIT	

Roofs are a significant contributor to a site's impervious cover and therefore to increasing stormwater runoff, especially when concentrated into gutters and downspouts. Install a cistern to collect roof runoff for non-potable or potable use in the house or garden, install a downspout sump or a green roof. When using runoff for indoor use ensure it is properly filtered or treated to ensure it meets health standards.

A green roof or eco-roof significantly captures and reduces roof runoff on low pitched or flat roofs. This can have significant runoff reductions on projects with a high percentage of building coverage. In addition it can increase the insulation value of the roof, prolong the roofs lifespan, and create habitat. There are many commercially available green roof systems for easy and reliable installation, and they have been proven to function well in cold climates with either native grasses, mosses, or sedums.

Submission: Designate on development plan any green roofs, and/or locations of roof downspouts and cistern location(s). Cisterns should be sized to hold roof runoff for at least a 10-year, 2 hour storm event (see Homer Stormwater Manual).

A - 6	Post construction stormwater runoff volume not to exceed pre-development conditions for an undisturbed site. Post construction runoff to be 25% less than pre-development conditions on a previously disturbed or developed site.
1 CREDIT	

Manage all runoff from impervious areas and areas of increased runoff on site so that calculated runoff volume post construction is equal to or less than pre-disturbance runoff volume. Increased stormwater runoff volume degrades drainage ditches, creeks and receiving waters (lake, wetland, bay) quality. In addition increased runoff from developed areas usually has increased levels of pollutants and sediment. And, increased runoff increases the frequency and level of local flooding. Mitigating increased runoff on site can be done with rain gardens, filter strips, swales and basins. Technical specifications are available in the Homer Stormwater Manual, and passive site development techniques (sometimes referred to as LID – Low Impact Development techniques or BMP- Best Management Practices) may be enough to fulfill this credit without needing formal structural measures.

Submission: Calculations showing pre and post development runoff quantities and net change. Development Site Plan should clearly demarcate stormwater management areas and volumes. Cross-sections of stormwater management elements such as rain gardens and basins must accompany plan.

A - 7	Use over 90% native plants (by cover) in landscape design.
1 CREDIT	

Native plants are well adapted to the weather and soil in Homer, and they are important for habitat and stormwater management. There are many attractive native plants such as ferns, crooked stem, elderberry, willows, birch, dogwood, rose, cranberry, blueberry that can be planted in more formal arrangements and gardens. The % cover area excludes areas used for vegetable gardens or fruit trees as part of the planting area.

Submission: Development Plan and/or planting plan that shows and calls out planted species, noting areas of native and non-native plantings.

A - 8	Innovation Credit
1 CREDIT	

This credit is to recognize development or design that went above and beyond the requirements of the Suitability Map Developer Guidelines requirements to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites within the specific GI Zone areas of compliance.

This credit can be applied for once for each GI Zone if the innovation can be shown to accomplish the stated intentions for that particular zone type.

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

A - 9	Agency personnel or specialist consultant
1 CREDIT	

There are many specialists available for reference or to use as a professional consultant for a project. If you hire a consultant or get a consultation from a specialist for assistance in designing your site beyond what is required by code or law, you can receive this credit point. Specialists can include Landscape Architects familiar with native plants and habitat restoration, trail design specialists trained in Sustainable Trail Construction through Alaska Trails or other National organization, natural resource conservation personnel, biologists and ecologists, and other 'ists' who can consult on specific environmental conditions being considered on the site.

This credit can be applied for once for each GI Zone.

Submission: Documentation or report created by the consultant for the project, or a signed letter explaining the consultants' assistance that includes contact information for the consultant.

A - 10	Plat, subdivide or replat along ecological boundaries
1 CREDIT	

The original property divisions across the country were located on a grid pattern that did not refer to local conditions of topography, hydrology or vegetation. This has often created pitfalls for developers and property owners, making a property less developable due to disconnected areas of suitable land, causes inappropriate filling of drainages, leftover slivers of land where a road must follow natural contours, etc.

As property boundaries are modified, this credit encourages owners to locate new property lines, or modify existing ones, to fall on natural boundaries. In this way, drainage setbacks, for example, can be made to correspond to required building setbacks from property lines, buffers along property lines can create both privacy and habitat connectivity, and etc.

Any platting action that locates or relocates a property line to better accommodate an identifiable natural or ecological boundary qualifies for this credit.

Submission: Recorded plat showing new property boundary. Site Analysis Map identifying and supporting the existence of the relevant natural boundary.

Slopes and Soils

3 credits required

Prerequisites

S - P1	Create/obtain a slope map of your property
Prerequisite	

Knowing where the slope is, and how it changes is important for you, your designer and contractor(s). At minimum create a plan that calls out slope percent(s) and direction(s) and shows general slope breaks: top of slope, bottom of slope, high points, low points, other transitions in slope. For more involved and sloped sites you may want/need a topographic survey to truly understand the slope variances to design your driveways, foundations, utility connections, etc.

Note that there may be data available on your slope topography through published or historical maps. The City of Homer can provide fairly accurate 5 foot contours from a 2004 LiDAR survey, and the Suitability Map Slope submap is a good starting point, but slopes should be verified through an on site survey (formal or informal, as needed).

Average slopes across intervals of at least 10 feet are appropriate to neglect small variations in topography. Slope percent classes should be identified as : 0 to 4, 4 to 8, 8 to 15, 15 to 20, 20 to 30, 30 to 40, 40 and more.

Submission: Slope plan or topographic plan with slope percents labeled.

S – P2	Determine soil type(s) on the site
Prerequisite	

Determine what soils are on your site by looking at the NRCS soils map, available online or in the Suitability Map Soils submap. Also look at the associated soils descriptions as they pertain to suitability for roads, driveways, foundations and septic leech fields. Note if there are any slope related concerns, as soil stability and suitability at a particular slope will vary greatly between soil types. Also note the ‘drainage class’ of your soil, which will help identify approaches to handling site hydrology.

A soils map will help you understand the potential construction concerns and costs associated with construction in the given soil type, and may help guide site layout and location of structures. Infiltration descriptions of the different soil types on your site can determine what stormwater management options are viable and where. It is a good idea to dig a test hole to confirm the soil type and depth of margins on site. Look at and record the depth of the different soil horizons with your contactor and/or engineer. This is a common service most contractors provide prior to any excavation work. If you are installing septic, request this information from the engineer who performs your required soil testing.

Submission: Soils map of project site and/or print out of description of site soil types and construction suitability.

S – P3	Limit disturbance of steep slopes
Prerequisite	

Soil structure and associated vegetation cover on and around stable steeper slopes is developed over time. This balance may be very close to the maximum stable slope possible, and any disturbance can cause local and/or regional instability or collapse. The areas mapped in this GI zone have been identified as sensitive for these reasons.

Do not disturb slopes over 40%, limit disturbance of slopes over 30% to 5% of their area in plan, and limit disturbance of slopes over 20% to less than 15% of their area in plan. Alternatively, create engineered retaining walls, gabian stacks or foundation walls to create a buildable area while maintaining native surface contours above or below the retaining walls, OR provide certification from a licensed engineer that any proposed slope’s Factor of Safety will be at least 1.5.

Isolated relief, or areas of steep slopes less than 400 square feet are exempt from this prerequisite.

Submission: Slope plan or topographic plan with slope percents labeled, areas of disturbance noted and retaining walls identified. Provide engineering certification if retaining walls over 3 feet high are to be constructed.

S – P4	Setback all structures a distance equivalent to at least the 50-year erosion rate on shoreline lots, according to the 2003 shoreline erosion study, and 40 feet from escarpments and areas of active erosion
Prerequisite	

Shoreline erosion is a natural process in Homer, and historical aerial data has recently allowed the erosion rates to be accurately measured. Controlling bluff erosion is a costly endeavor, and inappropriate private development can lead to public cost. Setting back structures a reasonable distance is the best way to protect them from loss.

Use the Suitability Map Shoreline Erosion map or City of Homer data to identify the 30-year erosion line, and plan all structures to be built behind this line. Structures on skids that are design to be moved are exempt from this prerequisite. In non-coastal areas, identify a 40-foot setback from all areas of active erosion and 'escarpment' soil types from the NRCS soils map or Suitability Map Soils submap.

Submission: Development plan showing all structures and the 30-year erosion boundary and/or 40-foot setback.

Credits

3 credits required

S - 1	Limit grading to construction areas per buffer table
1 CREDIT	

Soil structure and associated vegetation cover is established over many decades. The balance of compaction and air and water space creates a relatively stable structure on suitable construction sites. Disturbance of this structure can cause changes in surface and subsurface water flows, ultimately limiting future vegetation growth, and possibly compromising stability of sloped areas. By limiting the amount of soil disturbed to the immediate area needed for construction and trench creation one insures a limited change in overall site soil structure.

Buffer Table:

To obtain this credit, limit all site grading to within:

40 feet from building perimeter

15 feet beyond roadway edge/curbs

10 feet beyond utility trenches and parking surfaces

Submission: Construction plan clearly showing the extent of grading and any protective fencing or staking planned. Provide annotated plan to contractor.

S - 2	Balance cut and fill on site.
1 CREDIT	

Keep all soils on site to eliminate the import or export of soils to and from the site. Try to minimize unnecessary disturbance of the site with fill outside the constructed areas, and scrape and replace topsoil and as much native vegetation as possible on any filled areas. Balancing cut and fill will encourage minimizing excavation in the first place, reduce costs and will also avoid contributing to inappropriate disposal of fill soils elsewhere in the City.

Note that this credit will not be possible in many cases. Often it is the most appropriate and cost effective to balance cut and fill, but the emphasis of any development plan should be to minimize disturbance of native conditions in sensitive areas. Other credits are available for these situations.

Submission: Grading plan and calculations showing area and depth excavated or filled and total cubic yards (this includes building and road foundations and utility trenches). Show areas of fill with calculations matching the amount of cut, a compaction variable may be included. Show total areas of disturbance and areas of buildings, driveways and roads.

S - 3	Maintain native contours within 5 vertical feet (10 vertical feet for roads), and do not create slopes more than 1 in 4 except for retaining walls
1 CREDIT	

Create a development plan that modifies native contours by no more than 5 vertical feet (10 vertical feet for roads) except for areas with an engineered retaining wall or foundation. Create no slopes over 1 in 4.

Submission: Grading plan, pre-construction and proposed post-construction contours showing all areas modified, annotated with slopes and depths of excavation and fill.

S - 4	Create naturalistic slopes
1 CREDIT	

Do not create geometric steep slope of 3:1 for more than a 3 foot rise. When grading the site and creating cut and fill slopes do not create geometric steep slope with harsh transitions to natural slopes. The geometric slope and abrupt transitions create areas prone to erosion, failure, and can be an eyesore. Consider varying slope profile and steepness, always reduce slope and create slow transition between top and bottom of slope and existing or pad grade. Varying slope will create a naturalistic appearance, slow runoff and limit areas of stormwater erosion. If a slope were to fail, the variability in a naturalistic slope can limit the extent of failure. Keep slope less than 4:1 and where space permits try to vary slope between 8: and 5:1 slope. Plant slopes with a mix of native grasses and shrubs to reduce erosion and stabilize the slope.

Submission: Development plan with contour lines, and or elevation points at top of slope and bottom of slope and on grid or at appropriate slope breaks or changes.

S - 5	Avoid steep slopes
1 CREDIT	

Limit construction to areas of the site with less than 15% slope

Isolated relief, and areas of steep slopes less than 400 square feet are exempt from this prerequisite.

Submission: Development plan with areas of slope over 15% identified. If this information is not provided by a licensed surveyor, slope information will be verified with the City of Homer LiDAR slope map.

S – 6	Setback all structures a distance equivalent to at least the 100-year erosion rate on shoreline lots, according to the 2003 shoreline erosion study, and 100 feet from escarpments and areas of active erosion
1 CREDIT	

Shoreline, bluff and cliff erosion is a natural process in Homer, and historical aerial data has recently allowed the erosion rates to be accurately measured. Setting back structures a distance that recognizes a building’s lifespan is the best way to protect them from loss.

Use the Suitability Map Shoreline Erosion map or City of Homer data to identify the 100-year erosion line, and plan all inhabitable structures and structures with foundations to be built behind this line. In non-coastal areas, identify a 100-foot setback from all areas of active erosion and ‘escarpment’ soil types from the NRCS soils map or Suitability Map Soils submap.

Submission: Development plan showing all structures and the 100-year erosion boundary and/or 100 foot setback.

S - 7	Buffer steep slopes
1-3 CREDITS	

Steep slopes are susceptible to destabilization due to changes to the conditions above and below the slopes. Drainage and stormwater management is also more critical on sloping terrain, as higher flow rates carry more energy which leads to higher rates of erosion and scouring than the same flow quantities on shallow slopes. Vegetation and soil structure on and around steep slopes help to control flows and hold slopes together.

To be eligible for this credit, site all buildings and do not disturb areas of slopes or buffer zones around the top or bottom boundaries of slopes according to the following table:

Slope Disturbance Buffer credits:

CREDITS	30% to 40% slope	40% slope and over
1 CREDIT	none	35 foot vegetated buffer
2 CREDIT	20 foot vegetated buffer	50 foot vegetated buffer
3 CREDIT	40 foot + vegetated buffer	100 foot + vegetated buffer

Note – Areas of isolated relief, or areas of steep slopes less than 400 square feet are exempt from these buffers.

Exemptions and Alternatives: Areas below slopes which are stabilized with an engineered retaining wall, gabion stack or foundation wall, if the remaining slope is fully vegetated or otherwise permanently stabilized.

Submission: Development plan with areas of slope over 30% and over 40% identified. If this information is not provided by a licensed surveyor, slope information will be verified with the City of Homer LiDAR slope map. If retaining structures are used, certification by a licensed engineer and annotation on development plan of locations and heights.

S - 8	Conservation easement or deed restriction on all slopes over 35%
2 CREDITS	

The conservation easement must restrict future construction and clearing on all slopes over 35% on the property, except for possible light impact trails, engineered retaining walls and actions necessary to protect developed property.

Submission: A signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement. Copy of any platting documents.

S - 9	Innovation Credit
1 CREDITS	

This credit is to recognize development or design that went above and beyond the requirements of the Suitability Map Developer Guidelines for Slopes and Soils to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

Wetlands and Drainages

3 credits required

Prerequisites

W – P1	Map all wetlands, creeks, drainages or other water features on site. Obtain ACOE-approved wetland delineation.
Prerequisite	

During site analysis and inventory carefully map all drainages, seeps, wetlands and other surface water features. Note that not all features will be wet but can be determined by topographic relief, vegetation and/or soils conditions. Your surveyor can help by either performing a full topographic survey and/or doing a rudimentary analysis, or you may use the topographic map available from the City’s 2004 LiDAR.

Look carefully at the current wetlands map and obtain a Corps or other professional wetland delineation of the site. Note that wetlands are not always obvious as surface water but can be forested and/or have heavy shrub cover. In addition many sites have changed over the years due to road construction and improvements, as well as neighboring construction resulting in the creation of new wetlands or existing wetlands no longer being wet. The available wetlands maps, on which this zone map was based, are not definitive at all scales and wetlands may be over- or under-mapped in some areas. The Corps has a list of consultants that can assist you with determining if there are wetlands on your site.

Submission: A site Inventory plan/map with all water features, drainages, etc. clearly drawn and annotated. A copy of a wetland determination and/or acceptance letter of determination from the Corps of Engineers.

W – P2	Map general location of creeks, drainages and wetlands within 100’ of property (as possible without trespass) noting direction of drainage.
Prerequisite	

Look at suitability map, local wetlands map, and aerials, as well as noting what can be seen from your property or adjacent streets or trails. Inspect neighboring properties if possible with the owners permission.

Submission: Site context map/plan with estimated location of above clearly marked and annotated.

W – P3	No disturbance or fill in 90% of existing wetlands (see exemptions below), creeks or drainages, OR restore an equivalent area of similar and connected wetland or creek adjacent to filled wetlands. Prevent disturbance due to construction activities near wetlands and creeks.
Prerequisite	

While wetlands are abundant in Alaska, they are most important in developed and developing areas for water quality, erosions control, stormwater management and habitat. Wetlands outside developed areas do not replace these local functions. Because much of the soil in and around Homer has low permeability, and with a long winter accumulation of snow and resultant snowmelt, wetlands are crucial in slowing, filtering and infiltrating water, reducing flooding, and creating a hospitable growing environment for trees, shrubs and other vegetation. Wetlands are also important for local and migrating wildlife. When impacting any wetlands or creeks you will have to obtain a permit from the Army Corps of Engineers prior to any disturbance.

Some areas of Discharge Slope wetlands and wetlands ranked 1 or 2 in the Landscape Suitability - Wetland submap may be exempt from this requirement at the discretion of the incentive manager.

Boardwalks and piling structures that do not otherwise disturb the ground are not considered disturbance or fill in wetlands. A construction plan using these methods must be carefully planned to avoid disturbance or compaction by the equipment installing the pilings.

If developing near wetlands the following actions must be taken to limit the impact.

- Keep disturbances at least 10 feet from the outer edge of a wetland. Mark this boundary with staking or flagging prior to any construction or clearing activity.
- Do not divide or bisect a wetland or wetland complex with linear features (utilities, roads, driveways) unless surface conditions will be completely restored or a subsurface connection across the linear disturbance will be installed (see next).
- If a driveway or road traverses a wetland, place at least one peat and gravel filled culvert under the road to connect the two areas. The culvert should have open aggregate gravel subsurface support to reduce heaving. The culvert should be filled with a peat mix and have soil contact on both ends at least half the height of the culvert. This will create connection of saturated soils between the two sides of the driveway. Allow for air space in the culvert to allow for soil expansion during freezing conditions. Do not ditch and create an open culvert.

If you are impacting a stream or major drainage channel these are some of the actions you must take:

- Re-route the stream around the disturbance in a naturalistic manner. The created stream reach should have a natural meander and stream channel side slope. Have an engineer or Landscape Architect design the stream and calculate appropriate channel size to ensure channel stability and water conveyance to avoid flooding.
- When crossing the stream with a road or driveway cross the channel as close to perpendicular as possible.
- Oversize any culverts. Place a culvert under the road at least 50% larger than the size called for in minimum

engineering calculations. Place the bottom of the culvert below the bottom of the creek channel bed and fill the culvert bottom with native soil and gravel to create a seamless soil bed connection. The culvert should be placed on a stable gravel bed to reduce heaving and allow for subsurface flows during freezing temperatures.

- If the elevation drop between the outfall and the creek bed channel bottom is significant between opposite sides of the road, create a pool at the culvert outfall to eliminate scouring and dissipate the energy of water exiting the culvert. Limit the slope of the culvert to keep water velocities low.

Submission: Wetland delineation and construction plan clearly indicating areas of impact, if any. Cross sections of all impacted area showing constructed elements including roads, foundations, etc. Dimensioned sections of any culverts and constructed creek channels or wetlands. Copy of Army Corps of Engineers Permit if wetlands are to be dredged or filled. If pilings or piers are proposed, a Construction plan with staging and equipment areas clearly delineated. Signed note acknowledging receipt of construction plan by contractor.

Credits

3 credits required

W - 1	No ditches on property
2 CREDITS	

Except were required by City of Homer, such as roadside drainage ditches (these are usually within the City right-of-way), there shall be no ditches on the property. Ditches increase the concentration of water, and depending on grade, the velocity of water. Ditches can also change site hydrology and sub surface water flows. While ditches are often installed to create more developable area on a wet property, it is not appropriate in this GI zone, and other techniques should be used to create a developable site or development should be done on another part of the property.

If surface runoff is a concern around buildings, roads and driveways, a shallow vegetated swale is recommended to divert surface runoff without increasing flow velocities. If concentrated water runoff already exists on the site then the creation of a meandering stream channel is recommended to slow runoff. Careful topography, channel materials, check dams and vegetation must be considered to limit scour and erosion. A creek can be an aesthetic amenity and will be counted toward City landscaping and stormwater requirements.

Submissions: Development plan clearly showing all water conveyance systems. If creeks or swales are planned, show a cross section and a longitudinal section or spot elevations that specify the slope of the channel bottom.

W - 2	Create and maintain buffers and building setbacks from wetlands, creeks and significant drainages per chart below.
1-3 CREDIT	

The health and continued function of a wetland, creek or drainage is dependent on the adjacent upland area. The uplands and vegetation slow and filter stormwater runoff. The transition zone between upland and wetland is a rich diverse habitat area. Creeks often have a distinct riparian zone including a diversity of trees and shrubs. Therefore built structures, including roads and driveways should be set back from any wetlands and creeks to ensure the runoff from the structure is slowed and filtered. Undisturbed riparian zones and thick tall grasses or mosses are most beneficial. Therefore do not to mow the vegetation in the riparian zone or vegetated buffer. If access is desired consider a boardwalk on helical piers.

Some areas of Discharge Slope wetlands and wetlands ranked 1 or 2 in the Landscape Suitability - Wetland submap may be exempt from this credit at the discretion of the incentive manager.

Buffer Credit Table:

Vegetated Buffers and building setbacks credits:

1 CREDIT	25 foot vegetated buffer
2 CREDIT	50 foot vegetated buffer
3 CREDIT	100 foot + vegetated buffer

Note – Boardwalks on helical piers to gain access to wetlands or creek edges are exempted from the setback restrictions.

Submission: Wetland delineation and setback line clearly showing building setbacks and buffers. Setback must be staked or flagged on site. Include setback in any required construction plan provided to contractors.

Resources:

On the River, a publication from the Kenai River Center and the Kenai Watershed Forum for guidelines and suggestions for designing around and preserving buffers. While this book is focused on river edge properties, the same principles and concerns hold true for wetlands and creeks.

W - 3	Place a conservation easement around wetlands or creeks including the buffer area and building setback, OR if an ACOE Individual Permit is required, include wetland and creek buffers as part of that permit.
1 CREDIT	

The conservation easement must restrict future construction within the buffer and setback area above, except for possible light impact trails and helical pier boardwalks. The conservation easement must ensure funding for long term maintenance of the wetland, creek and buffer areas.

Submission: A signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement. Copy of all platting documents. Army Corps of Engineers permit.

W - 4	If a Stormwater Plan is required by the City of Homer, design the site to accommodate required stormwater runoff detention in newly-created wetlands and/or riparian areas integrated with the site stormwater plan.
1 CREDIT	

Wetlands and riparian areas are critical for stormwater management and wildlife habitat, as described above. Particularly when impacts to existing wetlands are unavoidable in a project, stormwater control with a constructed wetland is the best way to offset these impacts as well as create additional habitat benefits. It can be especially valuable to restore and protect degraded systems that are not directly impacted by the development.

This credit is not available if a stormwater plan is not implemented for the project, but can be used if stormwater control measures are used on site for neighboring properties under a joint Stormwater Management Agreement submitted to the City of EPA.

Submission: Development plan with area of created or restored wetlands or riparian areas clearly demarcated. Details, sections, and planting strategies for proposed created or restored areas.

W - 5	Innovation Credit
2 CREDITS	

This credit is to recognize development or design that goes above and beyond the requirements of the Suitability Map Developer Guidelines for Wetlands and Drainages to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

Wildlife Habitat

3 credits required

Wildlife habitat is the most difficult to map and even to identify on site. For this reason, most of the credits below are quite subjective and open to interpretation. Please take the time to read the background information referred to in each credit, to consider the potential of your site for habitat value, and make your best case for how your development plan creates or preserves significant areas of habitat in the ways described. It will be the responsibility of the applicant to make the case for eligibility for each credit. Recommendations from a professional biologist or wildlife specialist will be highly valued in determining eligibility for these credits.

Prerequisites

H – P1	Determine areas of valuable habitat on the site
Prerequisite	

Wildlife need food and water, but also the ability to get to and from food and water and areas for breeding and raising young. There is a great deal of habitat value on most properties in Homer, but much of it exists in edge zones and buffers that can become degraded when developed. Many species prefer to use open or edge areas if they have somewhere to quickly and easily retreat to, meaning that human habitat and animal habitat are not necessarily incompatible.

Look at your site for possible wildlife habitat features. Are there willow thickets that moose might browse, are there alder and elderberry shrubs that birds might feed and nest in? Is there clean accessible water in a creek or wetland? Are there clearly used wildlife trails on your property? Are there known occurrences of wildlife on the property? Ask the neighbors or local wildlife personnel.

Submission: Site inventory plan and context map with vegetation zones mapped and called out. Wildlife trails, and or known key elements or locations. List of species known to occur on the site or in the neighborhood.

Credits

3 credits required

H - 1	Preserve and protect areas or characteristics of known habitat value within this on-site delineated GI Zone of the property
1 CREDIT	

Areas or characteristics to consider include willow scrub, wetlands, ponds and creeks, alder and tree thickets. Preserve these areas and elements with the appropriate buffers. Plan your site to reduce impacts and possible confrontations. Preserving a willow thicket away from the house but in view from a window facilitates safe viewing of moose, a willow thicket right next to your front or back door may result in a hungry moose defending his or her right to eat and preventing you from getting in or out of your house. Tree and scrub thickets next to a meadow or mown areas can increase the habitat value for songbirds and cranes. Look at the larger context map and preserve connections and corridors to habitat beyond your property line. Many habitat areas inadvertently become ‘islands’ with little or no connections to each other. Preserving access and connections are critical. Look at connection of tree canopies and shrub lines, creeks and wetlands, and preserve these connections through your property. Preserve existing wildlife trails and their natural buffers and cover vegetation.

Submission: Development plan that clearly shows preserved vegetation and elements of habitat value and access and connections to and through your property. List of target species.

H - 2	Limit development impacts
1 CREDIT	

Keep the house compact and outbuildings close by. Large distances between outbuildings, driveway, house and other features essentially disconnects habitat areas, and creates a larger impact footprint. While your house may be small, the addition of all the other spread out elements will result in the same habitat impacts as a large sprawling house.

‘Compactness’ will be determined on a case-by-case basis for your specific area by the certification manager.

Submission: Development plan that clearly shows the extent of development and locations of outbuildings. Note the square feet of building footprints, driveway and parking, lawn and other constructed landscapes, and lot size. Other supporting evidence may include aerial photos of neighboring lots with comparative areas noted.

Resources:

For more guidance on habitat design and preservation
 Kachemak Heritage Land Trust’s “Living in Harmony with Moose,”
 National Wildlife Federation’s Back Yard Habitat program
 National Audubon Society

H - 3	Improve and create habitat on your property
1 CREDIT	

Plant and manage vegetation and buffers that have high wildlife value such as alders and wildflowers for bird habitat, spruce, birch, aspen and willow for bird and moose habitat. Preserve clean water available on site in either in a creek, wetland or pond. Always consider escape routes for all animals and humans, to increase use and avoid negative interactions.

Refer to KHLT’s “Living with Moose,” National Wildlife Federation’s Backyard Habitat program, and the Audubon Society for habitat guidelines and certification. Use caution to ensure you are not attracting bears, refer to The Alaska Audubon Society’s publication “Living in Harmony with Bears” available online or from AK department of Fish and Game.

Submissions: Development plan that shows areas of created habitat including vegetation planted/transplanted and species, water features, etc.

H - 4	Place a conservation easement on habitat and corridor areas
2 CREDITS	

Protect significant areas of existing or restored habitat and corridor from future impacts by placing a conservation easement on the property. Include a clear management plan to ensure future maintenance and management to keep the habitat healthy and high value.

Submission: A signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement. Copy of any platting documents.

H - 5	Institute the recommendations of an agency personnel or specialist consultant
1 CREDITS	

There are many local wildlife specialists available for reference or as professional consultants for a project. Instituting the recommendations of a professional consultant or specialist to create or preserve significant habitat and connectivity in your development plan will automatically qualify for this credit. Qualifying for this credit will usually also qualify you for at least one other credit.

Specialists can include professional Wildlife Biologists, researchers, Landscape Architects or local specialists familiar with local species and habitat.

Submission: Documentation or report created by the consultant for the project, or a signed letter explaining the consultants' assistance that includes contact information for the consultant. Development plan signed by the consultant clearly delineating areas of habitat to be preserved or created, with specifications and list of target species.

H - 6	Create or preserve significant areas or characteristics of moose, raptor, Sandhill crane or shorebird habitat
1 CREDITS	

Moose, Sandhill crane, raptors and shorebirds define Homer for visitor and locals alike. An additional credit is available if habitat creation or preservation is focused on these important local species.

Submission: Development plan that shows areas of created habitat including vegetation planted/transplanted and species, water features, etc. List of target species.

water features, etc. Location and dimensions of any adjoining property habitat areas.

H - 7	Create or preserve a connecting corridor or linear habitat element
1-3 CREDITS	

Connectivity is one of the primary focuses of the Suitability Map project, and is often the most difficult large-scale landscape characteristic to preserve in a small-parcel private ownership situation. This credit is designed to encourage the creation and preservation of habitat that is linear in nature and connects across a parcel, potentially becoming part of a much larger and healthier habitat system.

In your development plan and implementation, create a continuous, uninterrupted habitat corridor that extends at least from one property boundary to the opposite boundary, or continuously along 100% of one property line. If a dedicated habitat or open space area (park, conservation easement, deed-restricted parcel or other established area) exists adjacent to the property, the corridor must connect at least at this point. If no such area exists adjacent to the property, provide supporting testimony for why the corridor is located in the planned area.

Corridor credits will include the following:

1 CREDIT	50 foot wide habitat corridor or 25 ft corridor if at least a 25 ft corridor exists along the adjoining property line
2 CREDITS	75 foot wide habitat corridor
3 CREDITS	150 foot + wide habitat corridor

Submission: Development plan that shows areas of created habitat including vegetation planted/transplanted and species,

H - 8	Minimize light trespass from building and site
1 CREDIT	

Light pollution has large impacts on wildlife and human environment. Light pollution reduces our ability to enjoy stars and northern lights, as well as general sense of place. Lighting can deter or confuse animals. Lighting design can still provide a well lit, safe environment without creating unnecessary light pollution.

All exterior lighting must be directional, directing light downward. Bollard lighting must be directed at appropriate angles to ensure no direct uplighting. Light fixtures on exterior paths, garages, and other areas where high light levels are needed can use motion detectors adjusted to properly activate when a person or vehicle is in the vicinity. Any accent lights for signs and landscape features should be either downlights, or focus beam angled correctly to shine on the sign and eliminate stray light. Interior lighting should be designed to reduce direct focus out of windows.

Submission: Development plan and electrical plan (if applicable) with exterior lighting types called out. Product description of exterior light fixtures. Section drawings for all exterior accent lights that are not downlights clearly showing the cone of illumination and the target element.

H - 9	Innovation Credit
2 CREDITS	

This credit is to recognize development or design that goes above and beyond the requirements of the Suitability Map Developer Guidelines for Wildlife Habitat to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

Trails and Viewsheds

3 credits required

Prerequisites

T – P1	Map on-site and nearby trails or potential trail corridors
Prerequisite	

Consult with City of Homer Planning staff, Parks and Recreation Staff and other local trail advocates to determine any existing, proposed or historic trails or trail corridors on or near the property. Trails mapped in the Suitability Map - Trails subzone map identify all potential trail corridors, proposed trails from the Homer Non-Motorized Trails and Transportation Plan and reported existing or proposed trails. Note the locations of these corridors and discuss the potential of implanting these corridors on your site or alternatives to maintaining those connections.

Note: House Bill H25, sponsored by Rep Paul Seaton and passed during the 2007 congressional session, may be relevant to property owners concerned about liability arising from public use on private property and easements.

Submission: A site inventory Plan and Context map showing trails clearly marked as existing or historic trail and trail corridors on and near the property.

Credits

3 credits required

T - 1	Preserve existing trails on site in current location OR preserve an alternate connection to and through the site to existing trail
2 CREDITS	

Trails are a valuable resource in Homer, allowing for year round activities, and connection to a larger network, even connecting to downtown in some cases. In most areas with an established and well-maintained trail system, property values adjacent or near trails are 5% to 40% higher than comparable properties without this amenity. Many trails are informal and not mapped or protected; many on private property. Preservation and improvement of these trails and their connection can make Homer and your property more valuable and enjoyable.

Preserving the connection in perpetuity is important, especially if the trail is planned for future construction and connections. This will guarantee the access for future tenants and community members. An easement can also be prepared to ensure funding of or source for maintenance of the trail for the long term.

This credit requires only that trails are formalized in the new development plan, construction and maintenance is not required. Provide a trail easement on an existing trail corridor or on an alternate route that connected from and to the other parts of the trail. Easement width must be at least 10 feet if located across the interior of a property, or 20 feet is located along a property line (or 10 feet if at least a 10 foot trail easement exists on the adjoining property). Note: a 20 foot easement is required for the corridor to be considered for maintenance to be taken over by the City of Homer.

Submission: Development Site plan and plat that shows preserved and/or created trails and area plan showing connections to greater trail network (existing or proposed). If applicable, a signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement. Copy of any platting documents. If applicable, a narrative supporting deletion or re-routing of a proposed corridor or existing trail. A signed conservation agreement or a letter stating the intent and interest from the agency agreeing to hold the easement.

T - 2	Improve existing or new trails on site
1 CREDIT	

Formal establishment of a trail with hardening or other improvements is another way to insure the long term access of the trail corridor. This credit requires improvement of a trail, but does not require establishment of a formal trail easement. Trail improvements must be constructed to last a minimum of ten years.

Improve and maintain trail conditions to allow for easy access and way finding; this may include occasional tree/shrub trimming and mowing. Don't forget connections to the trails from roads and sidewalks.

Submission: Development Site plan that shows preserved and/or created trails and connections to greater trail network (existing or proposed). Copy of trail design drawings and construction or materials purchase agreements.

Resources:

Support for trail-building efforts is strong in Homer, and help can be found from such organizations as the Kachemak Nordic Ski Club, City of Homer, Alaska Trails, SNOMADs, and other recreation groups.

T - 3	Improved Trail Construction - Site and construct the trail sustainably
1 CREDIT	

Creating a trail is a great first step, however, the actual design and location of the trail will determine its usability, comfort, and maintenance. The trail must have grades that are easily traversed, and must be sited carefully to limit erosion potential and creation of overly muddy areas, etc. These actions will make the trail useable and easy to maintain. Choose a location for the trail that will clearly differentiate public trail from private residential area; this will increase enjoyment of the trail by visitors and the property owners. Plant trees and shrubs to enforce the boundary and to create visual privacy between buildings and trails. Ensure appropriate visibility on the trail so that users including wildlife avoid conflicts or accidents; create safe escape routes or buffer areas for humans and wildlife. There are a few books in print that have design guidelines for sustainable trail design, but you may want to contact Alaska Trails for their guidance and possible consultation or consultant referral.

Submission: Development plan with trail clearly demarcated and slope of traverse called out. Include trees or shrubs that may create a boundary or buffer. Include details or sections of any improved trail surface, bridges and/or drainage management.

T - 4	Create Trail Destination Improvements
1 CREDIT	

Trails are a great asset for skiing and hiking, but having special locations along a trail can create a sense of destination and reason beyond exercise for using the trail. Consider key areas along the trail, such as a spectacular view spot, a particularly appealing tree or tree grove, a pond or wetland. Create a destination associated with these areas by creating a clearing or amenity just off the trail. Include benches, tables, boardwalk, art and/or signage to highlight the area and invite users.

Submission: Clearly marked area on development plan with note calling out any furnishings or views.

T - 5	Prepare a legal agreement with organization for the long term maintenance of the trails.
1 CREDIT	

There are many stewardship groups in Homer such as the Kachemak Nordic Ski Club. These organizations may be interested and able in maintaining your trail(s) if they connect to a larger trail system that is maintained by them. This type of agreement can assure the maintenance and access of your trails by the Homer public.

Submission: A written and signed agreement from an entity or organization willing to take on the maintenance of the trails, or a letter indicating the intent to take on the management of the trails.

T - 6	Pair trail corridor with wildlife landscape feature or function preservation.
1 CREDIT	

Many of the site functions and elements that are advocated for protection by the Suitability Map can enhance a trail corridor. If you are preserving an area of wetlands or a creek or greenway, include a trail connection to and/or past the element to also qualify for this credit. However be responsible in protection of buffers and setbacks. Keep the trail on the edge of the preserved area or greenway. Wildlife can thrive on the edges of human use areas, but often prefer 'interior' habitats - habitats that have clear and well defined buffers around them. A trail along an edge will cause limited habitat disturbance and may encourage wildlife to use the preserved area, making the trail a more enjoyable experience if wildlife viewing is desired. Edge trails also create better safety zones and escape routes for human and wildlife reducing possible negative interactions.

Submission: Development map showing protected areas, buffers, and other complementary features, and location of trail(s).

T - 7	Preserve trail viewsheds
1 CREDIT	

The larger areas shown on the GI Trail Zone map indicate areas within the immediate viewshed of significant trails in natural areas. Preserving at least the visual impact of the larger environment around these trails is important for maintaining their desirability.

Preserve significant trees and buffers around buildings within the mapped viewshed of these trails. This credit is not intended to otherwise limit development of these areas, and in fact development is encouraged around trails to take the best advantage of the benefits of the trail system. Buffers, preserving large trees that are visible from a trail in summer or winter, or other innovative techniques can be used to qualify for this credit.

Submission: Construction plan and Development plan showing buffers, trees to be preserved, or other methods intended to preserve the experience of the trail system. Stake or flag buffers and/or trees and provide a copy of the development plan to the contractor.

T - 8	Innovation Credit
1 CREDIT	

This credit is to recognize development or design that goes above and beyond the requirements of the Suitability Map Developer Guidelines for Trails and Viewsheds to accomplish the goals of the guidelines. This extra point cannot be used to substitute for any prerequisites

Submission: In writing describe the additional measures proposed and how they will be undertaken, and how this protects the site ecology or specific landscape feature on or off site.

References

This document was prepared based on local knowledge of the area, and on information available in similar reference materials and certification programs. The following are key references recommended for further guidance.

LEED for New Construction & Major Renovations Version 2.2 (LEED NC) available online at www.usgbc.org/leed

LEED for Neighborhood Development Pilot Version (LEED ND) available online at www.usgbc.org/leed

LEED stands for Leadership in Energy and Environmental Design, and is a rating system created by the US Green Building Council (USGBC) www.usgbc.org or www.chapters.usgbc.org/alaska

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Land and Natural Development (LAND) Code: Guidelines for Environmentally Sustainable Land Development. Diana Balmori+ Gaboury Benoit . Wiley, 2007.

On the River: A Guide to Owning and Managing Waterfront Property on the Kenai Peninsula. The Kenai River Center & Kenai Watershed Forum. 2007.

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Stormwater and Meltwater Management and Mitigation: A Guide for Homer, Alaska. City of Homer, Allegra Bukojemsky and David Scheer. 2007. Available from the City of Homer Planning Department.

Living in Harmony with Moose. Derek Stonorov. Kachemak Heritage Land Trust, 1998.

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Credit Checklists

All Sites

<input type="checkbox"/>	A - P1 Prerequisite	Do not plant any invasive plant species
<input type="checkbox"/>	A - P2 Prerequisite	Meet all construction erosion control requirements in the City of Homer Standards for a Development Activity Plan (DAP) for any size development, and meet EPA requirements applicable to the site
<input type="checkbox"/>	A - P3 Prerequisite	Meet all requirements for long term stormwater control and mitigation as specified by the City of Homer SWP and the EPA
<input type="checkbox"/>	A - P5 Prerequisite	Do not cut or fill right up to the property line
	A - 2 1 CREDIT	Protect areas not being developed with fencing, flagging or other means to prevent vehicle and equipment traffic on soils thereby preventing compaction
	A - 3 1 CREDIT	Transplant at least 50% of sizeable shrubs, trees and other plants such as ferns on site for replanting on site.
	A - 4 1 CREDIT	Mulch 100% of cleared trees and vegetation on site and use for erosion control.

	A - 5 1 CREDIT	Collect and retain stormwater from roofs on site with a domestic collection system, downspout sump, and/or install green roof.
	A - 6 1 CREDIT	Post construction stormwater runoff volume not to exceed pre-development conditions for an undisturbed site. Post construction runoff to be 25% less than pre-development conditions on a previously disturbed or developed site.
	A - 7 1 CREDIT	Use over 90% native plants (by cover) in landscape design.
	A - 8 1 CREDIT	Innovation Credit
	A - 9 1 CREDIT	Agency personnel or specialist consultant
	A - 10 1 CREDIT	Plat, subdivide or replat along ecological boundaries
	TOTAL	All prerequisites must be met and at least 4 credits obtained

Slopes and Soils

<input type="checkbox"/>	S – P1	Create/obtain a slope map of your property
	Prerequisite	
<input type="checkbox"/>	S – P2	Determine soil type(s) on the site
	Prerequisite	
<input type="checkbox"/>	S – P3	Limit disturbance of steep slopes
	Prerequisite	
<input type="checkbox"/>	S – P4	Setback all structures a distance equivalent to at least the 30-year erosion rate on shoreline lots, according to the 2003 shoreline erosion study, and 40 feet from escarpments and areas of active erosion
	Prerequisite	
	S - 1	Limit grading to construction areas per buffer table
	1 CREDIT	
	S - 2	Balance cut and fill on site.
	1 CREDIT	
	S - 3	Maintain native contours within 10 feet vertical, and do not create slopes more than 1 in 4 except for retaining walls
	1 CREDIT	

	S - 4	Create naturalistic slopes
	1 CREDIT	
	S – 5	Avoid steep slopes
	1 CREDIT	
	S – 6	Setback all structures a distance equivalent to at least the 100-year erosion rate on shoreline lots, according to the 2003 shoreline erosion study, and 100 feet from escarpments and areas of active erosion
	1 CREDIT	
	S - 7	Buffer steep slopes
	1-3 CREDITS	
	S - 8	Conservation easement or deed restriction on all slopes over 35%
	2 CREDITS	
	S - 9	Innovation Credit
	1 CREDITS	
	TOTAL	All prerequisites must be met and at least 3 credits obtained

Wetlands and Drainages

<input type="checkbox"/>	W – P1 Prerequisite	Map all wetlands, creeks, drainages or other water features on site. Obtain ACOE-approved wetland delineation.
<input type="checkbox"/>	W – P2 Prerequisite	Map general location of creeks, drainages and wetlands within 100' of property (as possible without trespass) noting direction of drainage.
<input type="checkbox"/>	W – P3 Prerequisite	No disturbance or fill in 90% of existing wetlands, creeks or drainages, OR restore an equivalent area of similar and connected wetland or creek adjacent to filled wetlands. Prevent disturbance due to construction activities near wetlands and creeks.
	W - 1 2 CREDITS	No ditches on property
	W - 2 1-3 CREDIT	Create and maintain buffers and building setbacks from wetlands, creeks and significant drainages per chart below.
	W - 3 1 CREDIT	Place a conservation easement around the wetlands or creeks including the buffer area and building setback.

	W - 4 1 CREDIT	Create new wetlands and/or riparian areas integrated with the site stormwater plan that will accommodate required stormwater runoff detention.
	W - 5 2 CREDITS	Innovation Credit
	TOTAL	All prerequisites must be met and at least 3 credits obtained

Wildlife Habitat

<input type="checkbox"/>	H - P1	Determine areas of valuable habitat on the site
	Prerequisite	
	H - 1 1 CREDIT	Preserve and protect areas or characteristics of known habitat value within this on-site delineated GI Zone of the property
	H - 2 1 CREDIT	Limit development impacts
	H - 3 1 CREDIT	Improve and create habitat on your property
	H - 4 2 CREDITS	Place a conservation easement on habitat and corridor areas
	H - 5 1 CREDITS	Institute the recommendations of an agency personnel or specialist consultant
	H - 6 1 CREDITS	Create or preserve significant areas or characteristics of moose, raptor, Sandhill crane or shorebird habitat
	H - 7 1-3 CREDITS	Create or preserve a connecting corridor or linear habitat element

	H - 8 1 CREDIT	Minimize light trespass from building and site
	H - 9 2 CREDITS	Innovation Credit
	TOTAL	All prerequisites must be met and at least 3 credits obtained

Trails and Viewsheds

☐	T - P1	Map on-site and nearby trails or potential trail corridors
	Prerequisite	
	T - 1	Preserve existing trails on site in current location OR preserve an alternate connection to and through the site to existing trail
	1 CREDIT	
	T - 2	Improve existing or new trails on site
	1 CREDIT	
	T - 3	Improved Trail Construction - Site and construct the trail sustainably
	1 CREDIT	
	T - 4	Create Trail Destination Improvements
	1 CREDIT	
	T - 5	Prepare a legal agreement with organization for the long term maintenance of the trails.
	1 CREDIT	
	T - 6	Pair trail corridor with wildlife landscape feature or function preservation.
	1 CREDIT	
	T - 7	Preserve trail viewsheds
	1 CREDIT	
	TOTAL	All prerequisites must be met and at least 3 credits obtained