
WEST DOUGLAS CONCEPTUAL PLAN

CITY AND BOROUGH OF JUNEAU
AND
GOLDBELT, INC.

MAY, 1997



View at Mouth of Hilda Creek

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Background

In late 1995, the City and Borough of Juneau and Goldbelt, Incorporated jointly began conceptual planning of their adjoining properties along approximately eight miles of West Douglas Island. This property, including 1,740 acres of Goldbelt property along the coastal margin, and 3,434 acres of City and Borough land immediately interior of the Goldbelt property, is the largest developable block of land accessible to the existing City of Juneau.

The land at present is wholly undeveloped, with high potential for future uses, including housing, commercial, industrial, and recreational opportunities. The land is beautifully situated, with commanding views to the southwest across Stephens Passage to Admiralty Island. Any development proposal, however, raises critical concerns. These include protecting the obvious environmental value of the setting (including high value wetlands, anadromous streams, eagle trees), the lack of any existing infrastructure, and traffic impacts associated with increased use at the end of the existing North Douglas Highway.

Developmental goals are different for the two property owners. Goldbelt land is part of the ANCSA (Native Claims Settlement) land distribution dating from the early 1970's, and is one of three major ANCSA land holdings managed by Goldbelt, along with other land holdings at Echo Cove and Hobart Bay. Relative to the number of shareholders, this reflects a small land base from which to develop long-term opportunity for shareholders. Given this limited land base, Goldbelt, Inc. is committed to careful management of the property, with uses that simultaneously protect the environmental qualities of the land, provide for continued shareholder recreation opportunities, and develop revenue.

Given this difficult set of goals, several development conclusions result. First, Goldbelt will retain control of the land, rather than sell individual parcels. Second, development is likely to be compact and limited in total area to retain

as much as possible the subsistence and cultural shareholder uses of the land. Third, development will only take place if economically justified.

Interests of the City and Borough of Juneau (CBJ) are different in some areas, and shared in others. The City views potential land development at West Douglas Island as a way to provide opportunities that benefit the community at large. Development would not necessarily be profit-focused, but would seek to satisfy community needs such as increased housing capacity, increased recreational opportunity, or new commercial infrastructure, such as port or dock facilities. Like Goldbelt, the CBJ is committed to retaining the environmental attributes of West Douglas, and will carefully weigh improvements in that light.

It is likely that any future development options as identified in this planning study will require active co-participation from both the CBJ, and Goldbelt, Inc. They have a mutual interest in the correct development of roads and infrastructure, and may enter into specific discussions of land trades necessary to make their individual development goals successful.

Process

Minch Ritter Voelckers was hired as lead consultant to perform conceptual planning and land use analysis. The planning process first included a major effort to profile the existing land attributes, identifying soils, hydrology, wetlands, habitat, wildlife, marine issues, topography, and other development factors such as view and desirable site features. This work, produced by subconsultants with relevant expertise, resulted in a series of reports and mapping identifying different attributes. These mapped land attributes were then combined to identify generally developable portions of the property.

While this reconnaissance work was underway, over-all planning goals for the land were established. This involved a review of previous planning studies, meeting with Goldbelt and CBJ to establish their individual goals, and conducting public workshops to identify major community goals and concerns. A synopsis of public responses to the project is included as Appendix A. Meetings with Goldbelt emphasized many issues, including shareholder concerns about maintaining recreational and subsistence opportunity. Public issues identified included concerns over the impact of additional traffic on the existing North Douglas Highway, and the potential loss of recreational opportunity that now exists at the Outer Point and Peterson Creek area.

Based on this broad feedback, an initial list of planning goals was developed to guide subsequent land use planning exercises.

Planning by separate parties for a proposed golf course has paralleled the MRV planning effort. The general designation of property for the golf course was established by the CBJ Assembly, and subsequently refined by field survey work to identify the most appropriate areas, with the least environmental constraint in the area upland of Peterson Creek. A CBJ planning requirement was the designation of an access road corridor to initially serve the golf course, and then be upgraded for later use by adjacent area development on CBJ and Goldbelt property. That corridor is generally identified in this conceptual plan.

Recommendations

Based on general planning goals and the reconnaissance of the physical land base, sketch-level planning was initiated. After compiling the reconnaissance results, many large areas of land were found to be inappropriate for development, usually for a combination of reasons, including the presence of high-value wetlands, anadromous streams, unfavorable slope or soils conditions, or portions that were deemed culturally significant by Goldbelt and desired to be retained in an undeveloped state. Other portions of the property were identified as very attractive for development, with good soils, no environmentally sensitive lands, slopes that support development, beautiful views and water access.

The planning solutions that grew out of this analysis suggested "nodes" of development, high density developed portions separated by lower use and/or protected regions. This nodal development recommended by this Conceptual Plan evolved from two directions. First, this was an acknowledgment of the nature of the land itself (per the above), with major portions that could not be developed, and others that could. Second, nodal development results in a desirable proximity between residents and services, efficient use of the land resource (compared to traditional subdivisions, for instance), and cost-effective infrastructure development because of significantly reduced lengths and quantities. With relatively dense development that includes a mix of housing, commercial, and retail development (once mature communities have developed), many daily activities can be accomplished without relying on the automobile, promoting pedestrian and bicycle access. Finally, compact development has the key advantage of leaving large areas of land undisturbed, thereby protecting habitat, enhancing recreational opportunities, and maintaining the high visual value of the natural setting.

After review of various draft plan alternatives, Goldbelt's Board of Directors and the CBJ Planning Commission approved the general conceptual plan described in this document. It designates four principal development areas at intervals along the full length of the study lands. The development areas each have a distinct nature and are assumed to support different development needs. The concept plan as proposed is not time-dependent; individual areas will develop as the economic need justifies. It is therefore difficult to predict with any certainty when full range development will occur, since it is intrinsically tied to the general growth of Juneau, and other infrastructure improvements, such as a second channel crossing, which would have dramatic effects on development potential.

Each of the four development areas is located along the waterfront, because waterfront living, views and access are desirable. Included at the end of this section is illustration A defining the study property and development areas. The first parcel, *Development Area 1-A*, is located just beyond the upper portions of the Peterson Creek drainage, approximately .75 miles north of Middle Creek. This is near the southern end of the currently planned golf course. Development is likely to happen here first (among the development areas) because only 3/4 mile additional road extension is required once the road is developed as planned to the golf course club house. While Area 1-A is located on the waterfront, the depth of water is not sufficient to support major marine uses. Likely uses will include residential development, tourism-related opportunities such as hotel or cultural center, or office/ commercial uses appropriate to an attractive, self-contained setting (such as a NOAA or USCG facility). Uplands adjoining the golf course are categorized as *Development Area 1-B*, and loosely defined as housing which is planned to be developed as a future phase of the golf course.

Development Area 2 is located at Inner Point, approximately 1.5 miles south of Middle Creek. This location is best suited for marine and industrial uses because it has moderate protection from both northerly and southeasterly storm systems, and has sufficient water depth to support an industrial dock with a length of approximately 1,000'. The upland areas adjoining Inner Point are somewhat limited, but sufficient for industrial/commercial support facilities. Development possibilities include marine transshipment serving Southeast Alaska for industrial uses such as mining, fisheries support, bulk fuel storage, and water-related governmental agencies like the U.S. Coast Guard.

Development Area 3 is located approximately half-way between Inner Point and Point Hilda. This location is seen as primarily residential in focus, with an emphasis on recreational waterfront opportunities, including a public marina.

It should provide good access for general recreational use in the Hilda Creek drainage, and may be appropriate for camping and R/V development.

Development Area 4 is located approximately 3/4 mile south of Hilda Creek on very attractive beach front property. This property will be the most difficult to access, involving a total road extension from the present road terminus of approximately 7 miles, and significant environmental coordination to cross the Hilda Creek drainage. This property will support a variety of land uses when additional acreage is required to support Juneau's growth.

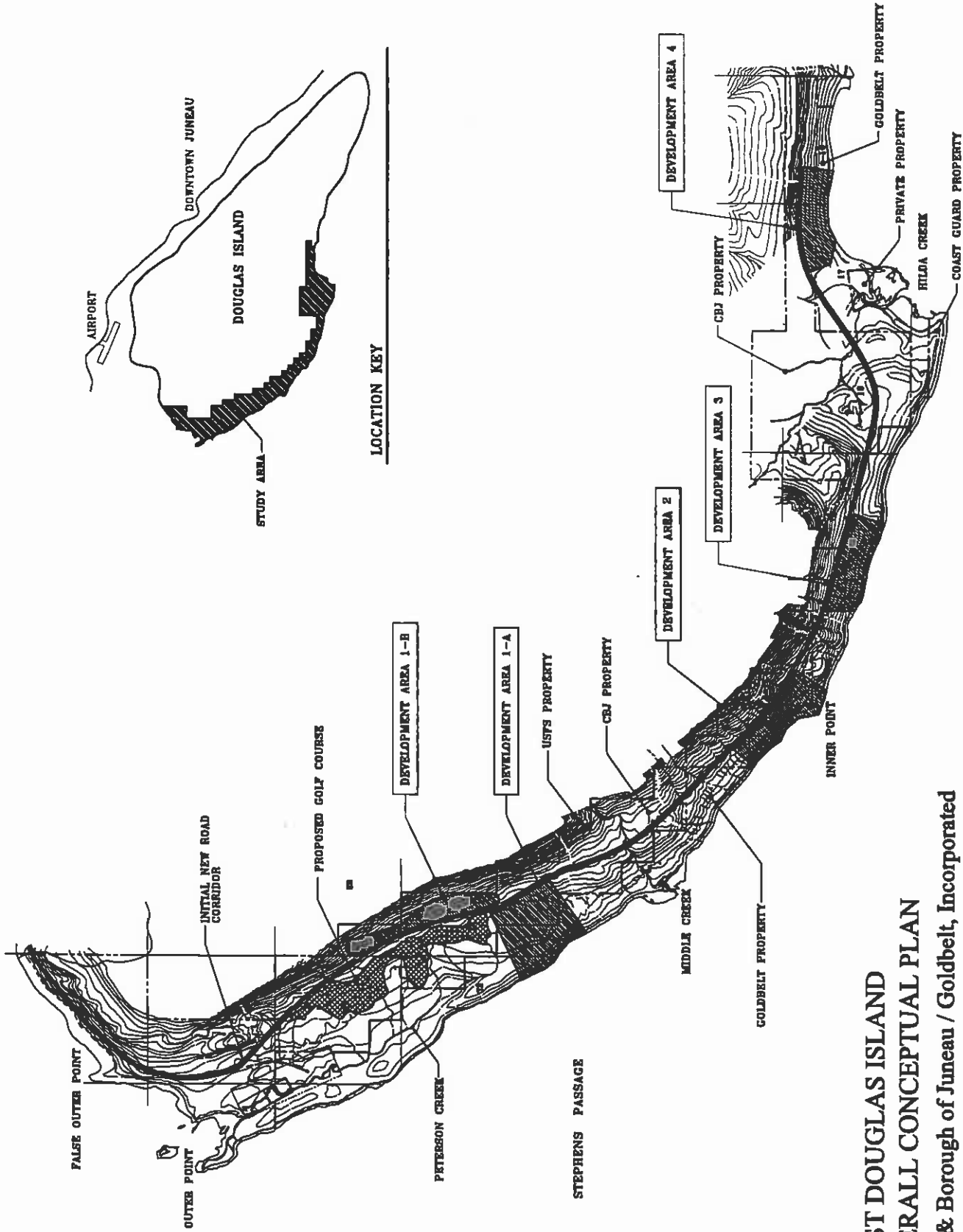
A set of hypothetical development assumptions was generated for each of the Development Areas, defining uses, densities, acreage, and population (see Appendix B). This was necessary to generate planning analysis of the specific impacts and infrastructure requirements triggered by the conceptual plan recommendations. This analysis reviewed habitat, wetlands, and traffic impacts associated with different levels of development. Utility options and costs for fresh water, waste water, sewer, and electrical systems, as well as road extension costs were also reviewed. Utility and road costs also included general cost estimates. While these estimates are necessarily generalized, they will assist in the evaluation of options for specific development planning and design.

Implementation

At present, the entire study parcel is designated in the CBJ Comprehensive Plan as a *New Growth Area*, obligating any development to satisfy detailed planning requirements listed in CBJ Title 49. This study analyzed the entire 5,000 acre parcel, and recommends development to be concentrated into four identified *Development Areas*, with significant undeveloped land portions between. It is anticipated that this study, with the support of Goldbelt and the CBJ Planning Commission, will redefine the CBJ Comprehensive Plan in the West Douglas area to show the Development Areas as four discrete *New Growth Areas* with reserve lands between.

Once this change, as described and mapped in Chapter 6 of this plan, is adopted into the Comprehensive Plan, future development proposed in the West Douglas study area will be generally confined to one of the parcels designated, and the specific planning requirements for that new growth area will need to be provided. This reduces the potential areas of development to those described, thus limiting the area of required planning to a manageable size.

Finally, this document is a generalized *concept plan*, and does not try to address specific New Growth Area requirements. It does, however, characterize the nature of each Development Area, including appropriate developable areas, densities and mixtures of uses. This information will be useful for future detailed planning of each area, helping to establish the concept and theme for each area, but should be flexible and not limit future development.



**WEST DOUGLAS ISLAND
OVERALL CONCEPTUAL PLAN**
City & Borough of Juneau / Goldbelt, Incorporated

MINCH RITTER VOELCKERS
Architecture • Planning

PURPOSE OF PROJECT

The undeveloped land on the western side of Douglas Island has long been viewed as a future growth option for Juneau. Reasonably close to the downtown core, accessible with a simple road extension, with significant developable land and a magnificent setting, it has understandably been discussed as a logical growth area.

However, specifics of the land ownership, lack of infrastructure, and environmental issues have delayed any development to this point. This study represents the commitment of the two largest land owners in the area, Goldbelt, Inc. and the City and Borough of Juneau, to jointly plan for the appropriate development of this property.

In 1995 the City and Borough of Juneau and Goldbelt executed a memorandum of understanding concerning their mutual advantage to study and eventually implement development options. Joint study goals were identified, and through an RFP process, Minch Ritter Voelckers Architects was selected to perform over-all masterplanning of the study area. The planning team assembled several sub-consultants with particular expertise in different study areas. The full team and responsibilities are identified in Appendix A.

The master planning effort included the development of detailed stand-alone study materials that develop the conclusions of this report, including environmental analysis, soils and geology, marine reconnaissance, traffic studies, and infrastructure (water, sewer, and electricity). In addition, a large body of mapping was produced identifying topography, soil types, and wetland delineations. These materials are available for detailed analysis. Relevant general material and conclusions from each of these supporting studies is included in Chapter 5 identifying existing conditions, and in Chapter 7 identifying recommendations for implementing the study results.

It has been the intention of Goldbelt and the City and Borough of Juneau to approach this planning process with an open mind toward the resultant study recommendations. To keep the process as broad as possible, CBJ and Goldbelt have also asked for an inclusive, participatory process that gives appropriate weight to adjoining resident concerns, traffic limitations, and the fragile nature of the many environmental assets in the study parcel. At the same time, the commitment exists on the part of both landowners to identify appropriate development goals and implement them over time as needs or opportunity justify the investment.

Concurrent with this study, the City and Borough of Juneau has been working with Totem Creek Properties to finalize design for a proposed 18-hole golf course. The several hundred acres discussed for the course are within the northern portions of the over-all study area. As golf course plans were refined, their lay-out was included with the land use planning of this study.

Road location for access to development is probably the most critical variable affecting both this study and the golf course. It is imperative that a single workable road corridor be established, prior to any development, that accommodates eventual full-term uses. That road corridor has been generally located, particularly in relation to the golf course. (See illustration plate 8).

PROCESS AND CHRONOLOGY

The planning process included several phases as follows: an information gathering phase, a phase to establish owner and community development goals, a design and layout phase, and an analysis phase that evaluated proposed planning solutions relative to existing conditions and project goals. Finally, materials were summarized in this report and other consultant studies.

The following outline illustrates the time line and information gathering process used for the study.

Consultant Team selected	Oct., 1995
All Douglas residents contacted	Oct., 1995
Informational Public Meeting, Douglas Library	Jan, 1996
Initial Field Reconnaissance	Oct., 1995-Feb., 1996
Resource Agency Coordination	Feb., 1996
Mapping of topo, wetlands, habitat	Feb., 1996

Traffic Analysis	April, 1996
Second Public Meeting, D.Z. Middle School	May, 1996
Planning Commission Review, concept plans	May, 1996
Goldbelt Board of Directors review, concept plans	June, 1996
Goldbelt approval of revised concept plans	July, 1996
Community Development staff coordination	Sept.-Oct., 1996
Planning Commission approval of revised concept plans,	Nov., 1996
CBJ and Goldbelt approval of development scenarios	Jan, 1997
Development of Infrastructure models and costs	Feb.-Mar., 1997
Completion of Draft Report	April-May, 1997

After review and approval of this document by Goldbelt, Inc. and the City and Borough of Juneau, it is anticipated that the CBJ Comprehensive Plan for West Douglas will be revised to reflect the study results. When future development is proposed, the specific development area will be subject to additional study per CBJ ordinances.

HISTORY OF AREA PLANNING

The general study area along the West Douglas shoreline has been the subject of many previous studies, including comprehensive planning documents. Goldbelt Inc. in 1991/1992 initiated detailed planning for specific development proposals, primarily a marine port at Inner Point and a subdivision near Peterson Creek. At that time, several aspects of the CBJ "New Growth Area" ordinance were tested against the proposed Goldbelt development. Difficulties with that process lead, in part, to recently adopted revisions in the detailed implementing language of the CBJ "New Growth Area" planning requirements. Portions of Goldbelt's previous studies (including bathymetry, surveying, and mapping) have been integrated in this current planning document

Numerous additional West Douglas studies analyzing specific needs or resources have been performed by State and Federal agencies. Perhaps most significant is work by the State of Alaska Department of Transportation to perform a full environmental analysis of various highway extension options in 1984-1986. Similarly, much recon-level mapping has been performed identifying soil types, and wetlands. See the Dunn Environmental report for a more specific background.

LAND OWNERSHIP

Land ownership is illustrated on Plate 1, and at a larger scale on Plate 9. Goldbelt owns almost the entire waterfront, stretching from Outer Point, to a point approximately a mile south of Point Hilda. The only exceptions are a Coast Guard reservation of approximately 40 acres along the outer point at Hilda Creek, and private property, measuring approximately 20 acres, located just east of the mouth of Hilda Creek.

Goldbelt, Inc. property was obtained per terms of the 1971 ANCSA land settlement agreement with the Federal government. It totals 1740 acres in a relatively thin coastal strip stretching more than eight miles along the coast, with width averaging between 1/4 and 1/2 mile.

City and Borough of Juneau property generally abuts the Goldbelt shoreline property on the upslope side. The total CBJ property holding in the West Douglas Study area is 3434 acres. The City property, like Goldbelt, is a relatively thin band, averaging approximately 1/2 mile width. A deeper area exists at the Hilda Creek drainage.

Immediately upslope of CBJ property is undeveloped United States Forest Service land, which is part of the Tongass National Forest. Four private residential lots are located at the northern property boundary at the mouth of Peterson Creek. They are accessed by crossing Goldbelt property, and use Peterson Creek water for domestic uses. Otherwise, no property improvements have been made at present within the study boundaries.

TRAFFIC ANALYSIS

The following past traffic studies have been reviewed as part of the traffic analysis for the West Douglas Master Plan, including studies of channel crossing options. Key issues or findings from each source are summarized. This material is useful to provide an understanding of resident concerns, the current carrying capacity of North Douglas Highway, and potential to support new development.

Second Gastineau Channel Crossing Feasibility Study

Holden Gerken & Associates, Inc., June, 1984

- A 410 person telephone survey indicated 62% of the population favor opening up new areas for housing, 39% interested in buying or building a home on North Douglas, and 69% favor building a second channel crossing somewhere near the airport.
- Study assumptions included: 1) A significant and increasing amount of total growth in Juneau will occur on North Douglas Island because people want to live there and suitable land is available; 2) This increased growth

will result in increased traffic and need for public and private services and facilities; 3) Any plan for population growth on Douglas Island should protect the existing North Douglas population to the maximum extent possible.

- Three different crossing alternatives were considered: 1) No-crossing; 2) Crossing away from the wetlands with a route from Engineer's Cutoff Road to Hut Point; 3) Crossing on the wetlands from eight mile Egan Drive to the Eaglecrest Road. Option three was the recommended alternative.

North Douglas Highway Extension Traffic Study

Alaska Dept. of Transportation and Public Facilities, March 1992

- The evening peak hour traffic volume on the hypothetical North Douglas Highway extension road would be 487 vehicles per hour in 20 years. This was based on assumed West Douglas development of 300 single family dwellings and 25 acres of industrial usage including a port and boat harbor with launch ramp.
- The bridge intersection of 10th and Egan will require improvement within 20 years with or without development on West Douglas due to general increases in traffic. In fact, the impact of the North Douglas Highway extension will be negligible. Current improvements under evaluation include an additional left turn lane westbound onto the bridge, adding an additional through lane on 10th, and adding a right turn acceleration lane from 10th to westbound Egan.
- The intersection of Douglas Highway and North Douglas Highway will have to be signalized within 20 years with or without development on West Douglas. The impact of the proposed North Douglas Highway extension will be minimal and will require no additional facilities.
- The section of North Douglas Highway from the bridge to the heliport will require additional shoulder width and possibly a center turn lane to accommodate increased traffic with or without the proposed North Douglas Highway extension. (In fact, the overall roadway width has been increased from 36 to 39+ feet as recommended in the study)
- The North Douglas Highway extension and subsequent development on West Douglas will cause a noticeable increase in congestion and a higher potential for accidents from the Heliport to the end of the existing road.

This section of roadway will require improvement with development on West Douglas that would not be required without development. The study recommends widening to 40 feet.

- A Second Channel Crossing from Egan Drive to Fish Creek Road would have only slight impact on the 10th/Egan and North Douglas Highway/Douglas Highway intersections during the evening peak hour.
- Although the technical Level of Service (LOS) will not change, there will be approximately 30% less traffic and less potential for accidents on North Douglas Highway with the Second Channel Crossing.

Comprehensive Plan of the City & Borough of Juneau

Community Development Department, Public Hearing Draft, 1995 Update

- The current Borough wide transportation system should be improved if increased development occurs at North and West Douglas Island.
- West Douglas Island has been identified as a possible location for new barge and heavy freight facilities. The Second Channel Crossing would make this feasible.
- If North, West and/or South Douglas Island are developed extensively, major road improvements will be necessary including road widening, construction of a parallel bench road, and/or construction of the Second Channel Crossing.
- CBJ support for the Second Channel Crossing should be renewed to encourage development on North and West Douglas Island.

Intersection Capacity Assessment - North Douglas Highway

Transportation Consulting Northwest for R & M Engineering, March 30, 1996

- The existing North Douglas Highway/Eaglecrest Road intersection has the capacity to accommodate existing Saturday peak hour traffic plus 300 additional vehicle through trips.
- The existing Douglas Highway/North Douglas Highway intersection performs poorly during Saturday morning peak hour traffic and fails during the evening peak hour. Signalizing this intersection will accommodate existing peak hour traffic plus 300 additional through trips from the

Eaglecrest area.

Chapter 8 concludes with an analysis of the traffic impacts associated with future development scenarios.

General Goals

In preparing a conceptual land use plan for the New Growth Area on West Douglas Island, the City and Borough of Juneau and Goldbelt Corporation have had an opportunity to evaluate the land use potential of a large area of undeveloped land near Juneau's central core. West Douglas is essentially a "clean slate" without significant existing infrastructure or dominant land uses.

Since West Douglas Island is largely undeveloped, the options for future land uses may appear to be unlimited. However, there are actually few scenarios for land development that satisfy the following basic community and land planning goals:

- Can the development be accomplished in harmony with the physical and biological environment, and benefit from natural amenities?
- Does it achieve the land owners' objectives for the use of their lands?
- Does it meet the needs of the public for additional land area for the wide mix of land uses that are essential to a growing population, such as housing, land for development that creates jobs and recreation resources?
- Does it result in residential communities that are affordable, aesthetic, vital and pleasing places to live?
- Can it be served by cost-efficient roads, utilities and other infrastructure?

The purpose of this study is to develop a West Douglas Concept Plan that achieves these goals, and can be used to guide subsequent development in this area. The West Douglas Concept Plan is described in detail in Chapters 6 and 7

and illustrated on maps in the appendices. Implementation of this plan and steps that must be taken as development in the area proceeds are found in Chapter 8. In preparing the West Douglas Concept Plan, the following major planning goals were carefully considered. Each is developed following.

- A. *The goals of Landowners:* CBJ and Goldbelt Corporation have differing goals, but each supports thoughtful development. Goldbelt desires revenue and shareholder opportunity. CBJ goals include new development to provide specific community growth opportunities, and enhanced recreation.
- B. *Planning requirements:* The CBJ intention for land use patterns in the West Douglas area, as expressed in the CBJ Comprehensive Plan and Land Use Ordinance (Title 49).
- C. *Public Goals:* The public's interests in the use, development and protection of the area and its qualities.
- D. *Environmental Characteristics:* Recognizing and planning in response to the environmental and physical characteristics of the area.
- E. *Development and Infrastructure:* The feasibility and alternatives for infrastructure for future development.

Each of these five factors that governed land use and community planning are amplified below.

A. LANDOWNER OBJECTIVES

The participation of the CBJ and Goldbelt in a cooperative planning process has created an unprecedented opportunity to design the development of West Douglas Island without the pressure of any particular project driving decision-making. This cooperation sets the stage for orderly development of the area and allows each landowner to better meet its own needs and objectives for the area.

There are also other landowners with interests in the West Douglas area. Sealaska Corporation holds subsurface rights on Goldbelt land. The Tongass National Forest, managed by the U.S. Forest Service, borders the length of the study area along the uphill boundary of the CBJ property. Land use plans for the

West Douglas area should also be compatible with the interests of these landowners.

City and Borough of Juneau

As a land owner, the CBJ is interested in a full range of long-term land uses in West Douglas, including residential, commercial, industrial, and recreational opportunity. This large tract of land is perhaps the best land base controlled by the CBJ near the existing town structure. It can provide meaningful additions to the land inventory for a variety of uses.

The CBJ and its developmental planning is, therefore, concerned with identifying the long-term needs of the Borough for land to accommodate housing, services, industry, commerce and recreation. The CBJ must consider how those needs can be met through careful development of its land, and other private lands, in the West Douglas area. Land in West Douglas Island offers the opportunity for increased housing of various densities; new marine development, including both industrial marine use as well as recreational boating use as Juneau's principal harbor approaches capacity; other commercial and industrial uses; and open space, public trails and recreational areas.

To support recreation, the CBJ is currently working with private interests in the development of a golf course on CBJ property within the northern portion of the Concept Plan boundary. CBJ development goals include public use trails, retention of open space, and provisions for public access to the shoreline. Roads, water, sewer, electricity, and similar infrastructure and services must be provided to developing areas in the most cost-efficient and affordable manner. To achieve these goals, portions of the CBJ-owned land in the West Douglas area will likely be made available for private purchase to facilitate development targeted to meeting specific community needs.

Goldbelt Corporation

Goldbelt Corporation's lands in the West Douglas area are private lands, conveyed to the corporation under the Alaska Native Claims Settlement Act (ANCSA). These lands are a primary asset of the Goldbelt Corporation and its shareholders. Goldbelt is committed to the long-term management of its property for high shareholder benefit, and pursuing development opportunities which have the potential to provide stable employment for shareholders. At the same time, since its land base is finite and culturally important to shareholders, Goldbelt is

committed to careful evaluation of development opportunities to ensure that subsistence and cultural uses are maintained. This requires that the majority of their land will likely remain in an undeveloped state.

The Goldbelt Board of Directors and staff have maintained a careful approach to development of West Douglas ANCSA lands. Goldbelt is considering many potential land uses, including areas for development of a cultural center, dispersed recreation cabins, an eco-lodge, and more intensively developed areas that could accommodate a mix of residential, service, commercial, industrial and marine uses. All of these potential uses are evaluated in this study.

Goldbelt has emphasized the importance of protecting the unique cultural and environmental features of their West Douglas land. The Goldbelt board directed that large areas of the Peterson Creek drainage, and Middle Creek area be actively designated as no development zones.

Because these concerns require retaining large land areas underdeveloped, the consolidation of new development into compact areas was favored, with retention of open space between to preserve the land base. While Goldbelt recognizes that some of its West Douglas lands, particularly beach areas, have been used for general public recreation, it is becoming a more assertive land owner and will be making decisions about future recreation and other land uses in this area based on input from shareholders. It can not be assumed that any Goldbelt lands will be available for sale to the general public in the future. Certain Native lands may, however, at some point be sold, leased or traded as a result of this Concept Plan and Goldbelt policy, particularly in conjunction with joint CBJ planning. There is no automatic assumption that any particular land disposition or use will be considered.

B. CBJ COMPREHENSIVE PLAN

In addition to being a major land owner on West Douglas Island, the CBJ has the administrative authority and responsibility to decide what type, character and density of land use should be developed on all lands, public and private, throughout the Borough. This land management direction is provided in the CBJ's Comprehensive Plan. The Comprehensive Plan was updated and approved by the CBJ Assembly in 1996 and, therefore, gives very current and relevant policy direction on land use.

The CBJ Comprehensive Plan designates West Douglas Island as a "New Growth Area." New Growth Areas are defined as:

Sites in rural areas potentially suitable for urban/suburban residential development – characterized by urban densities and a full complement of services and facilities, including water and sewer, recreational, educational and neighborhood commercial services. Non-residential uses such as port facilities or resource-related industrial development, may also be important.

A fundamental planning concept of the CBJ Comprehensive Plan is to promote efficient and compact urban land development in "New Growth Areas." Policy 2.7 of the Comprehensive Plan states:

It is the policy of the CBJ to encourage and facilitate the development of New Growth Areas in suitable locations in the rural area of the CBJ in order to accommodate limited urban level development opportunities outside the Urban Service Area.

New Growth Areas are thus a departure from the development pattern now evident outside of Juneau's urban service area, which is characterized by low density residential development, without associated services and facilities, and lacking diverse or intensive land uses. In support of a change from the typical land use pattern, to the New Growth Area approach, the Comprehensive Plan promotes New Growth Areas as the "preferable future community form," stating:

Compact growth in urban areas is preferable because there the use of land is more efficient... By concentrating development, the CBJ will ...minimize the per unit costs of extending sewer, water, utility lines and roadways. Significant reductions in travel, energy consumption and pollution will result by encouraging the development of residential uses in relative proximity to shopping, employment, cultural and recreational facilities. Based on extensive studies of the experience of other American cities, compact urban development is preferable to urban sprawl. (CBJ Comprehensive Plan, page 11).

Thus, there is clear direction that land use on West Douglas Island (all designated at present as New Growth Area), be located in compact urban sites within the more rural setting. These urban development sites should allow for the eventual maturation into a full range of urban services and uses. The West Douglas Concept Plan follows this policy direction by proposing that development be consolidated into five discrete "development areas," with large tracts of undeveloped open land retained between.

The Concept Plan was also guided by and is responsive to many other policies of the Comprehensive Plan, which addresses the following issues:

- Promoting compact urban development to ensure efficient utilization of land resources and cost-effective provision of urban facilities and services. (Policy 2.3).
- Provision of a variety of housing opportunities in sufficient quantities and at affordable prices, to meet the housing needs of its residents, especially low and moderate income families. (Policy 2.8).
- Provision of sufficient and suitable acreage for port facilities. (Policy 2.14).
- Dedication of sufficient and suitable land for commercial and industrial development. (Policy 2.15).
- Protection for stream corridors, wetlands, and the diversity of fish and wildlife habitat. (Policies 3.1, 3.2 and 3.6).
- Promoting and facilitating transportation alternatives to automobiles. (Policy 4.3).

C. PUBLIC GOALS

Citizens of Juneau have many varied interests in land plans for West Douglas. Current public use of the area, which is undeveloped and not accessed by road, is limited to recreation, wilderness-related tourism, hunting, fishing and other subsistence activities. However, a future road extension will provide a significantly expanded land base on Douglas Island, that could accommodate a wide variety of land uses, including housing, commercial and industrial development, marine access, and additional recreation opportunities. Residents throughout the Borough have an interest in how these community-wide land use needs will be met.

Two public meetings were held during the informational and development stages of the West Douglas Concept Plan: January, 1996, at the Douglas Library, and May, 1996 at Dzantik'i Heeni Middle School. The meetings were well attended and the public's questions were answered by members of the planning team, CBJ staff, and Goldbelt representatives. In addition, approximately 400 notices were

sent to all North Douglas property owners at the initiation of the West Douglas planning process. Approximately 100 were returned with identified concerns (see Appendix B). A newsletter was distributed to all Goldbelt shareholders outlining project progress in early 1996. The CBJ Planning Commission reviewed the plan in various stages during Committee of the Whole meetings held in May and November, 1996. Goldbelt Corporation reviewed the plan during Board of Director and subcommittee meetings in July, 1996 and subsequently at the general shareholder meeting. Public ideas and concerns expressed during the West Douglas planning process are summarized below.

Residents along North Douglas Highway, and especially in the small neighborhood at the mouth of Peterson Creek near where the North Douglas Road now ends, have an acute interest in the type and density of development that would occur along a road extension, in the protection of the Peterson Creek drainage and other environmental qualities and amenities of the surrounding area.

Some members of the public focused on the opportunities for development of an expanded land base at West Douglas. People see opportunities for additional affordable housing in Juneau, as well as new commercial and industrial ventures that could strengthen Juneau's economic base and job market.

Others expressed concern about the wisdom of allowing too much future growth in Juneau in general, and West Douglas in particular. Citizens noted that West Douglas holds considerable value as habitat for fish and wildlife, and should remain undeveloped. Concerns about water quality in Peterson Creek and other watersheds were expressed. Other members of the public felt that subsistence uses and traditional Native Alaska uses in this area would be harmed by development.

The cost of extending the road and practicality of providing water and sewer service were concerns of some residents. Many wanted to know who would pay for this infrastructure and what the timing of development would be.

Significant concern was expressed about potential traffic impacts resulting from the development of West Douglas Island. Residents note that the North Douglas Highway is a heavily used high speed roadway. Lack of sun in the winter results in icy, difficult driving conditions, regardless of the roadway Level of Service (LOS). Recreation use along the road and in road shoulders is growing, adding to dangerous driving conditions, particularly with driveway ingress and egresses. Many feel a threat exists to pedestrians and bicycles throughout the year. North Douglas residents are therefore concerned about increased residential,

commercial and industrial traffic. Existing traffic congestion at the Juneau Douglas bridge, the Eaglecrest intersection, and the Bonnie Brae subdivision intersections at peak traffic times was noted. Questions regarding how West Douglas development relates to the need and feasibility of a second crossing of Gastineau Channel were raised during the planning process. Many expressed the sentiment that if significant West Douglas development occurred, a second channel crossing was necessary.

The possibility of a tunnel through Douglas Island, rather than a road around the island, was mentioned. The possibility of locating a recreational airport in the Pt. Hilda vicinity or relocating the Juneau Airport was also mentioned. (Though both were felt to be unrealistic by the Airport manager).

Other public comment was received regarding opportunities to enhance recreation uses of West Douglas Island through improved access to hiking, skiing and hunting areas; development of a linked trail and open space system; public access to the shoreline; and development of a golf course.

Finally, concerns over maintaining the existing quality of the recreation experience at West Douglas, including open space, beautiful undisturbed scenery, quiet and solitude were expressed. With any growth, the current nature of the Outer Point area will change. It is a clear goal of this study that new development will offer additional public recreation that compensates for this change.

D. PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

The land use planning process for West Douglas was dependent in large part upon an analysis of the physical and environmental characteristics of the study area. These features are described in detail in Chapter 5, Physical Property Inventory.

Analysis of the existing physical and environmental characteristics of the land directed the initial land use designs in the Concept Plan. Areas of high environmental values, steep or unstable slopes, and difficult or poorly draining soil conditions were avoided for transportation corridors or development areas. Wetlands were generally identified as high value or low value throughout the study parcel. High value wetlands were protected from proposed development areas. Similarly, eagle nest trees were protected with a full 330' radius from

conflicting land uses. Stream corridors were protected to prevent environmental degradation.

When these environmental and physical features of the area were overlain and mapped, areas with the most and least development opportunity became relatively obvious (see plates 2-5). This resultant pattern actively supports the previous planning criteria pointing to "nodal" development, favoring development that is consolidated into several smaller development areas, rather than broadcast at lower densities throughout the West Douglas area. This allows the location of development in areas that are the most physically suited, with the opportunity to benefit from natural amenities (such as solar access, scenic views, shoreline location, offshore depths, and protection from adverse weather), and create the least environmental degradation.

The areas that have the most development constraints can then be retained in a relatively undeveloped state as open space. This preserves the values of environmentally sensitive areas, and avoids areas that are not physically suited to support development (such as poorly draining soils or steep slopes). It will also allow retention of large areas for shareholder subsistence, recreation, cultural and aesthetic values.

E. DEVELOPMENT AND INFRASTRUCTURE

Transportation and infrastructure planning goals are based on identifying long-term solutions appropriate to the scale of development. This helps insure that eventual growth does not create difficulties caused by lack of foresight.

A key issue concerns the eventual highway extension linking development areas in West Douglas. A first portion of that extension is planned now for golf course access. This pioneering road will be located such that future road improvements follow the same general corridor, with eventual improvements in width, curve radius, and paving. (See illustration Plate 8).

The road system will avoid the current problems along North Douglas Highway of random driveway access to a high-speed road. The primary road will have limited access, with a secondary road system at each development area providing access to specific development.

The planning process for West Douglas evaluated the feasibility and estimated

cost for providing road service and other infrastructure to the area. Other utility development is keyed to the type and nature of proposed development. Chapter 7 includes a detailed analysis of utility recommendations based on potential development recommendations.

F. GENERAL PLANNING PRINCIPLES

The planning team used the information summarized above to generate a set of land planning principles that guided development of the West Douglas Concept Plan. These principles guided the planning team's decisions regarding the locations, types, character and density of development recommended for West Douglas. These principles include:

Land Use

- Group similar land uses such as residential, parks and schools.
- Separate incompatible land uses such as industrial and residential. This separation serves to protect public health, safety and welfare of residents, and protects industries from nuisance complaints.
- Use the physical and environmental traits of the land to drive primary land use designations. For example: areas with steep slopes are not designated for development, high hazard areas like flood plains or avalanche chutes are not designated for development, use natural benches for road corridors, reserve high-value wetlands as open space, use areas with appropriate offshore characteristics for harbors and ports.
- Incorporate pre-existing land uses and activities into the Concept Plan effort to the maximum extent.
- Provide for a mix of land uses and activities within a development area to ensure a healthy and pleasant economy and environment. For example, when planning a residential community, recognize the need for nearby residential services, such as grocery store, gasoline station, bus stop, and places for children to play.
- Take population growth and likely development trends into account when

planning and designing facilities and infrastructure to ensure adequate capacity for future growth.

- Designate land to provide sufficient development opportunities to meet a broad range of resident's needs and lifestyles.
- Reserve ample open space and recreational space within the fabric of developed portions.
- Generally reserve the waterfront for water-dependent and water-related uses.

Transportation/Infrastructure

- Develop an efficient road system that moves people and goods with minimum interference to residents and activities, and one that enables residents to move safely and easily from one part of the community to another.
- Minimize pedestrian-vehicular conflict points.
- Promote compact development patterns. These are easier and cheaper to service, more energy efficient and preserve open space. Locate and design the utility and road system to promote compact, efficient and economical service delivery.
- Plan and design so that the easy delivery of public services such as police and fire protection are accommodated.
- Ensure that environmentally sound sewer and waste water disposal options are available in areas designated for developed land uses.

Environment/Open Space/Cultural Values

- Reserve designated land areas for native cultural activities and uses.
- Provide a linked system of greenbelts and trails.
- Provide adequate open space and parks for nearby residents.
- Protect beautiful vistas. Preserve unique areas.

- Ensure adequate public access to portions of the beach and shoreline.
- Preserve natural vegetation to the maximum extent.
- Protect anadromous fish streams. Protect stream corridors from adverse effects of development. Provide a higher level of protection for non-urban shorelines in public ownership.
- Protect wetlands from adverse effects of development.
- Protect watersheds that could potentially be used for domestic water supplies.
- Protect eagle nests from conflicting land uses.
- Protect important cultural sites from conflicting land uses and adverse effects of development.

General Issues

One of the most obvious attributes of the West Douglas study land is the pristine and beautiful quality of the natural environment. It supports a rich ecosystem of mature forest, wetlands, varied habitat, and animal life. It has been used for centuries for native subsistence purposes, and more recently for general recreation and hunting. The region is highly valued for its coast line, views, weather, and proximity to recreational resources.

Before initiating any planning studies to identify recommended future uses of this Goldbelt and CBJ property, a detailed analysis was conducted to identify significant environmental resources, topography, soils, marine issues, and weather conditions.

The following specific analyses were conducted of the study area:

- Environmental Analysis, prepared by Dunn Environmental Services
- Marine Reconnaissance, prepared by Peratrovich, Nottingham & Drage, Inc.
- Water and Wastewater, prepared by Easton Environmental
- Geotechnical, prepared by R & M Engineering, Inc.
- Traffic Study, prepared by R & M Engineering, Inc.
- Electrical and Communication Utilities, prepared by Haight & McLaughlin, Inc.

Graphic base sheets were generated for the entire study parcel at an accurate scale, allowing a detailed identification of boundaries, terrain, wetlands, habitat, eagle trees, streams, and other site information. These maps were then compiled to create a composite of the entire study area. This over-all composite mapping (see Appendix Plates 2-5) was seen as an instrumental first step (along with establishing planning goals) needed to identify

appropriate development opportunities at West Douglas Island.

It is the stated intention of Goldbelt and their shareholders that any development proposed for West Douglas Island be modest in impact, and conducted in a fashion that is very sympathetic to the existing conditions. Given the value of existing environmental resources, and the scale of proposed future development, it is likewise necessary to acknowledge the high degree of scrutiny and regulatory over-sight required for any proposed development. Finally, we believe it is an important planning goal to work with the environment to the highest extent possible because this is intrinsically the best way to develop, capturing the advantages of a place without overwhelming the setting. For these reasons, the composite sheets were seen as critical to establishing an initial working template of available lands.

A. ENVIRONMENTAL ANALYSIS

The West Douglas Island master planning study area contains three anadromous fish streams, 19 known bald eagle nests, and hundreds of acres of high value wetlands.

Both environmental resources and environmental regulations pertaining to the study area are dynamic and will change with time. This environmental analysis is a "snapshot" of the resources within the area as of this date. Before any specific development is undertaken within the area, delineation of the environmental resources within the development area should be an integral part of the detailed design process.

The environmental analysis for this master plan has several goals:

1. To identify and locate those resources that normally require consideration of avoidance during development, such as wetlands, anadromous fish streams, and Bald eagle nests.
2. To locate those natural environmental factors that may prove to be attributes or hazards to potential development, such as pleasing beaches and viewpoints or flood hazards areas.

Methods

Because the Master Plan study area is so large, available funding did not allow a detailed environmental reconnaissance. However, a wealth of information exists from previous studies of the area, including:

- National Wetlands Inventory Mapping
- Corps of Engineers Wetlands Mapping
- Soil Conservation Service Mapping
- US Fish and Wildlife Service Bald eagle mapping
- North Douglas Highway Extension EIS and supporting studies
- AK Dept. of Fish and Game Anadromous Fish Stream Atlas

The analysis consisted of compilation of this material and transfer of it to one map. The various information was then compared, especially the wetlands and soils information. Field verification of the information consisted of 14 individual wetland delineations performed according to the 1987 Federal Wetland Delineation Manual. In addition, soil, hydrology, and vegetation was noted along the entire study area, as well as the locations of Bald eagle nests, flood hazards, and other topographic features that could be important in planning future development. Field investigation was concentrated in the vicinity of Peterson Creek for several reasons: a proposal to develop a golf course was already underway at the time the master planning effort began, and this area was the obvious target for initial development because of proximity to existing transportation infrastructure. Field investigations were also done at Middle Pt., Inner Pt., and Pt. Hilda.

Wetland Delineations

Delineation of wetlands for the purposes of this master plan was accomplished by using available information on wetlands, soils, and existing aerial mapping, with field wetland site delineations concentrated in the vicinity of Peterson Creek.

The purpose of this effort was to produce an initial approximation of wetland areas, and was not intended as a jurisdictional wetland delineation. A map was produced to the scale of 1" = 400' which contains all available information layered and color coded. This exercise showed a close

correlation between the Soil Conservation Service soil mapping and soils observed in the field. In particular, hydric soils locations (as well as saturation), as opposed to non-hydric soils, were very accurate.

Hydric soils are by definition those soils which are saturated sufficiently to produce anaerobic soil conditions. Two of the three factors determining the presence of regulatory wetlands are hydric soils and saturated conditions. In addition, field analysis showed that the third factor, prevalence of vegetation adapted for life in saturated soil conditions, was almost universally present in the master planning area. It is therefore reasonable to assume, for the purposes of this master planning effort, that the presence of hydric soils is a positive indicator of regulatory wetlands in the master planning area. For instance, a common vegetation community, present both in forested wetlands and in forested uplands, consisted of the following dominant species:

Trees: W. Hemlock (facultative), Sitka Spruce (facultative upland)

Shrubs: Vaccinium sp. (facultative), Rusty Menzezia (upland), W. Hemlock (facultative)

Forbs (low groundcover plants): Cornus Can. (facultative upland), 5-leaf bramble (facultative)

Of these 7 dominant species, 4, or greater than 50% of species, are rated facultative or wetter, indicating a prevalence of wetland vegetation. Other forested wetlands with wetter soils usually contained one or more obligate species, with species such as Rusty Menzezia exhibiting morphological adaptation to the wet soils by growing on old stumps and logs.

Ralph Thompson, Juneau Corps of Engineers, has agreed with the above described method of wetland delineation for the purposes of this master plan.

It must be emphasized that individual proposals for development will require jurisdictional wetland determinations and permitting, if necessary, to ensure compliance with the Clean Water Act.

Recommendations for Wetland Areas

The following recommendations were developed by way of an abbreviated functional analysis of wetland communities. The functional analysis technique used is the WET II, as modified by Adamus for the CBJ in the "Juneau Wetlands, Functions and Values", 1987. The abbreviated analysis was performed based upon knowledge of important wildlife habitat from previous

studies in the area, field observations, public comment, and in the case of Peterson Creek, with additional consideration for residents with water rights near the mouth of the stream.

Comments from the public and resource agency personnel have clearly indicated several wildlife concerns: anadromous fish habitat and deer wintering habitat. In addition, residents near the mouth of Peterson Creek possess water rights in the creek, and could be impacted by water quality changes, as well as changes in flows of the creek. An additional concern was the recreational use of the area, which is not strictly related to wetland physical functions, but which is included as a function in the Adamus study.

Virtually all functions included in the Adamus study are important to fish, wildlife, recreational users of the area, local residents, and potential developers.

For instance, such functions as ground water recharge and discharge, surface hydrologic control, erosion sensitivity, and sediment and toxicant retention are important to both anadromous fish and downstream residents with water rights.

Other functions considered are: Nutrient Export, Riparian Support, Salmon Habitat, Disturbance Sensitive Wildlife, Regional Ecological Diversity, Ecological Replacement Cost, Recreational Use/Potential, Recreational Use/Actual, and Downslope Beneficiary Sites.

Peterson Creek Wetland Complex

A rapid analysis of the wetland complex encompassing the Peterson Creek drainage results in Very High, High, and Moderately High ratings for all functions except groundwater recharge, L, and Downslope beneficiary sites, M. (analysis sheet attached). This wetland compared favorably with the wetland complex at the mouth of Montana Creek. (ML1 in the Juneau study).

It is the recommendation of this author that the entirety of the Peterson Creek wetlands to the East of the mainstream be designated non-developable (with exceptions for necessary transportation facilities, low-impact recreation facilities such as trails, and habitat enhancement activities). This designation would preserve the high functional ratings of the wetland complex and associated fisheries habitat, as well as providing a large contiguous old growth forest of over 400 acres, important to deer wintering habitat, species diversity

and richness, and recreational value. Although there are a few upland "islands" within the contiguous wetland complex, the vast majority of the complex has very wet organic soils and includes many small tributary streams and seasonally flooded areas, making most development scenarios problematic.

Other Wetland Complexes Within the Study Area

In general, other wetlands within the study area should be avoided for development purposes where prudent and feasible, in accordance with Section 404 of the Clean Water Act. Wetlands with organic soils, such as muskegs, pose difficulties for most construction, in addition to the usual added difficulty of disposal of the waste soils. Other wetlands, such as forested wetlands with mineral soils are very little different than adjacent forested uplands in functional value. Construction in such forested wetlands can pose problems however, due to lateral discharge of groundwater and associated erosion potential.

For the purposes of this master plan, it is recommended that wetlands not discussed above (as associated with anadromous fish streams), be considered as developable after consideration of other factors, such as availability of upland sites, overall planning needs, logistics, and proximity to associated geographic features, such as shore frontage or potential deep-water port sites.

Anadromous Fish Streams

Peterson Creek. (ADF&G Anadromous Stream # 111-50-10750)

Peterson Creek supports runs of Cutthroat Trout, Dolly Varden Char, Coho, Chum, and Pink Salmon. The ADF&G Anadromous Fish Stream Atlas shows 5 tributaries to Peterson Creek that support these species. Field investigation of the area has shown many smaller tributaries within the wetland area that probably also support rearing habitat for the immature of those species.

A buffer of 200 ft. in wetland areas is recommended for the west side of the Peterson Creek mainstream, based on several factors: numerical modeling in literature (Adamus, 1987) supports this distance to assure lateral discharge from adjacent wetlands; 200 ft. would make a more windfast vegetative buffer than the normal 50 ft. to prevent windthrow from SE winds from carrying over the mainstream; and 200 ft. would provide a visual buffer for

both wildlife and recreational users of the streamside trails along the mainstream of the creek. Where uplands border the creek mainstream, a buffer of 50 ft. is recommended to allow maximum use of uplands while protecting the water quality of the creek.

Other Anadromous Fish Streams

Middle Creek., (ADF&G # 111-40-10600) at Middle Pt., supports runs of Cutthroat Trout, Dolly Varden Trout, Coho, Chum, and Pink Salmon in the short stretch of stream (200 - 300 ft.) below an impediment to fish passage created by a waterfall.

At Middle Creek, the stream becomes deeply incised only a few hundred feet upstream of tidewater. Using careful pollution and erosion control, development within 50 ft. of the top of the stream bank would be environmentally acceptable. This buffer will allow a relatively level area in which to control erosion and sedimentation while maximizing development opportunities. The level area at the mouth of the creek should retain a larger buffer to protect its park-like quality and prevent wind-throw. It should be noted that the CBJ Comprehensive Plan recommends a 200' buffer on either side of major anadromous streams (section 3.1.1).

Hilda Creek, approximately 1/2 mile south of Hilda Pt. (Anadromous Stream # 111-40-10690 and 111-40-10700) supports runs of Cutthroat Trout, Dolly Varden Char, Coho, Chum, and Pink Salmon in the north branch, and coho and Steelhead trout in the south branch.

Hilda Creek previously branched just upstream of tidewater into north and south tributaries. The southerly branch of Hilda Creek was discovered to have breached its channel approximately 1/4 mile south of the previous mouth, and now enters tidewater through a new streambed. The area between the new streammouth and the old stream mouth (still the mouth of the northerly branch) is an outwash plain, and obviously hydrologically active. The south branch has obviously lost some spawning and rearing habitat with the re-channeling, and the previous runs of Coho and Steelhead may have been impacted.

Both Hilda Creek streams should have 200 ft. buffer strips on both sides of each stream, for similar reasons as given above for the west bank of Peterson Creek mainstream. In addition, development in the extensive wetland complex upslope of Pt. Hilda should be avoided because of the high erosion

potential of those saturated organic soils, and the probable value of that area as deer wintering habitat.

The area between these Hilda Creek streams, within approximately 200 yards of tidewater, should probably not be used for intensive development, as it appears to suffer regular flooding and deposition of sediment.

Bald Eagle Nests

Nineteen Bald eagle nests have been located by the US Fish and Wildlife Service within the project area. Eighteen of the nests are near the West Douglas shore, and one is far inland, within the proposed golf course area. Most nests are evenly spaced approximately 1/2 mile apart, apparently near maximum density. No information is available on how many nests are occupied yearly, but the average ranges from 40 to 50%.

A 330 ft. radius buffer is recommended around each tree. This buffer is based on the following: a CBJ ordinance uses this distance prohibiting construction on public lands, and encouraging this buffer on private lands by policy in the Comprehensive Plan. In addition, local experience has shown this buffer to reasonably protect against disturbance during nesting, as well as provide a good windfast vegetative zone; for most trees in the study area this buffer will provide a undisturbed area between the nest and the eagle's food source, the water, and this standard has been accepted by the US F&WS to show a good faith effort to protect the nest tree, and in most cases would assure compliance with the Bald Eagle Protection Act.

Bald eagle nests are known to blow down or fall down over time, while new nests are constantly being built further and further from the beach. In any year, we can expect approximately 5% of the nest locations to change. Therefore, with 19 nests in the study area, on average one nest will blow down and/or be replaced, or another nest built, every year.

Should transportation corridors or other development proposals require development within the 330 ft. radius, consultation with the US F&WS is encouraged to prevent an inadvertent violation of the Bald Eagle Protection Act.

Regulatory Requirements

Those developments requiring fill or dredging of wetlands will require a Corps of Engineers Section 404 permit. Developments proposed seaward of Mean High Water will require a Corps of Engineers Section 10 permit. As discussed above, should the impacts of the proposed developments requiring these permits be considered significant by the Corps of Engineers, an EIS would be necessary to comply with NEPA regulations.

Other regulatory requirements associated with Section 404 and Section 10 permitting include the Section 401 Water Quality Assurance from the ADEC, a cultural resources clearance from the State Historic Preservation Officer, and Coastal Zone Consistency from the Division of Governmental Coordination. In addition, earthworks in excess of 15 acres require coordination with the EPA for application of the Storm Water General Permit under Section 402 of the Clean Water Act.

State permits probably would include Fish Habitat permits from the ADF&G for crossings of anadromous fish streams, water rights for wells or water impoundments, and tidelands leases from the DNR. Clearing of areas in excess of 10 acres require clearance for consistency with the Alaska Forestry Practices Act.

Environmental Conclusions

The identified environmental conditions at West Douglas take into account both known, mapped environmental resources, observed resources, and probable resources inferred from other materials. An important factor to keep in mind within the study area is the dynamic nature of both the environment and the environmental regulations, especially when considering such a long-term document as this master planning effort.

Environmental laws and regulations are changing almost yearly. For instance, wetland locations may be stable, but the definition of wetlands is prone to change, as well as regulations relating to development in wetlands. The threatened and endangered status of the Northern Goshawk and the Alexander Archipeligo wolf are currently being re-assessed. A ruling on those species is due in May of 1997. Both species could inhabit the study area, and are possibly using parts of the proposed development areas. Should they be listed as threatened or endangered species, development scenarios could change significantly.

Before any of the proposed developments is designed, more specific delineation of wetlands, Bald eagle nests, hazards, and critical habitats must be undertaken, using the best information of the day.

B. GEOLOGY AND SOILS

A geotechnical study was conducted of the CBJ/Goldbelt properties on the west side of Douglas Island. The study purpose is to describe the area soils, ground water and geologic conditions. These parameters are then related to the areas suitability for development. This report will describe our investigation findings, interpret the findings in terms of regional geology and topography, then offer conclusions and recommendations.

Regional Setting

The study area is on the northwest side of Douglas Island beyond the present end of North Douglas Highway. It extends as a "belt", about 1 mile wide and approximately 8.5 miles southeast along the west shore of the island. Most of the area is on a bench bounded on the west by Stephens Passage and on the east by the high mountain ridges of Douglas Island.

The area climate is relatively moderate, with a favorable southwest exposure. However no direct climate records exist for the immediate area. The Juneau area in general, has a wet maritime climate, with moderate temperatures (small seasonal and daily variations). Mean annual rainfall at the Juneau Airport is 53 inches. Mean annual temperature is 47 F. January mean low is 9F. July mean low is 42F, and mean high is 63F. Weather can be windy and stormy, and snowfall can be expected from November through March.

Geotechnical Study

Several reconnaissance studies have been made of the area by ADOT/PF, Environaid, US Soil Conservation Service, US Geological Survey and various other consultants. All of these studies, plus aerial photography and recent topographic maps, were used for this study.

Area Geology

Due to vegetation and soil cover obscuring bedrock outcrops in the study area, the bedrock geology has not been mapped in detail. The units that have been mapped are metasediments and metavolcanics thought to be Jurassic to Cretaceous in age. Some of the specific rock types are graywacke, slate, schist, greenstone, and conglomerate.

Much of the surficial geology is related to Pleistocene glaciation. During that time the ice was several thousand feet thick. The ice began melting about 10,000 years ago, and seawater flooded in, filling the fjords to a level 600 to 700 feet higher than the present level. Fine grained sediments were deposited from the silt and glacial-flour laden seawater, and larger clasts were deposited from melting ice bergs, thus forming the Gastineau Channel Formation (Miller, 1973).

Sea level prevailing at the time, retreated to its present day elevation in a series of steps related to seismic activity and isostatic rebound. During this stepped retreat, beaches were formed and deposited on the existing bedrock and soils. These beaches became stranded as the land rose, hence forming raised beach deposits.

Soil Sequences

The soils can be divided into six groups: muskegs, beach deposits, colluvium, bedrock (or shallow bedrock), till and glaciomarine deposits. It is often difficult to distinguish between the three sand and silt units (till, glaciomarine and raised beach).

Because of the limited ground truth information, describing the area in terms of the soil sequences can be done only in a general way. The terrain in the West Douglas Goldbelt/CBJ properties can be divided into three areas: the area from the northern property boundary (south of Outer Point) 2.1 miles southeast to Middle Point, Middle Point 3.4 miles southeast, and the remaining 1.7 miles to Point Hilda.

In the first segment the terrain is flat to gently sloping. Generally near the beach is a band of well-drained gravelly sand/silt and shallow bedrock. Continuing inland, the soils are often poorly drained and covered with a thick organic mat. The organics range from 1.5 to 3.0 feet of mucky peat in the scrub forest, to 4.5 to 8.0 feet of peat in the muskegs. Further inland the

terrain begins to rise and colluvial soils and shallow bedrock is common (these are well drained soils). The colluvium often contains large angular rocks.

In the second segment, beginning at Middle Point, the bench terrain of the first segment pinches out and gives way to relatively steep hillside terrain. This area is fairly well drained. The soils are generally sands and silts with larger clast. The organic mat ranges from 0 to 2.0 feet thick. The steeper upper slopes are forest litter over shallow bedrock.

In the last segment, near Point Hilda, the terrain begins to flatten out and large areas of poorly drained soils with thick organic covers are common. There is a band of fairly well drained soils near the beach.

Ground Water Conditions

The water table varies with terrain slope, permeability of underlying soils, and season of the year. Flat to gently sloping areas tend to have high water tables and thick organic mats with ground water 0.5 to 2.0 feet under the surface. Areas of steeper terrain are better drained and have thinner organic mats. Here the water table is over 2.0 feet below the surface. In areas near the beach underlain by permeable soils, no water table was indicated within 3.0 feet of the surface. Ground table depths are taken from the ADOT/PF-North Douglas *Reconnaissance Report*. The elevations were measured in the spring and summer of 1984 (March 16 to June 22).

During extended rainy periods the water table should be expected to rise to near the surface in muskegs and to within 2.0 'of the surface in better drained areas.

Proposed Quarry Site

ADOT/PF proposed a quarry northeast of the present end of the North Douglas Highway. The quarry encompasses a ridge that parallels Douglas Highway. ADOT/PF estimates that the quarry contains 15,000,000 c.y. of material. They have prepared some quarry design concepts and foresee the quarry as suitable for supplying material for both road construction and general area-wide development.

Two potential conflicts exist. It is the same general area that has been proposed for a golf course and it is near an area identified as wetlands.

Conclusions and Recommendations

The area's favorable micro climate and flat to modestly sloping terrain, make it very desirable for development, especially residential. Generally, the soils and drainage are satisfactory for conventional building foundations and road construction.

However, there are several soil conditions that require special consideration. The areas of muskeg and mucky peat in the first and last segments (Peterson Creek Basin and Hilda Creek Basin) pose construction problems. This soil normally requires removal and replacement backfill, overlay, or other special foundation measures. These soils are unsuited for septic tanks or individual treatment plant or drainfield type wastewater disposal systems.

In areas underlain by glaciomarine silts, consideration needs to be given to this soil's tendency to loose strength and flow when wet. During and after construction it needs to be kept dry, often requiring drainage structures and special construction techniques.

The middle segment (Inner Point and south one mile) of steeper terrain may be in the path of debris flows from the very steep terrain above it. Avoidance is often the best protective measure in these areas.

The soil conditions described herein are based on limited tests holes and probes as well as the interpretation of previous studies in accordance with accepted professional standards. However, variation from the predicted soil conditions will occur in a study area this large. Therefore, it will be required to conduct more detailed geotechnical studies prior to any specific individual design and construction. These future studies should offer recommendations about drainage, frost susceptibility, foundation bearing values, slope stability and material suitability.

C. COASTAL MARINE CONDITIONS

A general marine reconnaissance and evaluation was conducted along the entire West Douglas waterfront. Specific study goals were identified as follows.

- Conduct a general reconnaissance of West Douglas Island between Outer

Point and the area one mile south of Point Hilda.

- Identify and evaluate areas having marine-related development potential, incorporating new and existing bathymetry, and wave/weather forecasting.

The City and Borough of Juneau currently has, and will continue to have, a need for additional dock and harbor space, and adjacent uplands for support. Potential facilities discussed for development on the west side of Douglas Island have included a freight dock, a fuel terminal, a cruise ship dock, new Coast Guard and NOAA facilities, a fishing dock with boat haulout and upland storage, a marina, and boat launching facilities.

The report is intended to serve as a foundation for analysis of future development proposals on the west side of Douglas Island. More detailed studies will ultimately be conducted as specific projects emerge.

Outer Point to Middle Point

The shoreline between Outer Point and Middle Point aligns roughly in a northwesterly-southeasterly direction. It starts out as steep, weathered bedrock at Outer Point and eventually transitions to a gravel beach near Middle Point. Water depth is shallow throughout this stretch of shoreline as the ten fathom depth averages more than a thousand feet from shore.

Prevailing winds from the south to southeast direction blow from Point Young and across Stephens Passage before reaching this section of beach. The resulting fetch length is approximately six nautical miles. For a wind speed of fifty knots, the predicted wave height is approximately four feet, if the wind speed is sustained for at least an hour and a half. Winds from the northwesterly direction have a fetch length of approximately ten nautical miles and blow roughly parallel to this beach. With a wind speed of fifty knots, the predicted wave height is approximately six feet, if the wind speed is sustained for at least two and a half hours. A southwesterly wind would blow directly across Stephens Passage with a fetch length of three nautical miles. Again, for an assumed fifty knot wind speed, the predicted wave height at this beach would be approximately three feet if the wind was sustained for a minimum of one hour.

Uplands for this portion of Douglas Island consist primarily of muskegs and small timber extending an average of approximately half a mile from the base of the mountain down to a band of old-growth timber adjacent to the beach. In general, the topography in this area is relatively level and has potential for development.

Inner Point to Point Hilda

The shoreline between Inner Point and Point Hilda aligns roughly in an east-west direction. Although portions of the shoreline are gravel beaches, the majority of the shoreline is comprised of large cobbles. Deep water is close to shore throughout this area.

Prevailing winds from the southeast direction blow across Stephens Passage with a fetch length of approximately two nautical miles. For a wind speed of fifty knots, the predicted wave height is approximately two and a half feet, if the wind speed is sustained for at least forty-five minutes. Winds from the South to southwesterly direction blow across Young Bay resulting in a fetch length of approximately five nautical miles. For a wind speed of fifty knots, the predicted wave height is approximately four feet, if the wind speed is sustained for at least an hour and a half. Due to its east-west orientation, this section of shoreline is not significantly affected by northerly winds.

The base of the mountain begins to move back away from shore again along this portion of the island. The result is a substantial amount of developable uplands, particularly near the Point Hilda area.

Point Hilda Area

The area immediately east of Point Hilda is a typical delta, indicating shallow water depths extending well off shore. The ten fathom depth, for example, is approximately half a mile from shore in this area. Adjacent to the east of this area however, water depths are adequate for most marine-related development other than a deep-draft vessel facility. Beaches in this area are predominately gravel with variable sized cobbles.

The portion of Stephens Passage adjacent to Point Hilda is oriented in the east-west direction; consequently, the area is completely protected from northerly storms. Prevailing winds from the south to southeast direction blow across Stephens Passage with a fetch length of approximately three nautical miles. For a wind speed of fifty knots, the predicted wave height is approximately three feet, if the wind speed is sustained for at least an hour. As the winds become more easterly, the fetch length increases for this area. A direct easterly wind would have a fetch length of approximately eight nautical miles. For a wind speed of fifty knots, the predicted wave height is approximately five feet, if the wind speed is sustained for at least two hours.

The entire Point Hilda area has developable uplands immediately adjacent to the shoreline. It is primarily old-growth timer and the topography is relatively consistent and level.

Purpose

This chapter of the West Douglas Concept Plan and Plate 2, following, are recommended for adoption by the CBJ Assembly as an amendment to the Comprehensive Plan. The purpose of this amendment is to redefine the existing West Douglas New Growth Area designation in the CBJ Comprehensive Plan to instead designate five discrete development areas. This material will also provide more specific guidance for future growth within these areas, and provide guidance for protection of the intervening open land.

Before any significant development in the West Douglas study area can occur (of more than a minor nature), a Master Plan must be prepared and approved by the CBJ Assembly, in accordance with the guidelines for New Growth Areas provided in the Comprehensive Plan and Land Use Code. The development concepts and policies listed in this chapter should help guide land use proposals for the development areas, and ensure protection of open space areas.

This suggested Comprehensive Plan amendment does not change the existing Resource Reserve land designation in the Comprehensive Plan, nor the Rural Reserve zoning designation from the CBJ Land Use Code. Master Plans prepared for the specific development areas in the future would propose new land classifications and zoning that would be appropriate for each area.

The following concepts and policies provide specific guidance for preparation of Master Plans for development within the West Douglas Concept Plan area. Adopting this chapter, the final concept plan shown as Plate 1, and these policies as an amendment to the CBJ Comprehensive Plan, will ensure that they guide preparation of the more detailed Master Plans for the New Growth Areas, and the eventual developments that result. This chapter includes the following planning components: Development Concepts, Development Area Policies, Transportation and Utilities, Open Space, and Recreation.

A. WEST DOUGLAS DEVELOPMENT CONCEPTS

Development in West Douglas should be consolidated into five discrete "development areas" as illustrated (designated as Areas 1A, 1B, 2, 3, and 4). These compact areas will be developed at urban/suburban densities and provide a full complement of land uses, services and facilities, including residential, commercial, industrial and recreational uses. The development areas will be separated by significant open space reserved for the protection of important cultural, ecological, and/or recreational values.

This land use pattern is not typical for Juneau. Development outside of Juneau's urban centers is more typically characterized by single family homes located on large private lots along each side of single arterial roadways. Non-residential uses and services are generally not available close to these residential areas. Residents must travel to Juneau's developed urban centers for shopping, schools and libraries, cultural activities, industry and employment.

For many reasons identified earlier, the land use patterns proposed in this Concept Plan are much more suited to the West Douglas area and will more satisfy the community's needs for use of this large, important land area.

First, the environmental and physical features of West Douglas are varied throughout the study area and dictate different types of land uses. High and moderate value wetlands are interspersed with non-wetland areas. Some soils drain well and can support development, while nearby, poorly draining soil conditions or very steep slopes make development less feasible. Certain areas are protected from high winds, while others are not. There are only a few areas where water depths can support development of a recreational marina or industrial port facility. Streams and drainages that support Salmon and other fish bisect the area, and Eagle trees are dispersed along the coast line. Close evaluation of the natural environment of the study area clearly indicated large areas can only be developed with difficulty and at high cost. To avoid these problems, development is instead proposed for smaller more discrete areas where development will be less costly and can occur without negative environmental impacts.

Second, the Goldbelt Corporation, a major land owner in the West Douglas area, has identified large tracts of land which will be retained as reserves for open space, habitat, recreation, cultural and other uses. Areas of Goldbelt property that are more suitable for development will be developed at a higher density and level of use. This will maximize the benefit gained from these compact areas of land, consolidate development for more efficient services, and protect sensitive

environmental areas from impact. It is unlikely that Goldbelt will dispose of its land to private land owners for development in a dispersed residential land use pattern.

Third, the CBJ Comprehensive Plan designates West Douglas as a New Growth Area, where compact areas of urban/suburban densities and mixed uses are established as a policy goal. The West Douglas Concept Plan follows this direction from the Comprehensive Plan. As a land owner, the CBJ has also indicated that protection and enhancement of the recreational values of its lands on West Douglas are a high priority. Consolidating development in discrete nodes, and reserving intervening land in open space, satisfies this land management objective.

Finally, a land use pattern that includes compact development areas, with intervening open space, is most responsive to the planning principles and the public interests outlined in Chapter 4. This type of development will offer the public the advantages and convenience of urban living, with the amenities of a more rural, less congested area. This land use pattern: (1) uses the limited land area that is suitable for development wisely, by increasing density and accommodating many uses in a compact area; (2) provides for a mix of land uses and activities generally within a five-ten minute walking radius to create a strong community feeling and a vital neighborhood; (3) creates a mix of housing densities, which promotes affordable housing; (4) uses the natural characteristics of the land to determine where development is and is not appropriate; (5) allows for efficient and cost effective utility, transportation and infrastructure service; (6) encourages pedestrian and non-motorized transportation; and (7) protects areas of environmental and cultural sensitivity.

Development Areas

As described above, the West Douglas Concept Plan designates five discrete areas as development areas. Population growth, land needs and development opportunities will drive the development schedule for the West Douglas development areas. The Concept Plan anticipates that development will occur as market forces and the interests of the land owners dictate, but expects that the basic infrastructure, location and type of development will be largely pre-determined by the Master Plans prepared for the development areas, and by the requirements of the Comprehensive Plan and Land Use Code. It is expected that development will be phased, perhaps over a considerably long time span. This type of phased development is anticipated for New Growth Areas in the CBJ Comprehensive Plan (policy 2.7.6).

Growth Area remains compact, efficient, and does not intrude on areas with important ecological or cultural values, or areas that contain unstable slopes or soils not suitable for development.

2. Growth within development areas should be organized compactly and coordinated to ensure wise use of land resources, allow efficient and cost effective utility and infrastructure service, promote energy efficiency, and preserve open space.
3. General design concepts that promote pleasant communities with vital neighborhoods should be followed. This includes mixed use development that provides a sense of community, such as coffee shops, hardware and drug stores, common park/green areas, and community post offices. These small scale commercial uses should be integrated into residential areas where practical. Development Areas 1-A, 3 and 4 should be planned around open, green space in the community center, surrounded by dense land uses and concentric rings of increasingly less dense residential development. Development should be planned around a five to ten minute walking distance from community center(s).
4. Moderate density housing suitable for the full range of income levels should be planned. Residential designs should break the stereotype that moderate and high density development is low income residential by promoting careful design and using design ideas from the new Planned Community Development (PUD) ordinance.
5. "Strip" commercial development should be avoided. Large commercial uses not suitable for integration into the residential community, such as large grocery stores, banks, drug stores, auto repair facilities, and mini-malls, should be accommodated in well defined commercial districts.
6. Where possible, growth within development areas should be designed to protect important vistas and view sheds and to take advantage of solar access and weather protection.

C. TRANSPORTATION AND UTILITIES

Construction of a "limited entry" main road, with a secondary road system within each development area accessing the main road with only one or two major

The five development areas proposed in the West Douglas Concept Plan are shown overall in Plate 1. Plates 6 and 7 provide informal lay-out suggestions to identify the type of potential uses. Each Development Area is further defined in Chapter 7 following.

Development Area 1-A:

Goldbelt Corporation owns the majority of the 120 acres in this development area. The community will be located on desirable beach frontage, with a concentric organization around public open space. The most dense commercial and housing uses will be located adjacent to the open center, with lesser densities at the perimeter. Anticipated uses in this development area are significant housing and a supporting commercial core. A major anchor use is likely, such as a guest lodge or office/research center such as the NOAA lab or USCG facilities, that provides a base for local housing and commercial support. At build-out the population could be 2,500. Related institutional facilities would likely include an elementary school, fire station and library, which would eventually serve all development in the West Douglas area. This area does not have deep-water marine access and the shoreline is not amenable to a recreational harbor.

Development Area 1-B:

The CBJ owns the 200+ acres in this development area. The focus will be dispersed low to moderate density housing adjacent to the golf course. Gasoline stations, food stores and other commercial enterprises would be guided to Development Area-1 to prevent strip commercial growth along the road, and to prevent the beginning of a pattern of driveways and streets bisecting the main (higher speed) transportation corridor for the area.

Development Area 2:

Goldbelt Corporation owns the approximately 50-70 acres in this development area. The primary function of this development area will be for water-oriented industrial and commercial uses. The location has very good marine potential, with sufficient water depth and reasonable storm protection, allowing year-round deep draft vessel use. A primary development feature will be large dock(s) with adjacent filled staging areas. Most development will be below the highway, with the complex served by a secondary access road. Typical uses could be a terminus for marine transshipment of resources such as fish or minerals, use as a bulk fuel depot, use for other storage facilities, or support of water-related agencies such as the

USCG or NOAA research vessels. Uses affecting infrastructure might include a commercial ice plant, fish processing facilities, limited office space, bulk freight, and fuel storage.

Development Area 3:

Goldbelt Corporation owns the approximately 80 acres that comprise this development area (this acreage excludes nearby recreational use lands). The major focus of this area will be primarily residential, with less commercial activity than in Development Area 1-A. Total area population could some day total 2,000. A key feature will be a large marina and water access, and adjacent recreational uses. Because of topography, the layout will be somewhat linear, with denser uses adjacent to a central open area. Southern perimeter areas will include significant areas for public recreation, with access to undeveloped areas in the Hilda Creek drainage. These areas should be somewhat separated from the compact housing areas. Recreational development could include public camping, beach access and RV accommodations.

Development Area 4:

The waterfront portion of the approximately 100 acres in this development area is owned by Goldbelt and the uplands are owned by the CBJ. This area is significantly separated from other West Douglas development by the Hilda Creek drainage. Though the property has excellent views, recreational opportunities and few development constraints, its development is likely to be farther into the future because of the extensive road and other infrastructure necessary for access, and the need to cross environmentally sensitive lands at Hilda Creek. When it does develop, the area is far enough away from Development Area 1-A to expect that it will support commercial and some institutional activity in addition to a major housing component. The area could support an eventual area population of 3,000.

B. DEVELOPMENT AREA POLICIES

1. The development area boundaries shown on the West Douglas Concept Plan map should be considered flexible until more exact boundaries are identified as part of the master planning process. Any approved boundary changes should be made only after it is ensured that development within the New

intersections is recommended. This road layout will avoid a pattern of many bisecting driveways and streets along the main road, which will limit traffic congestion and safety hazards.

Development Areas should be designed to promote pedestrian and non-motorized access. Compact development patterns, that include a mix of residential, retail and commercial uses, will encourage pedestrian and non-motorized traffic through the use of narrow streets, large sidewalks, benches and other features. The CBJ Comprehensive Plan indicates that minimum standards for bike and pedestrian paths will be required in the Master Plans for the development areas (policy 2.7.3). Consolidation of development into discrete areas will also facilitate efficient service of the West Douglas area with public transportation.

Transportation Policies

1. The new North Douglas Highway should eventually be extended to traverse the length of the study area, providing access to both CBJ and Goldbelt land. The road should be designed so that it:
 - a. Avoids, where possible, high value wetlands and other environmentally sensitive lands.
 - b. Limits or prohibits access and curb cuts on the highway extension to those that are necessary to access town centers or major developments.
 - c. Incorporates a separated pedestrian/bikeway or easement for non-motorized uses along the entire length of the road.
2. Transportation systems should be designed to preserve community character and livability. This will be best accomplished by separating local traffic within development areas from regional traffic on the North Douglas Highway extension.
3. Streets within development areas should be scaled to serve local traffic needs only. Pedestrian-friendly streets should be encouraged with narrow streets, large sidewalks and other design features.
4. Bikeways and pedestrian trails should be constructed within the development areas as well as connected to the main West Douglas Highway, to allow for safe and convenient non-motorized movements.

5. Public roads should be confined to serving planned growth within defined development areas. Road extensions outside of planned development areas should be restricted or prohibited. Small discreet roads outside these areas may be permitted to provide access to isolated recreation, tourism or cultural facilities.

Utilities Policies

1. All new development within study area should be supported by a public water and sewer system.
2. Development should be limited or precluded within watersheds that could potentially be used for public water supplies.
3. Utility extensions should be limited to serve indicated Development Areas only. Utility extensions outside of Development Areas should be restricted or prohibited.
4. Consider underground electrical and communication utilities to preserve the viewshed; if not possible, place utilities on uphill sides of roads.

D. OPEN SPACE

The Concept Plan proposes that land areas between the five development areas be left undeveloped or used only for very low impact activities, such as wilderness recreation, cultural activities, or subsistence use. This type of nodal development with protected land zones between relatively compact development zones works well with the environmental attributes of the West Douglas study parcel. Perhaps more significantly, it is also a major land management priority of Goldbelt, Inc. to retain major undeveloped areas for cultural, recreational and subsistence activities.

Lands recommended for retention as open space include sensitive watershed areas, anadromous fish streams and buffers on either side of these streams, high value wetlands, soils and slopes unsuitable for building, areas surrounding eagle nest trees, and areas of cultural sensitivity.

The designation of open space between developed portions will also enhance

the relative attractiveness of developed portions because of the adjacency of the natural land attributes, including view protection and recreation access.

Open Space Policies

1. Lands illustrated as Open Space which are owned by the CBJ should be retained in public ownership and classified as "open space," to ensure that they will remain undeveloped. The CBJ Comprehensive Plan indicates that the open space land use designation is appropriate for "land in public ownership ... [that is] to be retained as openspace and managed for recreational, scenic, habitat, historic, educational, interpretive, cultural and scientific values."
2. Goldbelt Corporation is encouraged to continue investigating and select one or more mechanisms for designating some of its private lands for retention in an undisturbed state. Mechanisms include conservation easements, working through a land trust, sale of development rights to a land preservation agency, or land trades.

E. RECREATION

Open space, park, trail and other recreation needs have been given high consideration. The Concept Plan identifies opportunities for providing public access to the shoreline, walking in undisturbed open land, and discusses the importance of identifying land for expanded public recreation. The current "end-of-the-road" is the jumping off point for undeveloped dispersed recreation activities in the CBJ, including hiking, hunting, and skiing, to name a few activities. One issue not sufficiently addressed at present is the fact that much public activity occurs on restricted Goldbelt property. Eventually, as West Douglas develops and the road is extended, the new end-of-the-road in the Pt. Hilda vicinity (with significant CBJ recreational property) will fulfill these same needs and serve a similar purpose. Eventually, this area will also be more developed, probably pushing some uses even farther south.

Recreation Policies

1. Guidance provided in the CBJ Parks and Recreation Comprehensive Plan, adopted July 1996, should be used to prepare a recreation component of future West Douglas Master Plan(s) to determine the amount and type of recreation services and facilities that should be provided. Consideration should be given to accommodating the six types of recreation amenities recommended in the CBJ Parks and Recreation Comprehensive Plan for each geographic extended neighborhood area, including: access to natural features, trails, park facilities, boat launches, fishing access and indoor recreation facilities (CBJ Parks and Recreation Comprehensive Plan, p. 8-22. #2, and pp 6-1, 6-2).
2. A system of open spaces, parks, and trails should be established within the development areas and in the intervening undeveloped areas.
3. Low impact public access to beaches and other important recreational attractions in the West Douglas study area should be provided.

Environment

The current Concept Plans have been developed to significantly avoid or mitigate environmental degradation at West Douglas. As development plans mature the following principals should be maintained:

1. Designated development areas should avoid important fish and wildlife habitat, particularly anadromous streams and eagle trees, and areas important for subsistence harvesting and gathering.
2. No development should occur within high-value wetlands. Development may occur within moderate and low value wetlands or areas with difficult or poorly drained soil conditions when necessary to ensure compact land development and efficient road design within development areas.
3. Development on unstable slopes should be avoided. With proper engineering, limited development may occur on steep slopes when necessary to ensure compact land development within development areas.
4. Wildlife corridors should be established that link critical coastal wildlife habitat with upland areas.

A. DEVELOPMENT AREA ASSUMPTIONS

Over-all conceptual plans for West Douglas have identified five distinct development areas dispersed along the eight-mile length of the study property. The following is a set of planning assumptions that define the nature and extent of development that may occur in each of these *Development Areas* over time. This general description of potential uses and acreages is a necessary step to provide a basis for estimating development impact on lands, traffic impacts, potential infrastructure needs, and development strategies.

It is also assumed that large areas of property between nodes is not developed. This open space will be retained for specialized low-impact uses such as Goldbelt subsistence use, recreational space, habitat reserve, and other open designations. Any limited use that does occur should not require infrastructure and utility connections.

The specific planning assumptions for each of the Development Areas are described generally in the following descriptions, with more elaboration in following portions describing planning goals, infrastructure, or development characteristics.

Extension of the primary access road, and improvement from a low-speed road to eventual full highway is implicit in the full development of each of the areas described following. Though development is likely to start with the nearest parcels to the existing road terminus (Development Areas 1-A and 1-B), this is not certain. The development of Area 2 for marine and transshipment uses might be the first to occur. Similarly, no timeline for full development can be established, since growth will be governed by market forces.

The development scenarios described following for four growth areas collectively total about 570 acres. The road itself, allowing a 150' ROW for the property length, adds about 128 acres. Out of the total study parcel of approximately

5,000 acres, this reflects an eventually development cap of 14%.

It is critical to the success of this "nodal" planning concept that undeveloped portions of property be retained in an open, undeveloped state, creating the positive separation between areas that are built up. This enhances the desirability of growth areas. It also ensures that significant portions of land are preserved as a Goldbelt cultural and subsistence reserve, and other CBJ/Goldbelt lands as recreational or habitat areas that acknowledge the special ecosystems. See additional discussion under Chapter 8, Implementation.

Description, Development Area 1-A

Total development will be controlled to not exceed approximately 120 acres. The community will be located on desirable beach frontage, with a concentric organization around an open public space. The most dense commercial and housing uses will be located adjacent to the open center, with lesser densities at the perimeter. Acreage and usage is assumed to roughly match the following:

1.	Open park and public space	15 acres
2.	Commercial	15 acres
3.	Mixed Use (150 residential units)	15 acres
4.	High Density Housing (250 units)	15 acres
5.	Med. Density Housing (300 units)	30 acres
6.	Special Uses (lodge, office complex, institutional)	30 acres

Anticipated uses in this development consist of significant housing and a supporting commercial core. It is expected that the development will also include a major anchor tenant, such as a guest lodge, or office/research facility that would be appropriate in an attractive, self-contained setting (the NOAA laboratory has been discussed). This anchor development would help provide a base for local housing and commercial support. Full housing development is estimated at 700 units. The approximate full-term population, including housing and commercial uses, may be estimated at 2,500. Related development, as the community reached maturity, would probably include public or institutional facilities such as an elementary school, fire station, and library.

Description, Development Area 1-B

1.	Golf Course and facilities, incl. clubhouse	200 acres +/-
2.	Dispersed housing adjacent to golf course	Acreage unknown

Anticipated golf course development slated for CBJ property near Development Area 1-A has been designated Development Area 1-B because of proximity. At present, planning for that project has not progressed enough to tie down specific golf course lay-out and adjoining housing areas. Detailed infrastructure and utility impacts will be identified separately by later planning documents. It can be assumed that future residential development adjoining portions of the golf course will utilize the commercial support of nearby Development Area 1-A.

Description, Development Area 2

Total development of this parcel is expected to total 50 - 70 acres. The primary function of this area will be for water-dependent industrial, commercial, and possibly recreational uses. The location has very good marine potential, with sufficient water depth and reasonably good storm protection, allowing year-round deep draft and smaller vessel use.

The primary development feature is anticipated to be a large dock(s) with adjacent filled staging portions. Most development will be below the highway, with the complex served by a secondary access road. Anticipated development uses are expected to fall under Waterfront Industrial uses or Waterfront Commercial uses.

Discussed development potential has included a terminus for marine transshipment of resource industries such as mining, commercial fisheries operations, use as a bulk fuel depot, support of water-related agencies such as the United States Coast Guard or NOAA research vessels, and as a general-use boat launch and breakwater.

Uses affecting infrastructure might include a commercial ice plant, fish processing facilities, limited office space of perhaps 5,000 sq. ft. supporting commercial operations, bulk freight, fueling and fuel storage facilities.

Description, Development Area 3

Development of this area is anticipated to be approximately 80 acres, excluding nearby recreational uses. The nature of development will be primarily residential, with less commercial activity than in Development Area 1-A. An attractive potential feature of the area would be a marina and public water access, and good access to adjacent inland recreational uses.

Because of topography, the lay-out will be somewhat linear, with denser uses adjacent to a central open area. Southern perimeter areas will include significant areas for public recreation, with access to undeveloped areas in the Hilda Creek Drainage. These areas will be somewhat separated from the compact residential development portions. Recreational development may include public camping, beach access, and RV accommodations. Acreage and usage is assumed to roughly match the following:

1.	Open and public areas	10 acres
2.	Mixed use (commercial, housing) (100 housing units)	15 acres
3.	High density housing (200 units)	15 acres
4.	Med. density housing (200 units)	20 acres
5.	Low density housing (100 units)	20 acres
6.	Special uses (RV, camping)	20 acres

Total housing is anticipated to number 600 units, with a significant additional transient population associated with recreational uses. For infrastructure design purposes, assume an equivalent population of 2,000. Marine use may be difficult to achieve for all-year moorage for small craft, given moderate storm exposure.

Description, Development Area 4

This area is significantly separated from other West Douglas development by the Hilda Creek drainage. Though the property indicated is very desirable in terms of view, recreational opportunities, marine uses, and buildability, its development is likely to be fairly far into the future because of the extensive road and utility development costs, and the need to cross sensitive lands at Hilda Creek.

The development will be separated enough from other commercial centers, such as Development Area 1-A, to expect that it will support commercial and institutional activity, in addition to a major housing component. It would easily support additional marine development, from commercial to recreational uses. Acreage and usage is assumed to roughly match the following:

1.	Open and public areas	15 acres
2.	Mixed use (commercial, housing) (150 housing units)	15 acres
3.	High density housing (250 units)	15 acres
4.	Med. density housing (250 units)	25 acres
5.	Low density housing (100 units)	20 acres
6.	Special uses (marina uses)	10 acres

The anticipated development equals approximately 100 acres, with an assumed housing component of 750 units, and a population of 3,000. Related development would expect to include a school, fire station, library, and light commercial development consistent with a satellite community.

B. ENVIRONMENTAL DEVELOPMENT IMPACTS

The West Douglas study property is environmentally rich and diverse. The four designated Development Areas have been located to minimize harmful environmental impacts. The areas avoid all high value wetlands, anadromous fish streams, and protect appropriate buffers around eagle trees. The following specific analysis of each area and the highway extension is offered.

Environmental issues, Access Highway Corridor

The proposed access highway corridor would transit a number of known and possible wetlands areas. The route does a good job of avoiding critical habitat areas around anadromous fish streams and known Bald eagle nests.

The high-speed, limited access highway envisioned would probably require compliance with the National Environmental Policy Act (NEPA) regulations if significant amounts of wetlands would be impacted, or if federal funds are used in construction. The NEPA review would typically consider not only the impacts of the road itself, but also the impacts of associated development areas and activities proposed.

In 1991, a Record of Decision (ROD) was signed by the Federal Highway Administration for an EIS prepared by the Alaska Department of Transportation and Public Facilities. That EIS was a first tier document, designed to provide a highway corridor for further planning purposes. Since the corridor described in that document was not adopted by the local planning authority, and since more than three years have passed since the document was approved without a re-evaluation of the document, as required by NEPA, is assumed that EIS, and the associated highway corridor, are no longer legally valid.

Environment, Development Area 1 - A

Development Area 1 - A consists of approximately 200 acres just south of the Peterson Creek drainage area. This area contains no anadromous fish streams. One known Bald eagle nest is located approximately in the center of the shoreward side of the area. The area contains approximately 10 acres of mapped muskeg wetlands. In addition, soils mapping shows approximately 40 acres of Kina soil in the development area. Kina soil is an organic soil, usually saturated, and usually indicative of forested wetlands in the study area. An additional 15 acres are mapped as Maybeso soil, a shallow organic soil that can be indicative of forested wetlands.

The known or suspected wetland acreage is approximately 65 acres. The Bald eagle nest buffer would approximate 8 acres, for a total of approximately 73 acres that should be avoided, if possible, within this development area.

The conceptual plan for this development area calls for no more than 120 acres of development, theoretically possible, while avoiding both wetlands and the Bald eagle nesting area.

Environment, Development Area 1 - B

Development area 1 - B is located adjacent and upslope of the proposed golf course area. There are no known Bald eagle nests in this development area, nor does wetland mapping indicate the presence of wetlands. Soil mapping shows an area of approximately 8 acres that could be forested wetlands. In addition, small forested wetlands may exist on the discontinuous benches in the area. Because of this area's location within the Peterson Creek drainage, special care would need to be taken in design, construction, and operation of developments to avoid water quality impacts to Peterson Creek. The small streams that drain this area are probably upstream of anadromous fish habitat, but do flow directly into fish habitat areas. This area would offer spectacular views over Stephens Passage toward Admiralty Island.

Environment, Development Area 2

This development area is approximately 120 acres in size. Approximately 15 acres of this area is mapped wetland. Approximately 10 more acres have mapped soils that are indicative of wetlands within the study area. Two Bald eagle nests are known to exist within the area, one close to the northern

boundary of the area, and one close to the southern boundary. The total area of Bald eagle nest buffer would be approximately 16 acres. Total area of development proposed for the area is 50 - 70 acres, consistent with avoidance of the critical environmental areas. There are no known anadromous fish streams in this area. The small level area at Inner Point has a nice sand beach.

Environment, Development Area 3

This 100 acre development area contains 28 acres of mapped wetlands, and another 15 or so acres of land that may be forested wetland, based upon soils mapping. Three Bald eagle nests are known within this area. One Bald eagle nest is on the western boundary of the area, therefore the buffer area would only take 1/2 of the normal 8 acres, or 4 acres. The other 2 Bald eagle nests known are within a mapped forested wetland, therefore their buffer is contained in the above delineated wetland acreage. The area contains no known anadromous fish streams. As this area is slated for a total development of 80 acres, some development may encroach upon forested wetlands, depending upon final delineation of those wetlands as development is imminent.

Environment, Development Area 4

This 115 acre development area does not contain any mapped wetland areas, however, soils mapping indicates approximately 8 acres of land that is very possibly forested wetlands, and another 11 acres of land that may forested wetlands. There are no known Bald eagle nests or anadromous fish streams within this area. This area has a beautiful sand beach with south exposure and gently sloping uplands. 100 acres of this area is slated for development; therefore, careful planning and delineation of wetlands would be necessary to avoid wetlands.

C. WATER AND WASTE WATER UTILITY DEVELOPMENT

This section examines options for developing water and wastewater utilities to support proposed development. Size and development assumptions are as previously described for five areas designated Areas 1-A, 1-B, 2, 3 and 4.

Water Utility

The average demand for potable water associated with the new development areas is estimated as follows:

	Average Demand ³ (gallons per day)
Area 1-A	195,000
Area 1-B	100,000 ¹
Area 2	215,000 ²
Area 3	160,000
Area 4	235,000
Total	905,000

¹ assumed demand due to lack of planning information

² primarily associated with seafood processing

³ demand does not include proposed golf course uses

Two general options were considered for providing potable water to meet demand: extending the existing City and Borough of Juneau distribution system to each area as it is developed, or developing new utilities based on local stream sources.

Two potential new sources were considered in detail: Middle Point Creek and Hilda Creek. Peterson Creek was not considered, due to low flows and potential for resource conflicts. Middle Point Creek flows are sufficient to meet the expected demand of full development of Areas 1-A and 1-B. To meet the very large demands associated with seafood processing at Area 2, as well as development of Areas 3 and 4, the Hilda Creek source would have to be brought on-line.

Assuming that development occurs from west to east (from Area 1-B to 4), capital costs for the two alternatives are estimated as follows:

Service Area	Cumulative Costs of Extending Existing Utilities (in millions)	Cumulative Costs of Developing New Utilities (in millions)
1-B	\$6.7	\$4.5
1-A	\$7.0	\$4.5
2	\$8.9	\$13.1
3	\$9.9	\$13.1
4	\$12.1	\$13.5

Estimates suggest that initial capital costs would be less to establish a new Middle Point Creek water source, treatment and distribution system, than to extend the existing distribution system to serve areas 1-A and 1-B. With development of Area 2, however, a Hilda Creek system will have to be developed. At this point, it becomes more economical to extend the existing distribution system to serve the new areas.

While no estimates were made, costs associated with operating the filtration treatment that will be required for the new water sources will far exceed costs of operating new storage and distribution components required to extend existing services to the areas. Withdrawing water from Middle Point and Hilda Creeks will pose potential fisheries resource conflict issues, while the existing Salmon Creek and Last Chance Basin well field sources are likely adequate to meet the increased demand. A significant advantage of extending the existing distribution system to the new development areas would be making water service available to properties along North Douglas Highway between the end of the existing system near Fish Creek and Outer Point.

Wastewater Utility

With the exception of Area 2, projected wastewater flow rates were derived from water demand estimates. In Area 2, most wastewater would be from seafood processing, and it was assumed that the processor would provide treatment, leaving only a small amount of domestic wastewater for treatment and disposal. Wastewater flow rates were estimated as follows:

	Average Flow (gallons per day)
Area 1-A	195,000
Area 1-B	100,000 ¹
Area 2	1,500
Area 3	160,000
Area 4	235,000
Total	591,500

¹flow assumed

Extending the existing sewage collection system to serve the new areas was not considered a practicable option given prohibitive costs, and the availability of cost effective options for developing new sewerage utilities. Wastewater composition should be relatively typical of that derived primarily from domestic activity.

Given the area geology, subsurface land discharge of treated wastewater effluent is not considered a likely alternative. Design concepts focused on secondary treatment with discharge of the treated effluent via marine outfalls and diffusers. While there are a number of treatment options, the extended aeration process appears well suited, and was used in the design concept. Off-site sludge disposal was also assumed.

Four service areas were identified: a combined system for Areas 1-A and 1-B, and separate services for Areas 2, 3, and 4. Capital costs were estimated as follows:

Service Area	Cumulative Costs of Developing New Utilities (in millions)
1-A and 1-B	\$2.4
2	\$2.45
3	\$3.45
4	\$4.85

Conclusion

Water and wastewater utilities can be made available to serve the new development areas. With proper treatment, potable water to meet limited needs in advance of large-scale infrastructure development may be obtained from local sources, such as smaller streams, alluvial deposits, and springs. For full-scale development, however, significant new sources and treatment plants will have to be developed at Middle Point Creek and Hilda Creek, or the existing CBJ water distribution system will have to be extended to serve the area. Consideration of long-term costs, avoiding resource conflicts, and maximizing service area size favors extending the existing system.

Unlike the water utilities, costs dictate that independent wastewater utilities be constructed to serve the new development areas, rather than extending existing systems. Four separate systems will be required to serve Areas 1-A and 1-B, Area 2, Area 3, and Area 4. Local conditions dictate collection and secondary treatment with effluent discharge via marine outfall and diffuser to Stephens Passage.

D. ELECTRICAL AND COMMUNICATIONS UTILITIES

Background:

The electrical systems in Juneau are controlled by three specific utilities. These utilities include Alaska Electric Light & Power (AEL&P) for power/energy, Telephone Utilities of Alaska, (PTI Communications) for communications, and Alaska Cable Network (ACN) for television. With this report, the services of these utilities are analyzed in comparison to services by separate, new utilities. To develop the comparison, the systems and their options are developed conceptually to better understand their implementation and associated costs.

These three existing electrical utilities presently extend their systems to mile nine of North Douglas Highway. From the Gastineau Bridge to the last service, all of the systems are of overhead construction, using AEL&P owned poles. The systems are all configured for distribution.

The existing structures were installed 15 to 20 years ago for these three utilities with height to allow for the future installation of 69 KV transmission. The structures presently support primary distribution at 12.5 KV, secondary voltages, telephone, and television. The structure heights no longer comply with the National Electrical Safety Code for 69 KV, and thus cannot be used for large power transmission in the future.

The following projected future growth assumptions have been used to calculate load.

Development Area 1-A:

Residential: 150 units low density, 300 units medium density, & 250 units of high density.

Commercial: Core area with retail and service businesses

Institutional: Schools, library, and fire station.

Special: Large office complex or guest lodge.

Population: 2,500.

Development Area 1-B:

Residential: 100 units low density.

Special: Golf course.

Population: 300.

Development Area 2:

Commercial: Some retail and service businesses associated with the waterfront activities.

Industrial: Fuel storage and transfer, seafood processing, mining support, freight, and government agencies.

Special: Docks

Development Area 3:

Residential: 200 units low density, 200 units medium density, & 200 units of high density.

Commercial: Core area with retail and service businesses

Special: Recreational camping, beach access, marina.

Population: 2,000.

Development Area 4:

Residential: 250 units low density, 250 units medium density, & 250 units of high density.

Commercial: Core area with retail and service businesses

Institutional: Schools, library, and fire station.

Special: Marina

Population: 3,000.

The utility systems must address the needs of all of these above listed characteristics, and they must be implemented in a manner to support the Area's needs with growth. The systems projected here will comply with the needs of the communities and can be implemented as the individual communities are developed

1. Power System Analysis

Projected Loads:

The City and Borough of Juneau presently has a system load of approximately 2.5 KW per person during the peak hours. This load profile varies through the day/week. The load being presented to the system in the downtown area is greater during the work day, and greater in the residential areas during the non-work hours. The West Douglas developments are assumed to produce a load profile for the area similar to the Lemon Creek Valley and the Mendenhall Valley.

Based upon the present demand of 2.5 KW per person, the projection of approximately 2,150 homes, and the assumption of 3.5 persons per home, the expected peak load will be approximately 19 MW (MW = 1000 KW).

The loads characterized above are for communities at their mature level of growth. It is forecast to take many years to reach these expectations. As a result, the utility systems must be configured to meet the near term needs, as well as the long term needs.

Progressive Implementation:

To develop a long term power supply system requires the construction of a 69 KV transmission line from the West Douglas substation to Development Area 2. Over the next five to ten years, the loads are assumed to be concentrated to the Areas 1-B and 1-A residential. These loads are light and do not immediately justify the capacity provided by a 69 KV transmission line. During this time, the existing 12.5 KV line can be extended from Mile Nine of North Douglas Highway to Areas 1-B and 1-A. Its construction should be at 69 KV to allow for future capacity increases, but powered at 12.5 KV. This will only require aerial line construction from the present end of service on North Douglas Highway to the Areas as they develop. It is expected that by the time that Area 2 begins development, the capacity of the 69 KV transmission line will be needed.

As an option, a powerplant can be installed with distribution developed as each area is developed. It is possible that this powerplant can be temporary until a power line can be justified, or it can be temporary until a more permanent powerplant can be developed. With a separate powerplant, a utility must be developed. It will be required that the utility meet all of its power obligations with its largest generator not operating, to allow back-up capacity. For this reason, the facility will require a minimum of two generators. For a longer term

configuration, the facility should have three or four generators to reduce the "off-line" capacity to a smaller part of the total powerplant capacity. With the initial growth, the generators can be smaller than those forecast for the ultimate powerplant. These will probably be replaceable or supplementable as community demand increases.

Characteristics & Options:

A. Extension of the present system: This option requires the following:

1. Construction of new aerial structures from nine mile North Douglas Highway to Development Area 2.
2. Installation of a new 69 KV line from the West Douglas Substation at the Gastineau Bridge to Development Area 2. Until required by the load demand, power this line at 12.5 KV.
3. Reconstruction of the existing aerial structures from the Gastineau Bridge to nine mile North Douglas Highway. The present structures do not comply with the National Electrical Safety Code for 69 KV transmission.
4. Construction of a new substation at Development Area 2. A substation may be required at Development Area 1-A if the road is not extended to Area 2 when substantial loads are present at Area 1-A.
5. Installation of 12.5 KV aerial distribution from Area 2 back to Areas 1-A and 1-B. Construction below the 69 KV line on the same structures.
6. Construction of 12.5 KV structures from Development Area 2 to Areas 3 and 4.
7. Installation of 12.5 KV aerial distribution from Area 2 to Areas 3 and 4.
8. Construction of 12.5 KV and secondary voltage (480/277 volt, 208/120 volt, and 120-240 volt, three phase and single phase), underground distribution within each Development Area.

B. Or, separate power system with a new powerplant constructed specifically for this area: This option requires the following.

1. Construction of a temporary powerplant in Development Area 1-A to

serve Areas 1-A and 1-B..

- a. The powerplant ultimately consisting of three 3 MW, or four 2 MW diesel fired, turbine powered generators. Initially, this powerplant could consist of two generators of either size.
 - b. Construction of 12.5 KV and secondary voltage (480/277 volt, 208/120 volt, and 120-240 volt, three phase and single phase), underground distribution.
2. Construction of 12.5 KV structures from Development Area 1-A to Areas 2.
 3. Installation of 12.5 KV aerial distribution from Area 1-A to Area 2
 4. Eventual construction of a permanent power plant facility at Development Area 2. This area is central to all of the communities. It is also most likely to have a bulk fuel depot, most efficient for a power plant.
 - a. Relocate the temporary powerplant from Development Area 1-A to this new facility.
 - b. The final powerplant consisting of three 3.0 MW and three 5.0 MW generators.
 5. Construction of 12.5 KV structures from Development Area 2 to Areas 3 and 4.
 6. Installation of 12.5 KV aerial distribution from Area 2 to Areas 3 and 4.
 7. Construction of 12.5 KV and secondary voltage (480/277 volt, 208/120 volt, and 120-240 volt, three phase and single phase), underground distribution within each Development Area.

Capital Costs:

A. Extension of the present system:

1. 69 KV structures and line from Nine Mile No. Douglas to Area 1-A
\$1,500,000

2. Replace structures and install 69 KV line from West Douglas to Nine Mile.	2,500,000
3. 69 KV structures from Area 1-A to Area 2.	500,000
4. Substation in Area 2.	1,000,000
5. 12.5 KV structures and distribution lines from Area 2 to Area 3	200,000
6. 12.5 KV structures and distribution lines from Area 3 to Area 4	500,000
Total Cost:	\$6,200,000

B. New powerplant

1. New temporary powerplant at Area 1-A.	\$9,000,000
2. New permanent powerplant at Area 2.	16,000,000
3. 12.5 KV structures and distribution line from Area 2 to Areas 1-A & 1-B.	400,000
4. 12.5 KV structures and distribution line from Area 2 to Area 3	200,000
5. 12.5 KV structures and distribution line from Area 3 to Area 4	500,000
Total Cost:	\$26,100,000

Operation and Maintenance Costs:

A. Extension of the present system:

With this option, the energy and demand costs are the same as for the present customers within the AEL&P service area. The present AEL&P rates are approximately \$0.07 per KWH for all customers and \$10 per KW (peak) per month for customers with loads in excess of 25 KW. The energy rate is basically used to support the cost for energy, system operating and maintenance staff, and

the utility administrative staff. The demand cost is basically used to support the cost for the installation and replacement of the facility.

The annual energy and demand costs are estimated as follows:

	<u>Energy</u>	<u>Demand</u>
Development Area 1-A &1-B: (2,900 MWHs/mo & 3.5 MW/mo.)	\$2,400,000	\$400,000
Development Area 2: (1,100 MWHs/mo & 2.5 MW/mo.)	900,000	300,000
Development Area 3: (1,700 MWHs/mo. & 2.0 MW/mo.)	1,400,000	250,000
Development Area 4: (2,400 MWHs/mo & 3.0 MW/mo.)	<u>2,000,000</u>	<u>350,000</u>
Total	\$6,700,000	\$1,300,000

B. New powerplant (and utility):

With this option, a new utility has to be established. All generation must utilize diesel driven generators. The energy and demand costs for such a utility will be essentially the same as for some of the other small communities in Southeast Alaska with similar energy sources. The cost in these communities are typically \$0.28 per KWH for energy and \$10 per KW demand. Given the assumed energy consumption above, and an assumed equivalent demand, the costs will be \$26,800,000 per year for energy and \$1,300,000 per year for demand.

2. Communications System

Projected Loads:

With the telephone industry, the system configuration requires a set of conductors for each voice and data line. Thus, the projections are estimated in quantity of line connections.

Communication loads are difficult to forecast at this time. With the recent burst

of computer-based data communication, load requirements are increasing very dramatically. This projection is estimated with some assumptions as stipulated below.

- Residential - one voice line and 1/2 data line per home.
- Commercial Retail - one voice line per 2,000 sq. ft. and one data line per 20,000 sq. ft. of space.
- Commercial Office - one voice line per 200 sq. ft. and one data line per 2,000 sq. ft. of space.
- Industrial - one voice line and two data lines per five employees .

With these assumptions, the communication loads are defined as follows:

Development Area 1-A:	Lines
Residential - 700 homes	1050
Commercial (retail and office)	500
Institutional (schools, fire station, library)	50
Special (Lodges, parks, etc.)	<u>50</u>
Total	1650

Development Area 1-B:

Residential - 100 homes	150
Special (golf course)	<u>50</u>
Total	200

Development Area 2:

Commercial (light industrial & offices)	100
Industrial	50
Marina	<u>50</u>
Total	200

Development Area 3:

Residential - 600 homes	900
Commercial (retail & offices)	500
Special (Parks, marinas, etc.)	<u>50</u>
Total	1450

Development Area 4:

Residential - 750 homes	1100
Commercial (retail & offices)	500
Institutional (schools, fire station, library)	50
Special (parks, marinas, etc.)	<u>50</u>
Total	<u>1700</u>

Total Projected Load (lines): 5200

Progressive Implementation:

The communications system, like the power system can be extended from its present facility at Nine Mile North Douglas Highway to the Development Areas on a near term basis. This requires the installation of conventional copper aerial cables to extend the present capacity to Area 1-A. It is also possible to install fiberoptic cable with the copper cables, such that the fiber optic can be used at a future point in time when demands and capacities merge. It is probable that the fiberoptic requirement will be within the first five years of development.

For short term needs, the least costly and most timely means is to extend the present Juneau system. For the long term, the additional needs will require the fiberoptic cable. The cost of this cable is less and the reliability is greater than a possible scheme involving microwave linkage with the long distance carriers.

Characteristics & Options:

A. Extension of the present system: This requires the following:

1. Installation of a fiberoptic transmission cable and a copper distribution cable from Nine Mile North Douglas Highway to Development Area 1-A. Utilize the copper conductors as an interim solution until their capacity is

used.

2. Install a new fiberoptic transmission line from the present downtown central office to Nine Mile North Douglas Highway.
2. Construct a new central office in Development Area 1-A.
3. Construct underground distribution in Development Areas 1-A and 1-B.
4. Construct aerial distribution from Development Area 1-A to Areas 2,3, and 4.
5. Construct underground distribution in Development Areas 2, 3, and 4.

Capital Costs:

A. Extension of the present system:

1. Transmission line from the present downtown location to Area 1-A. \$700,000
2. New central office in Development Area 1-A. 1,000,000
3. Aerial distribution from Development Area 1-A to Areas 2, 3, and 4 300,000

Total Cost: \$2,000,000

Operation and Maintenance Costs:

A. Extension of the present system:

With this option, the costs are the same as for the present customers within the PTI Communications service area. The present PTI rates are approximately \$17 per line per month for all residential customers and \$35 per line per month for business customers. These are the costs necessary to operate and maintain the basic telephone infrastructure. The long distance rates do not necessarily support the infrastructure, as they are used to support the long distance facility only.

The annual costs are as follows:

Residential (3200 lines)	\$650,000
Commercial (2000 lines)	<u>850,000</u>
Total:	\$1,500,000

3. Television System

Projected Loads:

The television utility is like the power utility in that it utilizes a single set of conductors to serve a load with numerous customers. With the bandwidth of the new fiberoptic cables being installed by ACN, a wide scope of signal can be transmitted (and received) to and through the developments with a minimum amount of cable.

It is estimated that there will be one service connection for each residence and one service connection for one of every five businesses. With the projection of 2,150 homes and estimate of approximately 100 businesses, there will be fewer than 2,200 service connections.

Progressive Implementation:

The television system can also be extended from the end of its present facility at Nine Mile North Douglas Highway. Regardless of the population at the end, the aerial structure will be the same.

It is possible to develop a new earth satellite station within the new communities. If so, it is desirable to locate the station such that it has access to the greatest amount of horizon. The best location appears to be near Point Hilda, due to the mountain topography. However, a station could be located at one of the other development areas with less satellite access.

There are no intermediate options with this system. Once a cable is installed from the end of the present system, there is no need for another option. If an earth satellite station is constructed, there is no need for an extension of the present system.

Characteristics & Options:

A. Extension of the present system: This option requires the following:

1. Extend the line from Nine Mile North Douglas Highway to the new developments on the aerial structures.
2. Construct underground distribution in Development Areas 1-A, 1-B, 2, 3, and 4.

B. Or, construct a new satellite station in Development Area 3. This area offers the best horizon to contact satellites, due to the wider spread of mountains. This option requires installation of aerial structures from Development Area 1-A to Area 3 at the very beginning of the project.

1. Install a line from Development Area 1-B to Area 4 on the aerial structures.
2. Construct underground distribution in Development Areas 1-A, 1-B, 2, 3, and 4.

Capital Costs:

A. Extension of the present system:

- | | |
|--|-----------|
| 1. Line extension from Nine Mile North Douglas Highway to the new Areas. | \$500,000 |
| Total Cost: | \$500,000 |

B. New satellite station:

- | | |
|---|-------------|
| 1. New satellite station. | \$1,000,000 |
| 2. Install a line from Development Area 1-B to Area 4 on the aerial structures. | 300,000 |
| Total Cost: | \$1,300,000 |

Operation and Maintenance Costs:

A. Extension of the present system:

With this option, the costs are the same as for the present customers within the ACN service area. The present ACN rates are approximately \$35 per line per month for all customers for basic service. These are the costs necessary to operate and maintain the basic cable infrastructure. With 2200 service connections, the annual cost will be \$900,000.

B. New satellite station:

With this option, the cost to operate and maintain the cable infrastructure is essentially the same as that required to extend the present Juneau area system. The present system will not require additional cost at the present satellite earth station for maintenance and operations. With this option, that cost will have to be included into the tariff. It is expected that the basic customer tariff will increase slightly with this option. The actual increase is not easy to determine at this time.

4. Summary

Power System:

Two extreme options to fulfill power requirements for the new communities are portrayed here. The first is to extend the present system within the borough to new Development Areas. The second option shown is to construct and dedicate a powerplant to this series of separate small communities. Since it is not likely that AEL&P will have the desire to operate a separate utility of this nature, this will require the development of a new utility.

From the development costs identified, it is far more economical to extend the present power system. It is possible to establish a small powerplant for interim operation when the development is started, before demand requires the construction of the line extension. Once several customers are identified within the development needing power from a single source, a utility must be established, or the line extended.

The largest single cost for power development is upgrading the distribution lines to the West Juneau substation, and a new substation at the West Douglas

development. However, initial growth can be accommodated with a simple extension of the existing 12.5 KV system until increased demand requires the major system upgrade.

Communications System:

Communications within the new development essentially requires an extension from the present system. Even if the new development is operated as a new utility, the costs will be approximately the same, due to the need to extend lines to the long distance carriers, and the need to interconnect with the present Borough system. Therefore, there are no easily identifiable cost options. The system can be configured to address near term needs for a short period of time.

Television System:

As with the power system, there are two extreme options for television cable service. Again, the present borough system can be extended to the development, or the development can be constructed as a separate system. The costs for these extreme options are not as wide as those for the power system.

Again, it is possible to establish a small satellite earth station as an interim measure prior to extending the present system. And again, a utility must be established to control customer service.

The best location for an earth satellite is near to Area 3. However, due to the long range progress of the development in terms of time, the station may have to be located closer to Area 1-A, or an underground cable can be installed from the best site to the development areas. These issues can be better weighed as the developments progress.

General:

The costs shown in this report are approximate, intended for the purposes of comparing options and to develop the range of costs. It is necessary to more clearly define the scope of the system before developing accurate costs.

There are several issues which direct the development toward extending the present utilities from Nine Mile North Douglas to the new Development Areas. Primarily it is the cost comparison of the capital investment and the operating &

maintenance costs of the two extremes. A separate system is considerably more expensive in both aspects.

Another point is that the communications and television utilities can be better facilitated with the extension. All of the utilities utilize common aerial structures. If one system is better facilitated by an extension of the present system, then the cost of extending the other systems is spread amongst the three utilities.

This report has been developed around the concept that the transmission line and the distribution lines along the primary road will all be aerial structures. The cost to place the "backbone" power system underground is great. It will cost in excess of \$1,000,000 per mile to place the 69 KV line and its associated lines underground.

E. TRAFFIC PROJECTIONS

This report represents traffic projections developed from the proposed development plan outlined in the first portion of this chapter.

This report first develops various tables showing traffic projections for each development area. The tables include the type of improvement and the anticipated traffic from each type of improvement.

Traffic projections were determined by using guidelines published in the 4th Edition, Trip Generation, Institute of Transportation Engineers (ITE) Report, dated September 1987. In some cases the average trip generation factors were used and sometimes the factors were modified to compare with traffic existing in similar existing locations. The ITE report generally provides a range for the factor and then provides an average. Where an improvement or type of traffic generator did not exist or insufficient data was listed, then an estimate was made based on existing DOT/PF traffic data.

In general, the Peak Hour traffic was determined using 12 % of total trip ends for each category. The peak hour traffic was used for the design of hourly volume traffic. The 12% factor was recommended by the ADOT/PF traffic engineering section as representing a reasonable value for determining DHV based on ADT from relatively small communities. When a different value for Peak Hour was used it was taken from the Trip Generation Report. The sum of the trips was used as the Average Daily Traffic (ADT). The sum of the Peak Hour traffic was used as

the Design Hourly Volume (DHV) for determining the width of roadways.

Table 2 develops the traffic generator factor used for each type of hypothetical development. The factor represents the number of vehicles per trip. A trip is a single or one-direction vehicle movement with either the origin or destination (exiting or entering) inside the study area.

TABLE 2				
DEVELOPMENT	TRAFFIC PROJECTION FACTORS			
	WEEKDAY	SATURDAY	SUNDAY	PEAK HOUR
OPEN PARK AND PUBLIC SPACE				
RECREATIONAL AREA	3.65/ACRE	5.4/ACRE	2.68/ACRE	0.1/ACRE
PARK AREA	15/ACRE	20/ACRE	20/ACRE	1.0/ACRE
COMMERCIAL AREA				
BUSINESS PARK PER 1000 SQ. FT.	10	2	1	1
GENERAL MERCHANDISE PER 1000 SQ. FT.	4.8	6	3.6	0.72
SHOPPING CENTER (Size under 175,000 sq. ft.) PER 1000 SQ. FT.	5.57	7.57	5.57	0.31
MIXED USE				
RESIDENTIAL UNITS	4/u	4.5/u	3.5/u	.4/u
GENERAL MERCHANDISE PER 1000 SQ. FT.	4.8	6	3.6	0.72
HIGH DENSITY HOUSING (u)	4.1/u	4.3/u	3.1/u	.4/u
MEDIUM DENSITY HOUSING (u)	4/u	4.3/u	3.1/u	.4/u
LOW DENSITY HOUSING (u)	6/u	7/u	7/u/	1/u
SPECIAL USE				

SCHOOL	1.032/std	.61/std	.3/std	.3/std
SHOPPING CENTER (Size under 400,000 sq. ft.) PER 1000 SQ. FT.	13	14	14	0.72
OFFICES	100/ACRE	90/ACRE	2/ACRE	2.3/ACRE
LODGE/HOTEL	2/rm	2/rm	2/rm	0.1/rm
R/V CAMPING	5.89/ACRE	5.63/ACRE	5.63/ACRE	5.6/ACRE
CAMPING	3.7/ACRE	25/ACRE	25/ACRE	4/ACRE
MARINA	12/ACRE	24.88/ACRE	25/ACRE	1/ACRE
INDUSTRIAL				
INDUSTRIAL PARK	62.9/ACRE	39.7/ACRE	9.7/ACRE	8.7/ACRE
LIGHT INDUSTRIAL	51.8/ACRE	8.79/ACRE	4.4/ACRE	1.7/ACRE
WATER PORT	11.9/ACRE	1/ACRE	0.5/ACRE	1.7/ACRE

Traffic projections were then determined by multiplying the traffic generator factors by the size of the proposed development generating traffic. The traffic projections are computed in the following tables (Table 3 through Table 7) for each Development Area. Note each number represents *full term* development of a particular Area. Schedule and growth assumptions are discussed subsequently.

TABLE 3				
DEVELOPMENT	TRAFFIC PROJECTION			
	WEEKDAY	SATURDAY	SUNDAY	PEAK HOUR
DEVELOPMENT AREA 1-A ESTIMATED POPULATION 2,500				
OPEN PARK AND PUBLIC SPACE				
RECREATIONAL AREA 10 ACRE	36.5	54	26.8	1
PARK AREA - 5 ACRE	75	100	100	5
COMMERCIAL AREA				

BUSINESS PARK 75,000	750	150	75	75
GENERAL MERCHANDISE 75,000	360	450	270	54
SHOPPING CENTER 175,000	975	1324	975	126
MIXED USE				
RESIDENTIAL UNITS - 150	600	675	525	60
GENERAL MERCHANDISE 75,000	360	450	270	54
HIGH DENSITY HOUSING (250u)	1025	1075	775	100
MEDIUM DENSITY HOUSING (300u)	1200	1290	930	120
SPECIAL USE				
SCHOOL - 450 STDS	467	274	135	135
SHOPPING - 100,000	1300	1400	1400	72
OFFICES - 10 ACRE	1000	900	20	23
LODGE/HOTEL - 40 RMS	80	80	80	4
TOTAL	8228.5 ADT	8222 ADT	5581 ADT	829 DHV
USE AN ADT OF 8,229 VEHICLES AND A DHV OF 829 VEHICLES FOR DEVELOPMENT AREA 1-A.				

TABLE 4				
DEVELOPMENT	TRAFFIC PROJECTION			
	WEEKDAY	SATURDAY	SUNDAY	PEAK HOUR
DEVELOPMENT AREA 1-B GOLF COURSE				
MODE OF TRAVEL				
45 PASSENGER BUSES 20,000 PERSONS PER 5 MONTH SEASON	11	11	11	2
10-15 PASSENGER VAN	14	14	14	2

CAR 20,000 PERSONS PER 5 MONTH SEASON	126	151	151	15
40 EMPLOYEES, 1.3/CAR 80 TRIPS 80/1.3 = 62	62	62	62	20
HOUSING, 250 UNITS	1100 ADT	1400 ADT	1400 ADT	125 ADT
TOTAL	1313 ADT	1638 ADT	1638 ADT	164 DHV
USE AN ADT OF 1313 VEHICLES AND A DHV OF 164 VEHICLES FOR DEVELOPMENT AREA 1-B.				

TABLE 5				
DEVELOPMENT	TRAFFIC PROJECTION			
	WEEKDAY	SATURDAY	SUNDAY	PEAK HOUR
DEVELOPMENT AREA 2				
INDUSTRIAL COMMERCIALS				
INDUSTRIAL PARK 28 ACRES	1761	1111	271	243
LIGHT INDUSTRIAL 20 ACRE	1450	246	123	240
TOTAL	3,211 ADT	1,357 ADT	394 ADT	483 DHV
USE AN ADT OF 3,488 VEHICLES AND A DHV OF 517 VEHICLES FOR DEVELOPMENT AREA 2.				

TABLE 6				
DEVELOPMENT	TRAFFIC PROJECTION			
	WEEKDAY	SATURDAY	SUNDAY	PEAK HOUR
DEVELOPMENT AREA 3 ESTIMATED POPULATION 2,000				
OPEN PARK AND PUBLIC SPACE				
RECREATIONAL AREA 5 ACRE	18.25	27	13.4	0.5
PARK AREA - 5 ACRE	75	100	100	5

MIXED USE				
RESIDENTIAL UNITS - 100	400	450	350	40
GENERAL MERCHANDISE 100,000	480	600	360	72
HIGH DENSITY HOUSING (200u)	820	860	622	80
MEDIUM DENSITY HOUSING (200u)	800	860	860	80
LOW DENSITY HOUSING (100u)	600	700	700	60
SPECIAL USE				
RV/CAMPING - 7 ACRE	41.23	39.4	39.4	6
CAMPING - 7 ACRE	25.9	175	175	4
PARK - 6 ACRE	90	120	120	4
TOTAL	3,350 ADT	3,804ADT	3,339.8 ADT	353.5 DHV
USE AN ADT OF 3,350 VEHICLES AND A DHV OF 354 VEHICLES FOR DEVELOPMENT AREA 3.				

TABLE 7				
DEVELOPMENT	TRAFFIC PROJECTION			
	WEEKDAY	SATURDAY	SUNDAY	PEAK HOUR
DEVELOPMENT AREA 4 ESTIMATED POPULATION 3000				
MARINA - 8 ACRE	96	199	200	20
PARK AREA - 2 ACRE	30	40	40	2
OPEN & PUBLIC SPACE				
SCHOOL	464	247	45	135
PARK AREA - 7 ACRE	105	140	140	7
HIGH DENSITY HOUSING (250u)	1025	1075	775	100

MEDIUM DENSITY HOUSING (250u)	1000	1075	1075	100
LOW DENSITY HOUSING (100u)	600	700	700	10
MIXED USE				
RESIDENTIAL UNITS - 150	600	675	525	60
SHOPPING - 100,000	1300	1400	1400	72
TOTAL	5,220 ADT	5,551ADT	4,625 ADT	506 DHV
USE AN ADT OF 5,220 VEHICLES AND A DHV OF 506 VEHICLES FOR DEVELOPMENT AREA 4.				

The full-term proposed development by Goldbelt and the City and Borough of Juneau considerably exceeds the proposed development anticipated in the ADOT/PF North Douglas Highway Extension Traffic Study, Final Report, March 1992. The ADOT/PF extension anticipated 300 single family units and 25 acres of industrial usage associated with a port. The estimated traffic projections for 20 years was an ADT of 3500 vehicles and a Design Hourly Volume of 487. This traffic has been met within 5 years based on ADOT/PF traffic data. The 1995 ADOT/PF traffic maps show an ADT of 3630. Using 13.9% of ADT the DHV is estimated at 504 vehicles.

The proposed development for North Douglas now includes a golf course, and development of residential and commercial areas to support an estimated eventual population of 7,500 persons, with a port facility, light industrial, schools, office, shopping and retail facilities.

The following Table 8, Table 9 and Table 10 represent adjusted traffic from the proposed Development Areas that would contribute to traffic on the North Douglas Highway, based on assumed growth rates. The adjusted traffic is the traffic that is anticipated to be trips to downtown Juneau or the Mendenhall Valley. The adjustment factor removes the traffic that would remain in the development areas, such as elementary school traffic and persons working in the area. It is anticipated the majority of freight or goods delivered to a port would be destined outside the North Douglas development area, as would most of the traffic for the proposed golf course. With full development, not all of the traffic generated would be trips to and from Juneau, Douglas, or the Mendenhall Valley. Some traffic will originate in Juneau, Douglas and the Mendenhall Valley that would go to the development on North Douglas.

In order to review possibilities it becomes necessary to assign a time line for hypothetical future development.

The traffic projections presented in this report are based on two options. In *Option 1*, Area 1, Area 1A and Area 2 are developed in the first 20 years. The development of Area 3 and Area 4 is delayed for 20 years. *Option 2* is based on the majority of the development to be completed or substantially underway within the next 20 years. This is viewed as an aggressive development assumption. If the scale or timing of development changes, the traffic impacts change accordingly.

Table 8 represents anticipated adjusted traffic if only areas 1-A, 1-B and 2 are developed in the next 20 years.

TABLE 8				
DEVELOPMENT AREA	ADT		DHV	
AREA 1-A	8229x0.41	3373	829x0.41	340
AREA 1-B	1313x0.70	919	164x0.70	115
AREA 2	3488x0.70	2412	517x0.70	362
TOTAL		6704 ADT		817 DHV

Table 9 represents anticipated adjusted traffic generated when Area 3 and Area 4 are developed. This may be in the first 20 years of development or these two areas could be developed after 20 years.

TABLE 9				
DEVELOPMENT AREA	ADT		DHV	
AREA 3	3350x0.41	1373	355x0.41	146
AREA 4	5220x0.41	2140	506x0.41	207
TOTAL		3513 ADT		353 DHV

Table 10 combines Table 8 and Table 9 to show the total estimated traffic when all areas are developed.

TABLE 10		
DEVELOPMENT AREA	ADJUSTED ADT	ADJUSTED DHV
COMBINED AREA 1-A, 1-B, 2	6704	817
COMBINED AREA 3, AREA 4	3513	353
TOTAL	10,217 ADT	1170 DHV

Table 11 adjusts the 1995 ADOT/PF current traffic analysis by projecting that traffic 20 years into the future using a factor of growth of 1% per year.

TABLE 11 - ESTIMATED TRAFFIC GROWTH @ 1%/YEAR WITHOUT DEVELOPMENT				
DEVELOPMENT AREA	ADT		DHV	
	1995	2015 ADJUSTED	1995	2015 ADJUSTED
N. DOUGLAS HIGHWAY JUNCTION TO MIKE HATCH AUTOMOTIVE	3630x1.2	4323	436x1.2	523
MIKE HATCH TO HELIPORT	2650x1.2	3180	318x1.2	381
HELIPORT TO EAGLECREST ROAD	1170x1.2	1404	140x1.2	168
EAGLECREST TO FISH CREEK	590x1.2	708	71x1.2	85
FISH CREEK TO TURNOUT N. DOUGLAS	270x1.2	324	33x1.2	39.6
TURNOUT N. DOUGLAS TO END OF ROAD	190x1.2	228	23x1.2	27.6

Table 12 combines Table 8 and Table 11 to show the combined effect of traffic generated by the proposed development (the slower growth Option 1), with the normal growth traffic.

TABLE 12 - ESTIMATED TRAFFIC WITH PARTIAL DEVELOPMENT, AREAS 1-A, 1-B & 2		
DEVELOPMENT AREA	ADT TABLE 8 & TABLE 11	DHV TABLE 8 & TABLE 11
N. DOUGLAS HIGHWAY JUNCTION TO MIKE HATCH AUTOMOTIVE	11027	1340
MIKE HATCH TO HELIPORT	9884	1198
HELIPORT TO EAGLECREST ROAD	8108	985
EAGLECREST TO FISH CREEK	7412	902
FISH CREEK TO TURNOUT N. DOUGLAS	7028	857
TURNOUT N. DOUGLAS TO END OF ROAD	6932	845

Table 13 combines Table 10 with Table 11 to show the combined effect of full development (Option 2) with the normal growth traffic of North Douglas.

TABLE 13 - ESTIMATED TRAFFIC WITH FULL DEVELOPMENT AREAS 1-A, 1-B, 2, 3 & 4		
DEVELOPMENT AREA	ADT TABLE 11 & TABLE 10	DHV TABLE 11 & TABLE 10
N. DOUGLAS HIGHWAY JUNCTION TO MIKE HATCH AUTOMOTIVE	14540	1693
MIKE HATCH TO HELIPORT	13397	1551
HELIPORT TO EAGLECREST ROAD	11621	1338
EAGLECREST TO FISH CREEK	10925	1255

FISH CREEK TO TURNOUT N. DOUGLAS	10541	1210
TURNOUT N. DOUGLAS TO END OF ROAD	10445	1198

Table 14 uses the traffic data from Tables 12 and 13 to arrive at a roadway width. The roadway width was determined by entering Table 11-07(1) *Rural and Urban Roadways* from ADOT/PF Preconstruction Manual, Chapter 11 - Design, Section 11-07. Table 11-07(1) provides a minimum recommended roadway width and a desirable roadway width to achieve a Service Level C for Urban Roadway. For the purpose of this study the North Douglas Highway was considered an arterial roadway. (Table 11-07(1)).

TABLE 14 - ESTIMATED ROADWAY WIDTHS					
DEVELOPMENT AREA	EXISTING WIDTH	WIDTH WITH PARTIAL DEVELOPMENT		WIDTH WITH FULL DEVELOPMENT	
		MIN	PREF	MIN	PREF
N. DOUGLAS HIGHWAY JUNCTION TO MIKE HATCH AUTOMOTIVE	39'	37.4	39.4	4 LANE	4 LANE
MIKE HATCH TO HELIPORT	39'	37.4	39.4	4 LANE	4 LANE
HELIPORT TO EAGLECREST ROAD	37'	35.4	39.4	37.4	39.4
EAGLECREST TO FISH CREEK	35'	35.4	39.4	37.4	39.4
FISH CREEK TO TURNOUT N. DOUGLAS	31'	35.4	39.4	37.4	39.4
TURNOUT N. DOUGLAS TO END OF ROAD	31'	35.4	39.4	37.4	39.4

Based on Table 14, when the design hourly volume (DHV) on North Douglas Highway exceeds 1300 vehicles, the cost to upgrade the North Douglas Highway would start to increase dramatically. At the 1300 DHV, the upgrade to a four

lane roadway for North Douglas needs to be seriously considered, or alternate routes for traffic need to be developed.

At that level of traffic, a second crossing of Gastineau Channel appears to become a feasible way to reduce a major reconstruction of North Douglas Highway. The existing Juneau Douglas Bridge approaches are already past design capacity. Providing an alternate route for traffic from North Douglas would assist in alleviating traffic at the existing bridge, as well as providing much enhanced transportation links serving the Borough over-all.

Traffic Analysis Conclusions:

Roadway Recommendations, Option 1 (Slower rate of Proposed Development)

Option 1 is the development of Area 1-A, Area 1-B and Area 2 within the first 20 years. Area 3 and Area 4 are developed sometime after 20 years. The existing roadway width meets the minimum criteria specified in DOT/PF Table 11-07(1) from the Juneau Douglas Bridge to Eaglecrest Road. From Eaglecrest Road to the end of the existing Douglas Highway would require widening of 0.4' to 8.4'. (See Table 14, Width with Partial Development).

With this option, the intersection at the Juneau/Douglas Bridge would require improvement. The 1992 DOT/PF North Douglas Highway Extension Traffic Study concludes signalization of the Juneau Douglas bridge intersection is necessary, even without the proposed North Douglas development. The intersection of Eaglecrest Road and North Douglas Highway would require improvement by installation of turning lanes to maintain the existing level of service at the intersection.

If Area 3 and Area 4 are delayed, then economical improvements can be made to the North Douglas Highway to service the proposed development without a second crossing. Major improvements are still required at the Juneau/Douglas Bridge. The intersection at Eaglecrest Road would require turning lanes to maintain the current level of service. (See Appendix D).

Roadway Recommendations, Option 2, (Full Identified Development)

Option 2 is full development of the West Douglas Development Areas in a 20 year time frame. Using the ADOT/PF Preconstruction Manual, Chapter 11 - Design, April 1995, Sec: 11-07, table *Rural and Urban Roadways, Guideline Roadway Widths for Urban Streets*, the anticipated DHV of all portions of the maximum development now proposed should result in an upgrade of the North Douglas Highway to a 4-lane roadway from the Juneau/Douglas Bridge to the Heliport at .5 mile North Douglas Highway. (See Table 14, Width With Full Development.) The roadway section from the Heliport to Eaglecrest Road meets the criteria to support a 4 lane roadway, but is still in the top range allowed for a two lane roadway. The roadway from Eaglecrest Road to the proposed development would need to be upgraded to a full urban roadway, 2 lanes each 11.8' wide (3.3 m) with 7.87' shoulders (2.4 m).

Substantial improvements would be necessary at the North Douglas Highway intersection at the Juneau/Douglas Bridge, and to the Juneau Douglas Bridge. ADOT/PF traffic counts indicate the traffic from West Juneau and Douglas had a 1995 ADT of 5,410 vehicles. The proposed development at North Douglas would result in a ADT of 13,867 vehicles trying to merge with in excess of the current Douglas ADT of 5,410 vehicles. The intersection is already overcapacity as determined by ADOT/PF with the existing 3,630 ADT from North Douglas attempting to merge with the existing Douglas ADT of 5,410 vehicles. The State ADOT/PF concludes the Juneau Douglas bridge intersection will require traffic signalization.

With the increased traffic generated by the development as now anticipated by Goldbelt and CBJ, a second crossing of Gastineau Channel from the North Douglas Highway to Egan Expressway appears to become not only feasible, but necessary. It is anticipated that with a second channel crossing, the North Douglas Highway would still need substantial improvements. But the need to upgrade portions of the roadway to a 4 lane facility can be deferred beyond the study period of 20 years.

It is anticipated 70 percent of the traffic generated by the development would use a second crossing instead of traveling the North Douglas Highway. This estimate is based on the assumption that most trips, after allowing for work trips, are generally shopping or recreation related. It is estimated that 20% of the trips to downtown Juneau from the edevelopment are individuals going to and from work. The major retail shopping centers of the community are located in the Mendenhall Valley and Lemon Creek areas. The most direct route to these areas would be by a second channel crossing. In addition, the proposed developments

may include major recreational areas which will generate traffic from the Lemon Creek, Mendenhall Valley and Auke Bay Areas to North Douglas.

This study estimates a second crossing DHV of 961 vehicles. It is anticipated that 70% of the existing traffic westerly of Eaglecrest Road and that 70% of the traffic on Eaglecrest Road would use a second channel crossing. It is also estimated that 40% of the traffic easterly of Eaglecrest Road would use a second crossing. Using these assumptions, Table 15 represents the estimated DHV that would use a second crossing.

TABLE 15		
ROADWAY SECTION	DHV SECOND CROSSING	
	WITHOUT CROSSING	USE CROSSING
FISH CREEK ROAD (EAGLECREST ROAD) TO END OF ROAD	1255x.8x.07	702
EASTERLY OF FISH CREEK ROAD	168x0.4	67
FISH CREEK ROAD	190x0.12x33 x0.7	16
TOTAL	DHV = 785 VEHICLES	

Based on ADOT/PF's, *Guideline Roadway Widths for Urban Streets*, the crossing would need to be two 11.8' (3.6 m) lanes, with 7.87' (2.4 m) shoulders. Additional development of CBJ and other private property on North Douglas, westerly of the heliport, may easily result in traffic that would warrant a four lane crossing for a second Gastineau Channel Crossing.

If full development occurs in the first 20 years, then the feasibility of a second crossing of Gastineau Channel needs to be addressed. It appears the construction of a second crossing may be economically feasible when considering the major upgrades required to the North Douglas Highway, the Juneau/Douglas Bridge, and intersections at each side of the Juneau/Douglas Bridge.

F. MARINE OPTIONS FOR DEVELOPMENT

A general marine reconnaissance was conducted of the West Douglas Island coast along the full 8-mile study parcel. The study also incorporated detailed analysis development in 1992 as part of detailed marine reconnaissance for port facilities at Inner Point.

General Observations

When the west side of Douglas Island is evaluated over-all, the area immediately north of Inner Point and the area east of Hilda Creek offers the greatest amount of natural weather protection. The configuration of the shoreline with respect to prevailing wind and waves makes these two areas the best choice for marine-related operations involving the mooring of small vessels. These operations include a marine, a NOAA facility, an excursion and charter vessel dock, and a boat launching ramp. These two areas are also potential sites for a fishing dock with a boat haulout and storage. This facility would not require as high a degree of protection mainly due to the structure of the dock and because the vessels using the facility are larger and would not be mooring at the dock for long periods of time.

Facilities which serve larger, deep-draft vessels can function in a less-protected environment. Evaluation of potential sites for development of this type of facility should consider deep water close to shore, a deep approach channel without hazards, direction of prevailing wind and waves relative to alignment of the dock, and the availability of a sufficient amount of developable uplands.

These criteria point to the shoreline between Inner Point and Point Hilda as well as area north of Inner Point. The marine-related operations which could utilize these areas include a freight dock, a fuel loading facility and tank farm, a cruise shop dock, and a Coast Guard operation.

Small vessels mooring at a floating dock on a year-round basis require a higher degree of protection than large, deep-draft vessels in port for short period of time. Protection from weather conditions can be achieved from the natural configuration of them and/or from man-made barriers.

Although the area immediately north of Inner Point and the area east of Hilda Creek both offer the greatest amount of natural protection, both sites would need a breakwater or wave barrier of some kind to provide the level of protection needed for harbor environment. As discussed earlier, a complete and detailed

analysis of the effect of wide and eaves on these areas would be necessary to perform preliminary design and layout of any breakwater or wave barrier.

Freight Dock

In Alaska, the two main methods of transporting freight are by container ships or by barge. For Southeast Alaska, barge operations dominate the industry. Barges 300-400 feet in length and drafting 10-12 feet are towed behind tug boats. Loading and unloading of the barges is a roll-on/roll-off operation utilizing a transfer bridge and forklifts.

Construction of a freight facility for barges would not require a full-length platform dock, but instead would consist of a transfer bridge with mooring and breasting dolphins. This would require a minimum water depth of minus 25 MLLW. Loading and unloading of a barge usually requires only a few hours to complete. This significantly reduces the chances of the operation being affected by a storm. A freight operation can function with typical wave heights up to 3-4 feet.

Construction of a freight facility for container ships would require a heavy-duty dock capable of berthing vessels up to 800 feet in length and drafting 30 feet of water. The dock superstructure would need to support a uniform load of 1,000 psf, axle loads of 80 tons and a moveable crane weighing 300 tons. A freight operation with large deep-draft vessels could function with typical wave heights up to 4-5 feet. The face of the dock should be oriented so that a moored vessel is headed into the direction of the prevailing wind and waves, and the water depth is a minimum of minus 40 MLLW.

Planning for determining the land area requirements for uplands development should consider the following:

- Storage Yard. AML's Juneau operation utilizes a storage yard that is approximately 5 acres.
- Freight Consolidation Building/Office. A combination freight consolidation and office building along with a proportional amount of automobile parking would require approximately 1.5 acres.

Fuel Tank Farm

Fuel terminals, in general, are of lighter construction than general freight-handling docks as they usually do not require the use of heavy handling equipment. Their

main products are usually unloaded at a fixed point and transported by pipelines. For this reason, a full-length pier is not necessary, but instead can consist of a relatively small hose handling platform, connected to shore by a trestle, supplemented by dolphins to take the bow and stern lines.

In general, it may be said that fuel terminals can be operated in less-protected water than would be required for general freight-handling terminals. The flexibility in the hose-handling equipment permits a considerable amount of movement to take place without damaging either the ship or platform. Although not recommended, installations have been found workable where the swells have been as high as 10 feet. In addition, unloading of fuel products usually requires only a few hours to complete. This significantly reduces the chances of a moored vessel being subjected to a storm.

Tanker vessels delivering fuel would require a minimum water depth of minus 40 MLLW, whereas fuel barges would only require a minimum water depth of minus 20 MLLW.

Land requirements for uplands development will depend on the amount of fuel and the number of different types of fuel products requiring storage. Unocal's existing Juneau tank farm is approximately 1.5 acres with an additional acre for their offices and vehicle parking.

Cruise Ship Dock

A major contributor to Southeast Alaska's economy is the tourist industry. As Alaska's capital city, Juneau will continue to be a strong draw for tourists.

A cruise ship operation would require a dock structure capable of berthing vessels up to 900 feet in length with a draft of up to 30 feet. This would require water depth at the face of the dock to be a minimum of minus 40 MLLW. To the extent possible, the pier line should be oriented so that a moored vessel is headed into the direction of the prevailing wind and waves. A cruise ship dock can function with wave heights as high as 4-5 feet.

As a minimum, uplands development for a cruise ship operation should allow for vehicle parking, primarily buses. Other facilities might include restrooms and a waiting shelter or possibly seasonal retail shops. Altogether, land area requirements would total approximately one acre.

Coast Guard or NOAA Base

Juneau's Coast Guard and NOAA operations are looking to upgrade or replace their current facilities. Both of these operations in particular would be well served by being located on the west side of Douglas Island because the area is central to waters north and south of Juneau.

The Coast Guard currently has two docks from which they conduct their operations; one downtown and the other in Auke Bay. The Auke Bay facility is adequate for the Coast Guard's 110 foot vessel *Liberty*; however, it is not able to accommodate their 150 foot buoy tender vessels or their 378 foot cutter vessel, *Jarvis*.

Clearly, the Coast Guard would benefit by operating from a single, centrally located facility. Their operations would require a dock structure capable of berthing vessels up to 400 feet in length with a draft of 15 feet. This would require water depth at the face of the dock to be a minimum of minus 25 MLLW. Prevailing wind and waves should be approximately parallel to the dock, with typical wave heights less than 3-4 feet.

Planning for determining the land area requirements for uplands development should consider the following:

- **Office Buildings.** An office building would be required to accommodate Coast Guard personnel. Actual size of the building would depend on whether or not the Coast Guard actually consolidates all of their operations in Juneau.
- **Automobile Parking.** Required parking space would be proportional to the size of the office building. The parking lot for Juneau's current downtown operations is approximately 1.5 acres.
- **Fuel Facilities.** Fuel will need to be available for those vessels operating from the Coast Guard's dock. An above ground fuel tank would require less than half an acre.
- **Storage Area.** The Coast Guard would need a fenced, secure area to store items such as buoys, anchors, and small boats. An estimate of required size would be a one acre area.

A variety of vessels use NOAA's current facility. Lengths of the vessels range from 16 to 32 feet. The largest vessel they operate is the 90 foot *John Cobb*. Dock construction for NOAA's operation could be a fixed structure, a floating structure or a combination of the two. Water depth should be a minimum of minus 15 MLLW. Wave height for a floating dock should be less than eighteen inches

which would require some form of breakwater or wave barrier.

Similar to that previously discussed for the Coast Guard, uplands development for NOAA's operation would include an office building, parking, fuel facilities and general storage. Altogether, the land area required would be approximately 1.5 acres.

4.5 Fishing Dock with Boat Haulout and Storage

The dock construction for fishing boats is typically a fixed structure (as opposed to floating) with sufficient capacity to allow vehicle access (light trucks and forklifts). To the extent possible, the pier line should be oriented so that a moored vessel is headed into the direction of the prevailing wind and waves. Water depth at the face of the dock should be a minimum of minus 15 MLLW. Such a facility would also require relatively sheltered water with typical wave heights less than 3-4 feet.

Facilities for commercial fishing boats are a specialized type of installation and should allow for the following:

- Loading and Unloading of Gear and Supplies. Substantial dock area should be provided to support vessel loading and unloading of gear and supplies. Equipment such as fixed or mobile cranes will be required.
- Vessel Repair Facilities. Dry docking or a boat grid should be available for fisherman to perform work on their boats.
- Straddle Hoist/Crane Lift. These mobile lifting devices use slings to support boats during haul-out, moving and launching operations.
- Fuel Dock/Bilge Pump Out/Sanitary Pump Out Facilities.

Planning for determining the land area requirements for uplands development should consider the following:

- Maintenance and Supervision Office. Land required approximately a half acre.
- Restroom Facilities/Showers.
- Net Repair Area. A clean, open-air, surfaced (asphalt) area where fishing nets can be spread out and repaired. Land required approximately a half acre.
- Gear Storage Area. Commercial fishing boats frequently have a considerable amount of gear that must be stored between trips. Typical gear to be stored might include nets, net reels, crab pots and buoys. The storage area should be fenced for security. Land required approximately two acres.

- **Dry Boat Storage.** Assuming an average boat length of 35-40 feet, *ASCE Planning and Design Guidelines for Small Craft Harbors* estimates that 55 to 65 boats can be stored per acre of land. This includes storage, aisles and maneuvering. A demand analysis would be required to determine the land area required.
- **Automobile Parking.** A demand analysis would be required to determine the number of transient and long-term parking spaces needed. *Per ASCE Planning and Design Guidelines for Small Craft Harbors*, one acre of land is adequate for parking 80 to 100 cars. This includes parking, aisles and landscaping. When ancillary facilities, such as restaurants and retail shops open to the public are provided, additional parking must be supplied by the owners or operators of these businesses. Again, the actual number of automobiles to provide parking area for, and hence, determining the land area requirements, would require a demand analysis.

In addition to the facilities directly accommodating the vessel berthing activity, there are a variety of ancillary facilities which may include an industrial/commercial boat repair and marine supply business, a convenience store or a coffee shop.

4.6 Boat Harbor/Marina

As a first step in planning the design of a marina, a demand analysis should be performed to determine the size and type of facility needed. Once the demand for a marina is understood, the number of boats and related facilities can be translated into land and water area requirements. *Per ASCE Planning and Design Guidelines for Small Craft Harbors*, approximately 15 to 25 boats of an average length of 35 to 40 feet can be accommodated per acre of water space, depending on the shape of the basin, and the amount of maneuvering area to be provided. The relationship between the amount of land and water required to support a marina operation will vary depending on boat size/mix and the nature of upland facilities. Typically, the land area required for most marinas is approximately equal to the water area required for dockage and access channels. The information obtained from a demand analysis can then be used to help choose an appropriate site for the marina.

A potential site for a boat harbor or marina should have adequate water depth for the boats it will serve, protection from wind and waves, easy access to destination waters and developable uplands to accommodate infrastructure required to serve harbor users and for future expansion.

Depth of water required for a marina will depend on the size and type of boats that will use the facility. Usually, a boat harbor will require a minimum water depth of minus 15 MLLW.

The sheltered basin for a marina can be natural or man-made. Typically, however, breakwaters are required to provide the desired level of protection to boats mooring in the harbor. This level of protection is primarily associated with wave action. Wave height within a harbor should be one foot or less. Functional performance, cost and aesthetics are factors to evaluate when determining the type of breakwater to use.

Accessibility of destination waters is a prime consideration in selecting a harbor location. Boaters prefer harbors close to where they are going. A harbor with primarily recreational fishing boats, for example, should be located with easy access to the best fishing areas. A boat harbor on the west side of Douglas Island would provide the best access to fishing areas both north and south of Juneau.

Determining a suitable site for a marina will also depend on the selection of user facilities. The following facilities are normally part of a small boat harbor.

- **Administration, Maintenance and Supervision Facilities.** A small craft harbor is a business, whether publicly or privately owned. Its operation requires a headquarters building adequate and suitable for administration and supervision. Land area required would be approximately a half acre.
- **Restrooms and Showers.** Marina patrons should be encouraged to use on-shore facilities by providing safe, clean, well-lit and adequate restrooms. Typically one toilet or urinal for men and one toilet for women should be provided for every 50 boats. Likewise one shower for men and one for women for every 50 boats.
- **Automobile Parking.** At most marinas, approximately 0.75 parking space per boat berth is usually adequate. Per *ASCE Planning and Design Guidelines for Small Craft Harbors*, one acre of land is adequate for parking 80 to 100 cars. This includes parking, aisles and landscaping. When ancillary facilities, such as restaurants and retail shops open to the public are provided, additional parking must be supplied by the owners or operators of these businesses. Land area required would depend on the results of a demand analysis to determine the actual number of automobiles to provide parking for.
- **Marine Fuel Service.** Because all boats need fuel, easy access to a fuel service float is highly desirable. Typically, diesel and regular fuel are provided at a ratio of one nozzle for every 150 berths. Uplands land area requirement for fuel tanks would be approximately a half acre.
- **Waste Oil Disposal and Sewer Pump Out.**

4.7 Excursion/Charter Vessel Dock

An excursion/charter vessel dock could be utilized by recreational charter vessels as well as shuttle vessels for Admiralty Island mining operations. The principal function of such a dock would be the loading and unloading of passengers.

Consequently, a floating dock with a gangway from shore would best suit this operation. Mooring of vessels at a floating dock will require a marina-type environment. Wave height, therefore, should be eighteen inches or less. Required water depth for a facility of this type would be a minimum of minus 15 MLLW.

The excursion/charter business is seasonal. If the facility was utilized by this operation only, the dock could be designed to be removed during winter months. This means the facility would not be exposed to winter storms and allows flexibility in choosing a potential site.

As a minimum, uplands development for an excursion/charter vessel operation should allow for vehicle parking. Other facilities might include restrooms and a waiting shelter. Altogether, land area requirements would total less than half an acre.

4.8 Boat Launching Facility

As a minimum, a boat launch facility should include a launch ramp, a boarding dock, and a parking area.

A single-lane ramp should be at least fifteen feet wide and extend from the maneuvering area, adjacent to the top of the ramp, to a point four feet below extreme low water. The ramp surface should provide positive traction and have a slope of twelve percent.

A boarding dock provides for the safe loading and unloading of boat passengers and gear. The dock should be a floating structure of sufficient length to allow for the mooring of two to three boats. An acceptable wave height for this type of structure is typically less than eighteen inches.

A boat launching facility must have adequate boat trailer parking space. The number of vehicle-trailer parking spaces will depend on the expected turnover rate at the ramp. This can be accomplished from the results of a demand analysis. Assuming an average vehicle-trailer length of 35-40 feet, the ASCE

Planning and Design Guidelines for Small Craft Harbors estimates one acre of land per 25-30 vehicle-trailers is required. This includes parking, maneuvering and minimal landscaping.

Boat launching facilities are commonly located within marinas due to the protected water available. The launching facility, however, should be separated as much as possible from the marina's berthing area and parking area. This will minimize congestion and allow for the maneuvering of vehicles with trailers.

The West Douglas Island Concept Plan proposes that five discrete development areas be designated within the larger study area. These five areas (treating 1-A and 1-B as distinct developments) should be designed as distinct new growth areas. The current designation of the entire West Douglas areas as one large, undefined New Growth Area should change accordingly. Each of the identified Development Areas has the land base, potential lay-out, and functional need to qualify individually as New Growth Areas. This plan also proposes that the Development Areas be clearly and permanently separated by open space reserved for protection of important cultural, ecological, and recreational values.

In the future, as develop needs or opportunities arise, this proposed land use pattern on West Douglas will be achieved through development of detailed Master Plans for each of these New Growth Areas as required by the CBJ Land Use Code. The Master Plans will detail the exact type, character and density of land uses that can occur; propose appropriate zoning designations; and adopt land use regulations to guide development. Master Plans for the West Douglas New Growth Areas would eventually be adopted into the CBJ Comprehensive Plan and implemented through the CBJ Land Use Code.

The timing of development of Master Plans, and the eventual development of West Douglas, cannot be predicted. Progress on the development will depend upon the goals of the land owners, development initiatives generated by either Goldbelt or CBJ, and market forces that affect demand for additional land area for development. However, in the interim, there are steps that should be taken to facilitate and finally guide the eventual development in accordance with this West Douglas Concept Plan.

This chapter describes current CBJ land use policy, regulation and procedures related to New Growth Areas, and land management direction for West Douglas Island. A process for implementing the West Douglas Concept Plan is also proposed.

EXISTING LAND USE REGULATION FOR WEST DOUGLAS ISLAND

There are two primary documents that regulate land use on West Douglas Island, the CBJ Comprehensive Plan and the CBJ Land Use Code. The West Douglas Concept Plan is compatible with the current policy direction and intention provided for New Growth Areas in these documents, as described below.

Comprehensive Plan

The 1996 CBJ Comprehensive Plan designates West Douglas Island as a New Growth Area (Comprehensive Plan, Chapter 6). This designation indicates that the CBJ views West Douglas as a suitable location for nodes of more concentrated urban/suburban uses, with associated services and other intensive development, within a rural setting.

While the CBJ has long held a policy promoting New Growth Areas, specific plans for such areas have not been developed to date. During the 1996 revision to the Comprehensive Plan, the CBJ Assembly amended the planning process for New Growth Areas to make it more flexible than it had been in the past, and to allow a broader mix of acceptable land uses within each development area.

The 1996 Comprehensive Plan identifies 13 implementing actions for New Growth Areas. The primary results of these implementing actions are:

- *Increased flexibility:* The Comprehensive Plan requires that the Land Use Code be revised to provide greater flexibility for New Growth Areas. The CBJ will consider alternative development approaches; allow a greater range of higher intensity urban, suburban, industrial and resource-related uses; allow development phasing; and may assist in marketing and developing the areas.
- *Development standards:* Minimum standards to regulate development will be established in the Land Use Code, including standards for minimum open space, recreation, landscaping, and circulation. There will be flexibility to consider alternative approaches to meeting these design standards.
- *Feasibility:* The Comprehensive Plan requires that the developer demonstrate that the proposed development is feasible. The developer must demonstrate sufficient residential units to create a viable community, and economic feasibility for the development. The developer may be required to post bonds to assure performance.

- *Master Planning:* The Comprehensive Plan continues to require that New Growth Areas be master planned.

In addition to identifying West Douglas as a New Growth Area, the Comprehensive Plan also designates the area "Resource Reserve." This land use designation is applied to areas not yet subject to development, where it is appropriate to conserve the area and its natural resources until more specific land uses are identified, approved and developed. Minimal low-density residential development and small-scale, visitor-oriented seasonal recreational facilities may occur in Resource Reserve areas.

CBJ Land Use Code

The CBJ Land Use Code regulates land uses and development in Juneau. The Code includes zoning designations which specifies what types of land uses can occur in each zoning district. In addition, for New Growth Areas, the Code lays out a detailed process for preparation and approval of a Master Plan. Chapter 49.70. Article I of the Land Use Code, which addresses New Growth Area Master Plans, has not yet been updated to reflect the new, more flexible policy language adopted in the 1996 Comprehensive Plan relative to New Growth Areas, described above. This update may occur in late 1997.

The Land Use Code currently lists the following features that characterize New Growth Areas, and which should be addressed in Master Plans for these areas:

- Capable of supporting urban development.
- Good land and/or water access.
- Unified ownership or control.
- Mixed-use residential supported by adequate recreation, public, industrial and commercial services.
- Aesthetically pleasing and energy efficient siting, design, and construction techniques.
- Efficient provision of sewer, water, roads, schools, and other public facilities.
- Preservation of vegetation, views, and other natural features.

- Provision of passive and active recreational activities, including water access, open space, community recreational facilities, and pedestrian and bicycle paths.
- Mitigation of land use conflicts.

Earlier requirements for minimum acreage for residential development and numbers of residential dwelling units in New Growth Areas were specifically eliminated in the 1996 Comprehensive Plan and will be eliminated in the subsequent revision to the New Growth Areas section of the Land Use Code.

The Code also outlines a master planning process for New Growth Areas that requires preapplication consultation with the CBJ, opportunity for CBJ comment on the application, conceptual approval by the Subdivision Review Committee of the Planning Commission, approval by the full Planning Commission, and adoption by the Assembly as an amendment to the Comprehensive Plan and Land Use Code. The Code specifies exactly what information is to be provided in the Master Plan.

Additional, or revised standards or procedural requirements for New Growth Areas, may be incorporated into the Land Use Code to implement the recent changes approved in the Comprehensive Plan.

The Land Use Code currently zones West Douglas Island as "Rural Reserve." The Code explains that Rural Reserve zoning is:

...intended for lands primarily in public ownership managed for the conservation and development of natural resources and for future community growth.

The Rural Reserve zoning designation allows the West Douglas area to be developed for certain rural uses, golf courses, recreational cabins, certain gravel mining operations, and homes on one-acre lots. Currently, such uses may be approved on a case-by-case basis through routine CBJ planning and zoning permit procedures.

IMPLEMENTATION OF THE WEST DOUGLAS CONCEPT PLAN

As noted above, the timing of preparation of Master Plans for the West Douglas development areas, and progress on such developments, cannot be predicted. However, the following steps should be taken to prepare for and accomplish implementation of the West Douglas Concept Plan.

1. Adoption of the West Douglas Island Concept Plan as an amendment to the CBJ Comprehensive Plan.

Chapter 6 of this Concept Plan should be adopted as an amendment to the Comprehensive Plan, following the required public review and hearing process. Adoption of this Concept Plan would amend the Comprehensive Plan to include the land use map which shows the five development areas, a route for the West Douglas road extension, and associated land use policies. This action would institutionalize CBJ support for the proposed land use plan, and would "capture" the major landowners agreements regarding the best way to proceed with area development. It would also ensure that future Master Plans for West Douglas New Growth Areas follow the land development course established in this plan.

2. CBJ and Goldbelt Corporation pursuit of land exchanges.

The CBJ is interested in gaining public access to the shoreline in one or more logical locations in West Douglas. Goldbelt Corporation is reluctant to sell ANCSA lands to reduce their land base size. It may be possible for the CBJ and Goldbelt to consider land exchanges, where the CBJ acquires necessary public lands in development areas, and Goldbelt receives equivalently valued lands from the CBJ.

3. Retention of open space on Goldbelt Corporation lands.

There are a number of techniques, relatively new in Southeast Alaska, that could achieve this critical land goal and also provide positive tax or financial advantages to Goldbelt. They all result in Goldbelt retaining ownership of its land. These techniques are outlined briefly below.

- A. Southeast Alaska Land Trust (SEALTRUST). Based in Juneau, SEALTRUST is a private, non-profit organization that works with

private and public landowners in Southeast Alaska to prepare and manage 'conservation easements.' Conservation easements are voluntary agreements that set forth land use and management requirements that are recorded on the land title in perpetuity. Conservation easements can limit or prohibit development to protect certain buildings, features, or ensure that certain existing activities are allowed to continue. SEALTRUST serves to monitor land use activity and enforce conservation easement restrictions. Private landowners achieve significant tax benefits from placing lands in conservation easements, including relief from property and income taxes.

- B. Purchase of Development Rights (PDR). A PDR program is typically administered by a public agency, using public funds to purchase the "development rights" on private property to ensure its long-term protection from adverse development impacts. This program is typically used to preserve certain uses, such as farming or logging (or recreation), that are considered important to the community but are threatened because of increased development pressures. The purchase of development rights allows the protected activity to continue, with the landowner compensated for loss of potential development profits. The land remains in private ownership, but the development rights have been purchased to ensure that the protected activity or use remains in perpetuity.
- C. Land Exchanges. In West Douglas, there may be opportunities for landowners to exchange lands to protect significant public uses and values, such as important recreation opportunities or fish and wildlife habitat.

4. Update CBJ Land Use Code sections regarding New Growth Areas to implement the new Comprehensive Plan.

The 1996 CBJ Comprehensive Plan adopted a more flexible approach to development of New Growth Areas. The changes removed earlier restrictions on minimum acreage for residential areas and minimum land use densities, and allowed for a broader mix of acceptable land uses, including additional non-residential uses. The Comprehensive Plan directs the CBJ to revise the New Growth Area section of the Land Use Code to reflect the Comprehensive Plan revisions. The CBJ Community Development Department is currently

working on this Land Use Code revision, with adoption anticipated in 1997.

5. Proceed with preparation of New Growth Area Master Plans for each development area.

Master Plans will be required for each development area, taking direction from the West Douglas Island Concept Plan and the requirements of the Comprehensive Plan and CBJ Land Use Code. The Master Plans will be developed as envisioned in Chapter 6 of this plan.

6. Adopt Master Plans as amendments to the Comprehensive Plan. Adopt zoning designations as changes to the CBJ Land Use Code.

Completed Master Plans for the West Douglas New Growth Areas will be approved by the CBJ Planning Commission and Assembly through the process outlined in the Land Use Code. Appropriate zoning designations, which will be recommended in the Master Plans, will also be approved by the Commission and Assembly.

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SUMMARY OF NORTH DOUGLAS RESIDENT CONCERNS

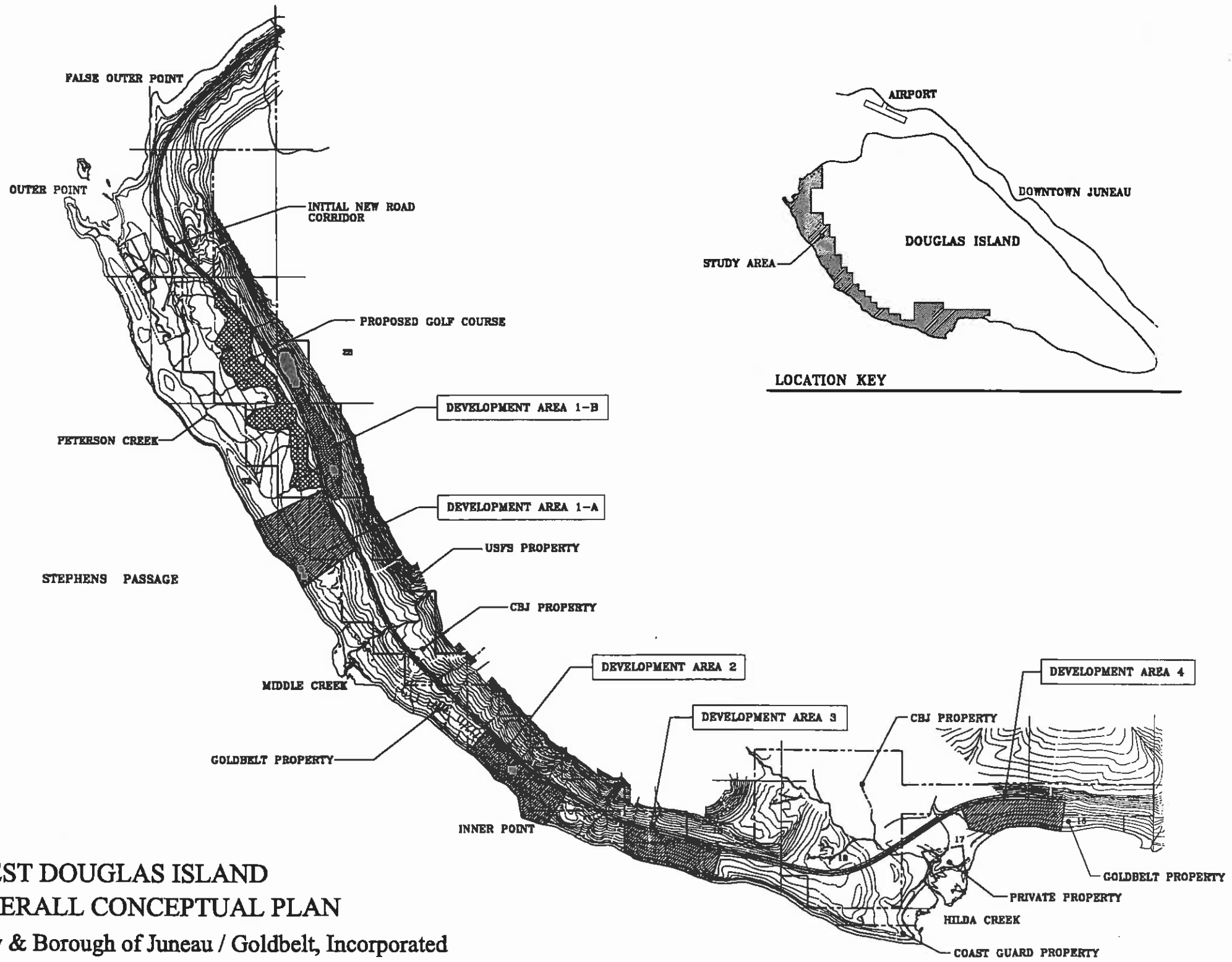
Approximately 400 notices were sent to all North Douglas property owners advising of the start of West Douglas Master planning, and inviting comment. Approximately 100 were returned with identified concerns, many having multiple concerns. The results are tabulated as follows:

A. TRAFFIC	43
B. DEVELOPMENT	58
General concern about development	13
Overdevelopment	4
Commercial development	2
Highway construction/maintenance	2
Airport move to Douglas	4
Noise control	4
Use of AJ mine tailings	1
Land availability/parcel size for small developers/private homes/cost	7
Water/sewer	6
Property taxes/value	6
Access to beach	3
Zoning	4
Low Income Housing	1
Jobs	1
C. LOSS OF RECREATION AREA	18
Solitude of False Outer Point, incorp.trails in design, public access of cross country skiing, development of Fish Creek, Outer Point, hunting opportunity	8

Expanding recreational opportunities, maintaining quality	5
Public access	3
Golf course	2

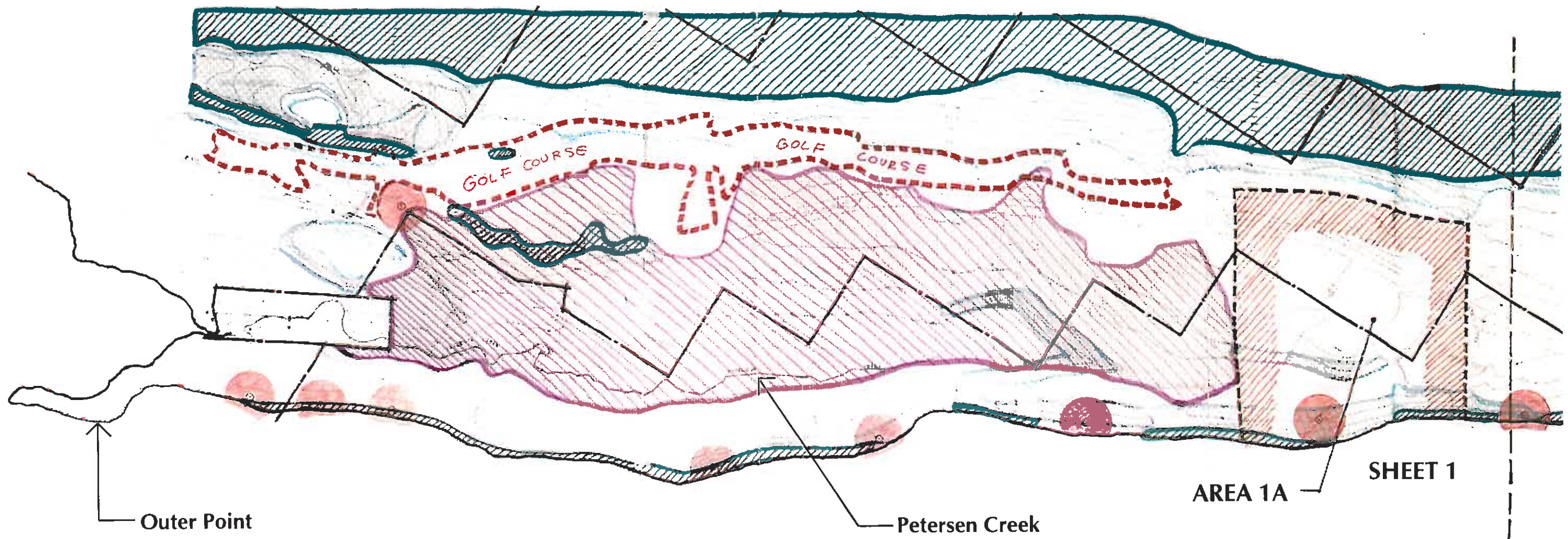
D. SECOND CHANNEL CROSSING 14

E. WATERSHED/ENVIRONMENTAL DEGRADATION 10
(Salmon/deer habitat, eagles' nests, water quality)



WEST DOUGLAS ISLAND
 OVERALL CONCEPTUAL PLAN
 City & Borough of Juneau / Goldbelt, Incorporated
MINCH RITTER VOELCKERS
 Architecture • Planning










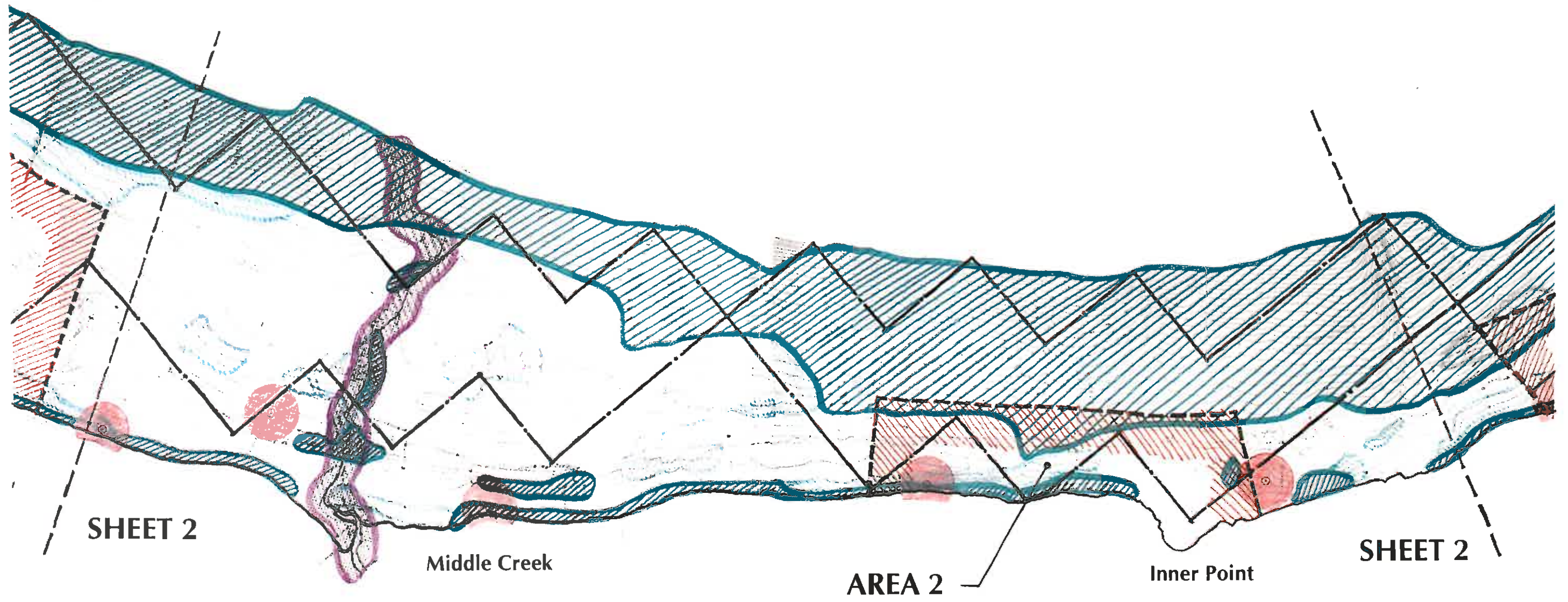
**WEST DOUGLAS ISLAND (Petersen Creek Area)
EXISTING CONDITIONS**

City & Borough of Juneau / Goldbelt, Incorporated

MINCH RITTER VOELCKERS
Architecture ■ Planning

KEY

-  HIGH VALUE WETLANDS/STREAMS
-  OTHER WETLANDS
-  GRADIENT ABOVE 30%
-  GRADIENT 15 TO 30%
-  EAGLE TREES








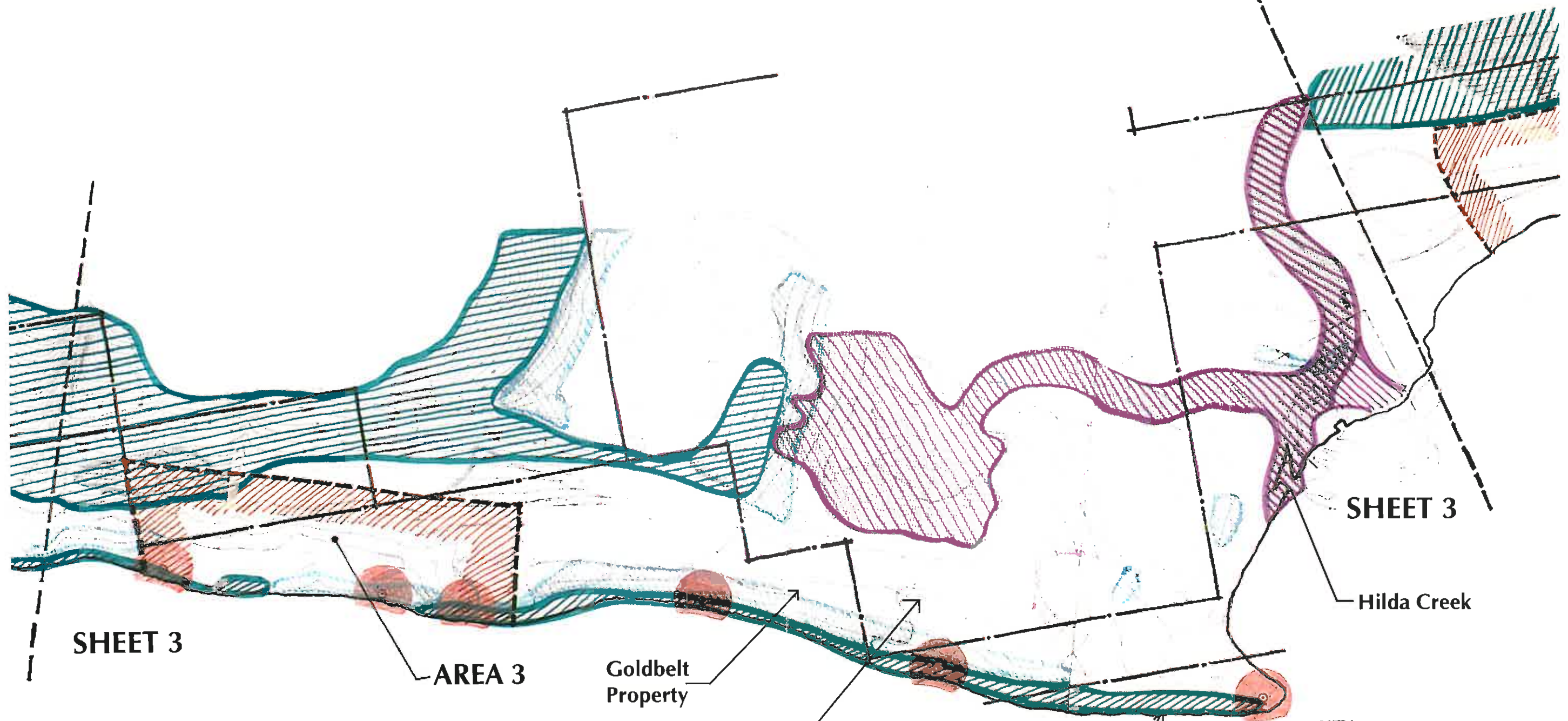
**WEST DOUGLAS ISLAND (Middle Creek, Inner Point)
EXISTING CONDITIONS**

City & Borough of Juneau / Goldbelt, Incorporated

MINCH RITTER VOELCKERS
Architecture ■ Planning

KEY

-  HIGH VALUE WETLANDS/STREAMS
-  OTHER WETLANDS
-  GRADIENT ABOVE 30%
-  GRADIENT 15 TO 30%
-  EAGLE TREES



SHEET 3

Hilda Creek

SHEET 3






AREA 3

Goldbelt Property

CBJ Property

Hilda Point

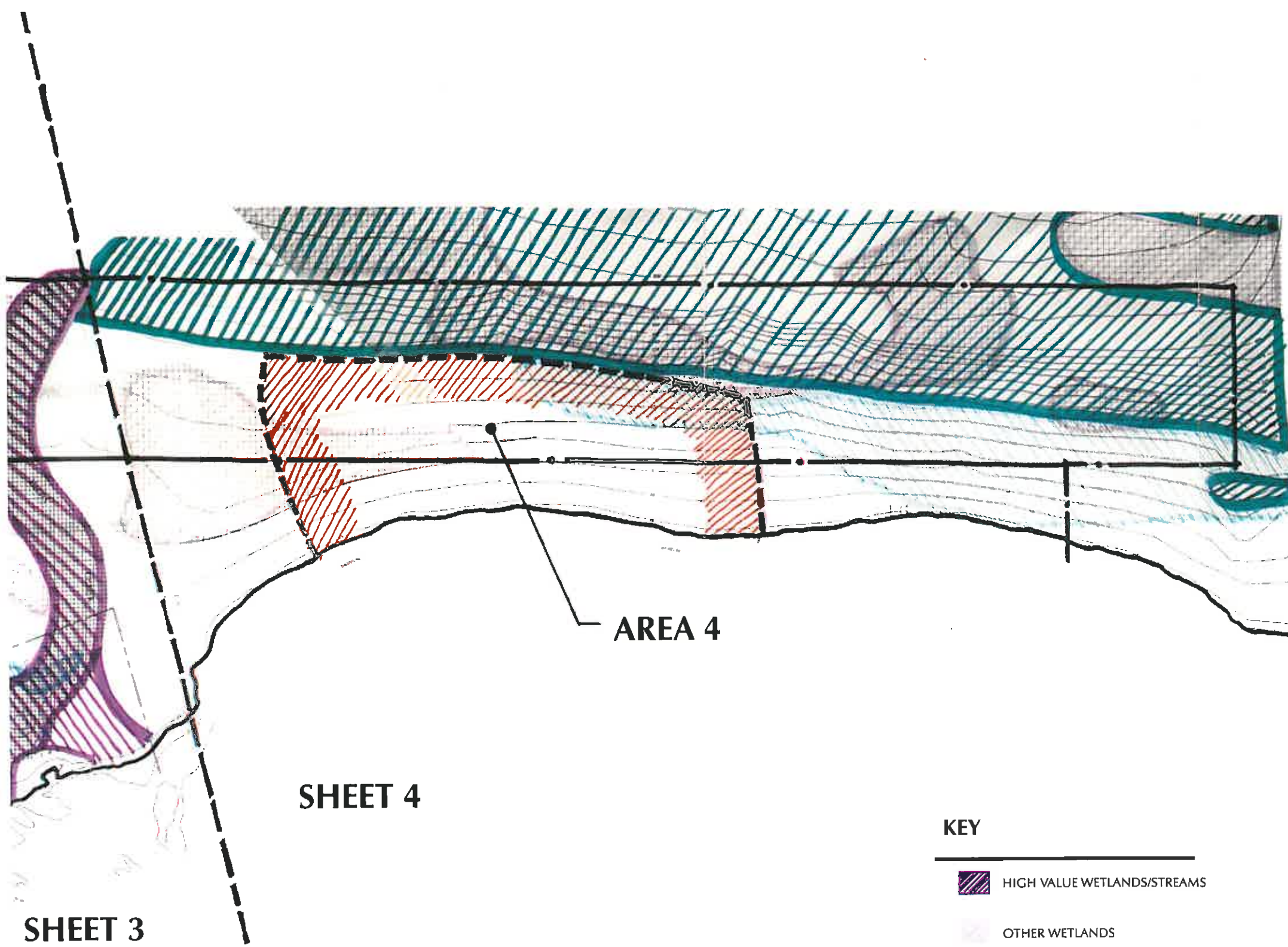
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-  OTHER WETLANDS
-  GRADIENT ABOVE 30%
-  GRADIENT 15 TO 30%
-  EAGLE TREES






**WEST DOUGLAS ISLAND (Hilda Creek Area)
EXISTING CONDITIONS**

City & Borough of Juneau / Goldbelt, Incorporated

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Architecture ■ Planning



WEST DOUGLAS ISLAND (South Hilda Creek)
EXISTING CONDITIONS
 City & Borough of Juneau / Goldbelt, Incorporated
MINCH RITTER VOELCKERS
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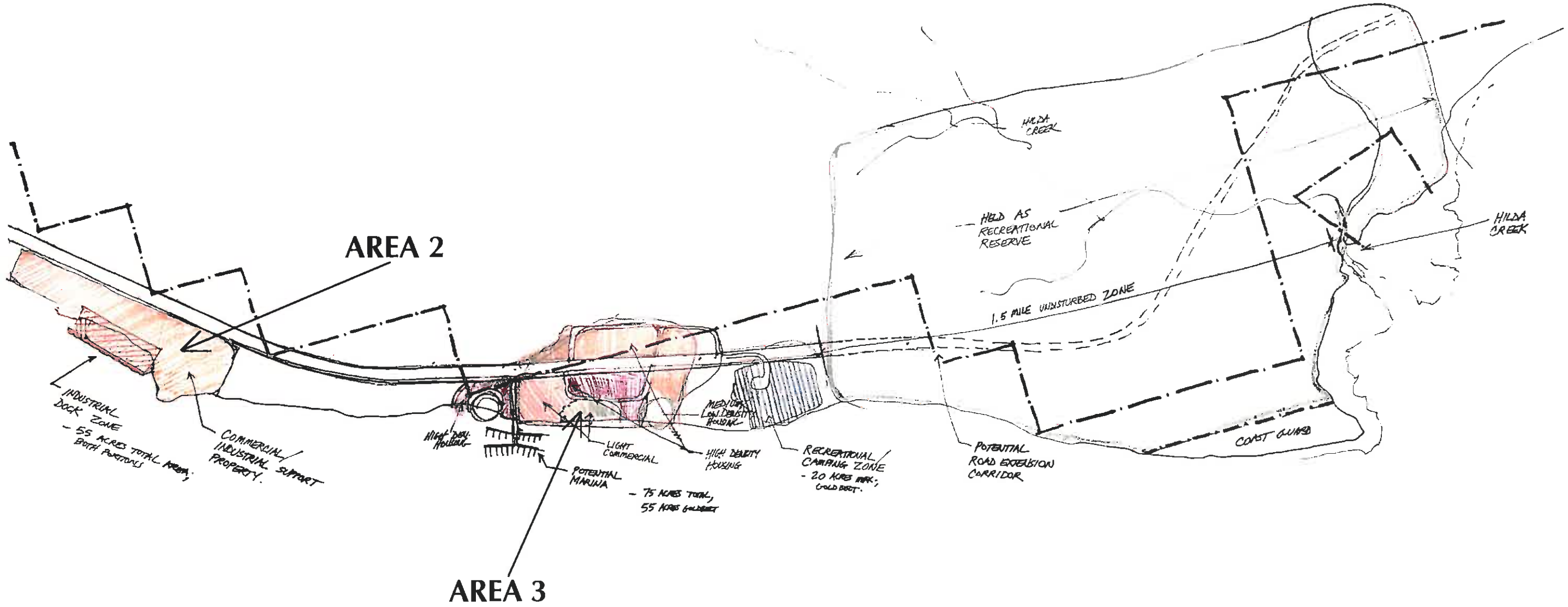
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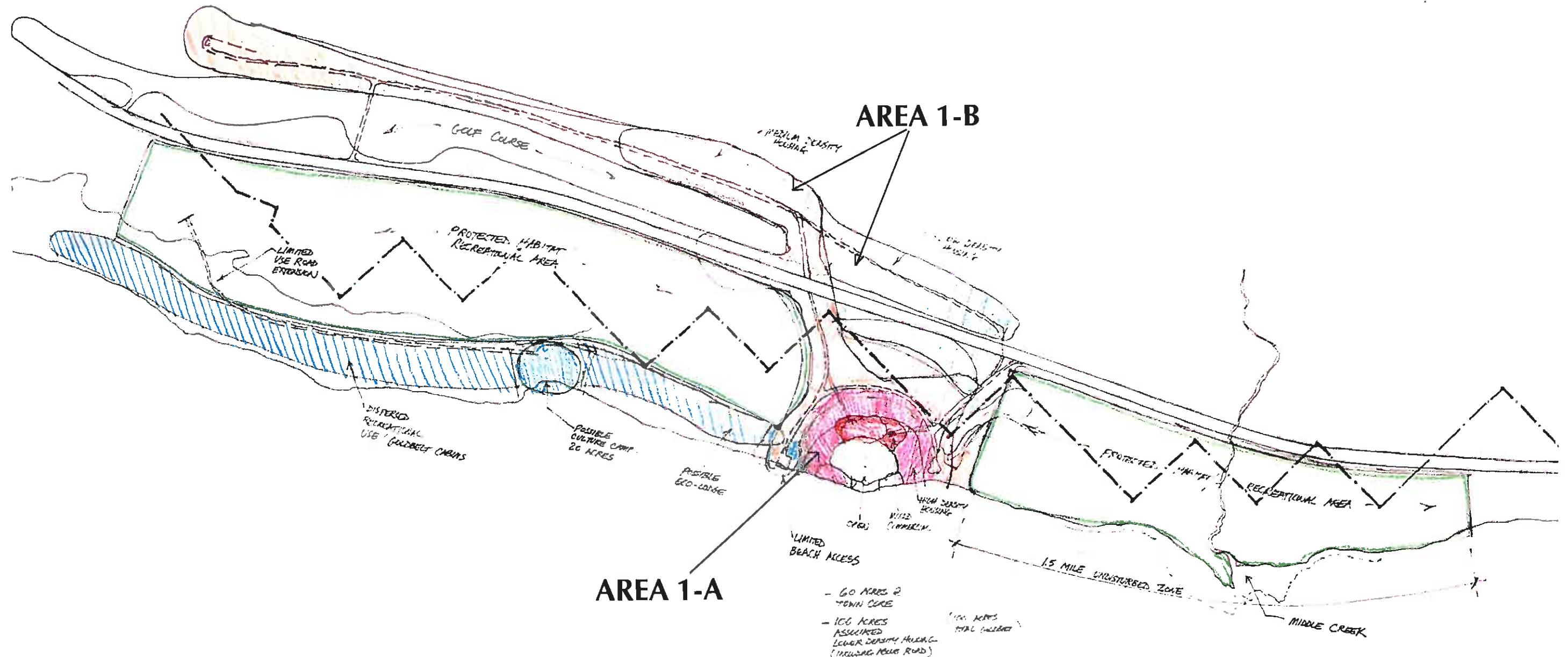
**WEST DOUGLAS ISLAND (Inner Point to Point Hilda)
CONCEPTUAL PLAN SKETCH**

City & Borough of Juneau / Goldbelt, Incorporated

MINCH RITTER VOELCKERS

Architecture ■ Planning



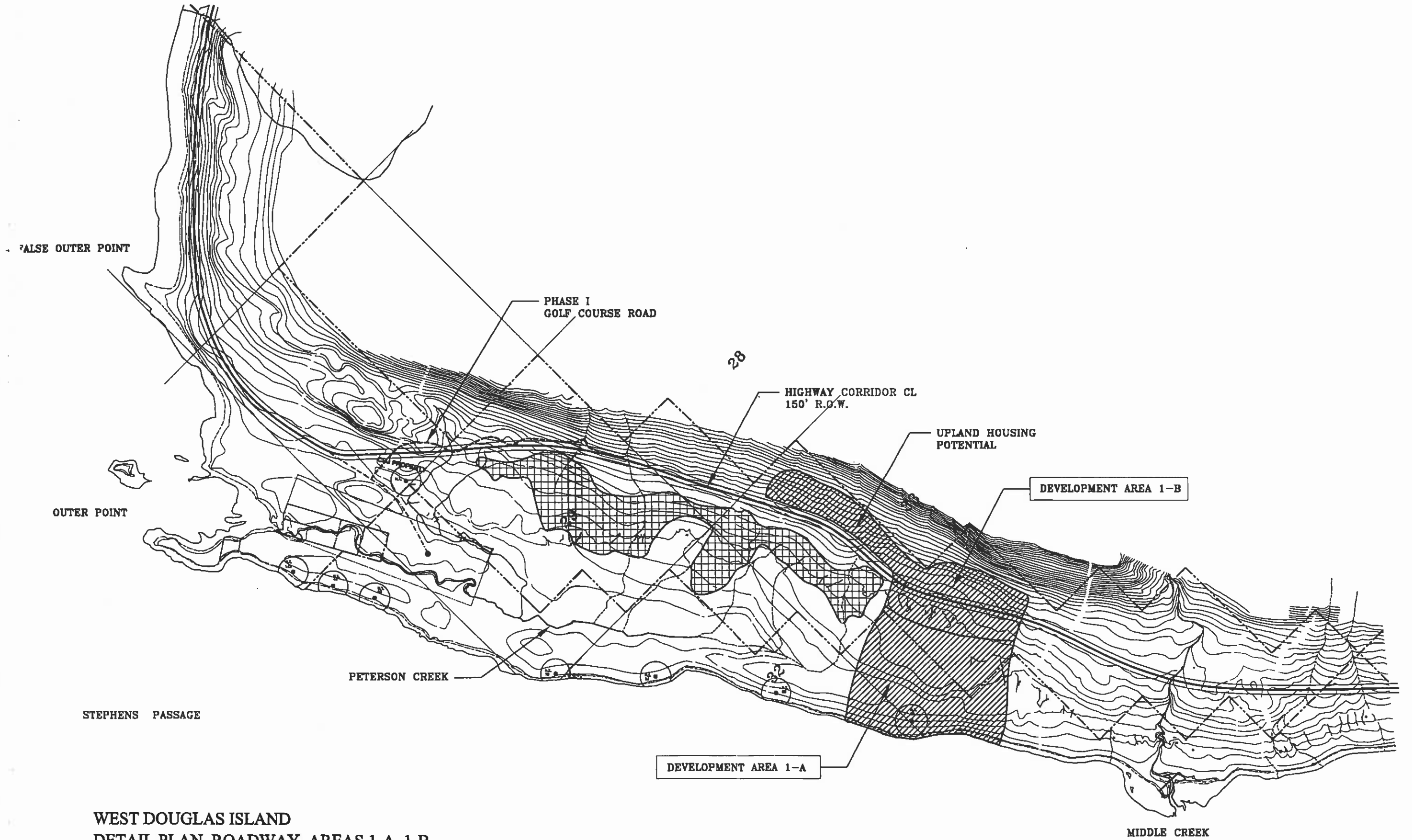


**WEST DOUGLAS ISLAND (Middle Creek Area)
CONCEPTUAL PLAN SKETCH**

City & Borough of Juneau / Goldbell, Incorporated

MINCH RITTER VOELCKERS

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WEST DOUGLAS ISLAND
 DETAIL PLAN, ROADWAY, AREAS 1-A, 1-B
 City & Borough of Juneau / Goldbelt, Incorporated
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