

## **II. INVENTORY**

A process of mapping natural resource and existing land status information was used that resulted in an analysis of opportunities and constraints for the development of the Eagle River Greenbelt. Base maps were produced with topography and land parcels indicated. Overlays of four inventory information maps such as wetlands and the 100-year floodplain were included to test plan alternatives. These four inventory maps were:

1. Plat of Eagle River Greenbelt - see appendix;
2. Wetlands and Floodplain Map - figures 3-6;
3. Land Status Map -figures 7-10, and
4. Visual Character Map - not included.

### **A. GEOMORPHOLOGY**

Eagle River is approximately 41 miles in length from its source at Eagle Glacier, then flows in a northwesterly direction to its mouth on Knik Arm. It is the middle 18-mile portion that is the study area for this greenbelt plan. The upstream 14-mile segment is within Chugach State Park while the downstream 9-mile segment is within the Fort Richardson military reservation.

Within this middle portion is the Eagle River Valley, a typical, glacier-carved valley. Glaciers advanced and retreated within the valley several times during the last million years, carving the exposed, unconsolidated materials such as sand, gravel and till over lowland sedimentary rocks. As the valley glacier withdrew, meltwater streams deposited sands and gravel while silts and clays were carried in suspension to be deposited in slackwater areas as sloughs or during floods. The creation of oxbow lakes, natural levees and other features of a low gradient, high sediment load stream valley point to a continuing process of erosion, deposition and reworking of these deposits by Eagle River and its tributaries. Thus, today the upstream portion of the study area is characterized by braided channel, riverain terrace wetlands, and an extensive, broad floodplain. Approximately from the South Fork confluence to the Eagle River Campground the river enters a more confined channel, marked by steeper slopes which rise on the north to residential development.

#### **1. SLOPE**

Mass wasting processes, the gravity induced movement of earth material (including snow), continue to shape the valley. Where slopes steepen and the unconsolidated sediments become

unstable, mass wasting accelerates. Slopes vary from nearly flat to gentle slopes along the valley floor, rapidly steepening to very steep slopes (45-100% or more) along the valley walls and as bluffs and cutbanks along the lower river.

Landslides and rockfalls ranging in size from minor slumps to massive slides involving millions of cubic yards of soil and rock occur in many of the steeper sloped areas of the valley. Avalanche hazard zones have been identified on both sides of Eagle River Valley with known avalanche paths extending to Eagle River Road. Many of the snow avalanche paths also cause rockslides.

The potential for mudflows also exists in the valley, particularly in steep gullies and former streambeds during spring breakup or during heavy summer rains. Seismically-induced ground failure ranges from low to moderately low susceptibility throughout the valley with generally higher intensities and longer periods of ground shaking than elsewhere.

## **2. Soils**

Silt and sandy loams comprise the majority of the valley bottom, interspersed with riverwash and areas of poorly drained peats. At the river's edge, mineral soils are derived from repeated flooding which deposits silt. Often, organic layers from streamside vegetation are repeatedly buried. At a later date, with stream channel relocation, the flooding frequency is reduced, allowing for development of uninterrupted soils and accompanying changes in the associated plant life.

## **B. VISUAL CHARACTER**

The visual landscape character of Eagle River Valley can be defined by glaciated mountains, sweeping views up and down the valley mixed with narrow glimpses of the river and Eagle Glacier. A major visual element within the valley is Eagle River itself. Meandering down the glacially carved valley floor, Eagle River provides visual focus for the length of the valley. The image of the river, in an as yet undisturbed valley floor setting, provides the sense of untouched wilderness associated with this area.

Topography and vegetation largely define the visual character within the valley. Steep valley walls and high ridge lines provide a strong sense of enclosure when not obscured by foreground vegetation. Development activity on ridgelines is very visible from the valley floor and affects the landscape's natural character which predominates within the greenbelt.

Vegetation in the form of birch, spruce and riparian woods limit views in most areas to internal or narrow "slot views" of distant features. Where openings exist, such as along gravel bars or over bogs, panoramic views may occur either up-valley to Eagle Glacier or down-valley, depending on orientation. Such views are limited, but quite spectacular, and thus valuable within the study area.

The two waterfalls on the South Fork of the Eagle River deserve special mention. A lower waterfall divides around a rocky promontory, falling 60 feet or more into a rock-studded pool which is frequented by spawning king salmon. This site is clearly visible from either of the downstream bluffs (best seen from the east) and provides an open, magnificent scene more grand than the enclosed setting of Thunderbird Falls, a popular park feature located north of Eagle River along Thunderbird Creek. The unique beauty of this area is augmented by the contrasting upper falls where water cascades in a natural flume through a narrow, rock cliff gorge approximately 100 feet in depth and 300 feet or so in length. No other pair of waterfalls like these exist within the Municipality.

### C. VEGETATION

Six vegetation types have been mapped in Eagle River Valley: coniferous, deciduous, mixed, forested bog, brush and open bog. Vegetative patterns largely reflect the amount of moisture in the soil. The first three categories, coniferous, deciduous and mixed are generally found on well-drained soils, whereas the remaining three are associated with poorly-drained soils and high water tables.

The pattern of ecological succession in the bottomland of Eagle River Valley is controlled by flooding frequency, stream channel changes and other abiotic factors. As plants take hold, biotic factors become increasingly important. A typical succession sequence would start with a gravel bar flooded annually with successive depositions of silt. As this material builds up over time, grasses and then willow and alder would begin to be found as flooding frequency diminished. Alders leading to poplars, which in turn give way to spruce, would maintain this

development as the flooding frequency approaches a once-in-100-years event and the time interval from the gravel bar stage becomes 100 years. Typically, the spruce dominated woods are found 3-4 feet above the river channel and as one moves toward the gravel bar, the early successional patterns are encountered at lower elevations.

#### **D. WILDLIFE HABITAT**

The Eagle River Valley provides important wildlife habitat as a largely untouched corridor from the alpine meadows within Chugach State Park to the tidal flats of Knik Arm. This valley has a significant diversity of wildlife from the larger mammals to populations of smaller mammals. Red, silver, chum, pink, and King salmon spawn in Eagle River. Rainbow and Dolly Varden trout are also present. Additionally, a variety of raptors and other birds are commonly observed.

While moose roam the entire valley throughout the year, in winter they are more likely encountered where abundant food, such as willow, is found. These areas are depicted on the habitat map as preferred moose habitat. In the upper valley "channel island" area, adjacent to Chugach State Park, several preferred moose habitat areas are found. In this same area, wolves, bear, and migrating sandhill cranes, among other species, appear to be more abundant.

The presence of top-of-the-food-chain predators (e.g., bear and wolves), as well as the diversity of plant and animal wildlife, attest to the richness and vitality of this river valley ecosystem. Preservation and protection of habitat afforded by the greenbelt is critical to maintenance of this diversity. Thus, the protection of such a river corridor and particularly the more primitive focus for the upper valley (see Section III) will do much to sustain viable wildlife populations and contribute to the uniqueness of the greenbelt. This must be a high priority in the overall management of the area.

#### **E. WETLANDS AND FLOODPLAIN**

##### **1. Wetlands**

The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

The vast majority of Eagle River Valley bottomlands have been designated as wetlands or lands affected by "Waters of the United States", as defined by Section 404 of the 1977 Clean Water Act, such as bogs, marshes, wet tundra and other lands that are periodically or permanently covered by water or that support plants which often grow in wet areas. Four different wetlands types have been identified in the Eagle River Valley including riverain terrace, non-patterned elongated complex, unforested closed bog and forested closed bog or swamp. The riverain terrace wetland type is by far the most extensive in acreage and exhibits a great deal of variability in terms of the plant communities present (e.g. from sedge tussocks in ponded water to white spruce woodlands). The dominant vegetation in this wetland type is, however, low shrub or low forest bog interspersed with wet meadows and marshes. Further discussion of this classification of wetland types is addressed in the Anchorage Wetlands Management Plan under Section 2.3.

Wetlands within the study area have been mapped, evaluated and classified within five designations: Preservation, Conservation, Development, Mixed Development and Unclassified. In keeping with the intent of the Anchorage Wetlands Management Plan, the 100-year floodplain, preservation wetlands were identified while the adjacent wetlands above that flood elevation were identified as conservation. The other wetland categories stood on their own. Approximately 3,000 acres of wetlands exist within Eagle River Valley. Of that total, over half is classified as preservation (1,640 acres) and over 40 percent as conservation (1,165). The remaining three classifications comprise 120 acres together (mixed development - 60, unclassified - 40, development -20) (Figures 3-6).

**The wetlands classifications are further described below:**

**Preservation Wetlands** - Wetlands selected for preservation are to be managed or protected through use of appropriate controls to maintain their natural character and function. Uses or activities which would degrade or destroy the natural systems and resources are to be prohibited. Uses of activities would be allowed only if they further enhanced, restored or preserved the natural character of the wetlands. Controls on lands or land uses adjoining wetlands would also be necessary to protect hydrologic

and habitat functions. Some improvements such as trails, restoration work or park maintenance facilities in adjoining areas or in the wetland would be allowed while the wetlands would generally be maintained in a natural condition.

**Conservation Wetlands** - These wetlands would be managed in such a way as to conserve their natural functions and values to the maximum practical extent while permitting certain carefully controlled uses to occur. Development associated with these wetland-related values would be permitted, but the natural character of the wetland would be retained as much as possible. Development within conservation wetlands will be designed to protect significant wetlands values through use of open space. In these instances, the Community Planning Department would work with the landowner/developer to prepare site plans which reserve portions of the wetlands as open space. Submittals for preliminary plats in conservation wetlands, (see AMC 21.15.100(c)), are designed to inform both the developer and Municipality which areas are more sensitive and thus better suited for retention as open space.

**Mixed or Cluster Development Wetlands** - Wetlands where relatively high density development can occur in certain areas to allow for open space in other areas. General permits issued by the Municipality, under delegated authority from the U.S. Army Corps of Engineers, allow wetlands development with incorporation of certain mitigation measures. These measures would be used in those wetlands slated for development in order to preserve, as much as possible, valuable wetland functions.

**Developable Wetlands** - These wetlands may be developed to satisfy growth needs. General permits issued by the Municipality, under delegated authority from the U.S. Army Corps of Engineers, allow wetlands development with incorporation of certain mitigation measures. These measures would be used in those wetlands slated for development in order to preserve, as much as possible, valuable wetlands functions.

**Unclassified Wetlands** - These wetlands have been determined to be wetlands through current mapping by the Corps of Engineers, but were not classified in the Wetlands Management Plan. Generally, such areas adjacent to the Preservation or Conservation wetlands will take on that classification. Other areas adjacent to Developable wetlands or isolated wetlands will

be classified as Developable wetlands. However, Assembly action in amending the plan to classify these wetlands and the Corps' concurrence are required before these designations would be official.

Unlike the Preservation and Conservation wetlands which require Individual permits or the Developable and Mixed Development wetlands covered by General permits, unclassified wetlands may require either an Individual or Nationwide permit. A wetlands determination prepared by the Corps is advised and would provide information on the particular permit path required.

These wetlands are regulated by the U.S. Army Corps of Engineers. Discharges of dredged or fill material into the navigable waters and wetlands associated with other waters of the United States fall under Corps authority. Under this authority, three types of permits are issued for the placement of fill material in wetlands: Individual, General and Nationwide. Within the Municipality of Anchorage, as a result of the Anchorage Wetlands Management Plan, authority has been delegated by the Corps to the Municipality for the issuance of General permits for fill activities in any wetland classified development or mixed development. The Corps still retains its authority for any other proposed wetland fill project. An Individual permit must be obtained for projects proposed in conservation or preservation wetlands and an Individual or Nationwide permit may be required for those wetland areas previously unclassified. The Individual permit process is most exacting and may involve a lengthy review and evaluation by State and Federal resource agencies to insure that the proposed discharge is in the public interest. The General and Nationwide permit process is much less exacting and more swiftly concluded by the Municipality and Corps, respectively.

## **2. Floodplain**

The 10-, 100-, and 1,000-year floodplains of Eagle River were determined for the Municipality by the engineering firm CH2M Hill, using the Corps of Engineers HEC-2 step backwater computer program, with cross-sections scaled from 1978 Municipal topographic maps. Subsequently, the Corps of

Engineers, as directed by the Federal Emergency Management Agency with Municipal concurrence, performed an "Approximate Study" of Eagle River, and prepared updated, though preliminary, maps reflecting the most current floodplain information available.

Both studies show that the configuration of Eagle River Valley determines width of the 100-Year floodplain. Up-valley, near the Eagle River Visitor Center, where the valley is wide and flat, Eagle River winds through the area, branching into side streams. The 100-Year floodplain in this area has numerous "channel islands" of land located between stream channels and extending above the floodplain. Proceeding down-valley, the width of the 100-Year floodplain decreases with the narrowing configuration of the river, until Eagle River is restricted to one main channel flowing between steep bluffs.

#### **F. Water Quality**

By continued protection of the river corridor, the Eagle River Greenbelt would directly aid in the preservation of water quality. As measured from one bank in the lower valley, the greenbelt reaches its narrowest width at approximately 240'. Thus, the potential for suspended sediments, oil and grease as well as increased turbidity and fecal coliform counts are greatly diminished with the creation of such a buffer. Without development adjacent to the river, the processes of runoff and erosion are much less likely to convey these pollutants to the river. Moreover, distant development should not impair water quality because such pollutants will have been removed through the filtering action of the greenbelt buffer. Finally, stormwater outfalls into Eagle River should be closely monitored to insure that proper water quality safeguards (e.g. sediment traps, oil\grease separators) are designed, built and adequately maintained. This will be particularly important as subdivisions are developed in the lower valley.

Two specific water quality concerns have been raised. Violations of the fecal coliform standard have been reported from the Hiland Mountain Correctional Center sewer outfall near the river bank by the picnic area in the Eagle River Campground. As a result, a plan for effluent control is under development which would clean up this discharge water to meet state water quality standards. In an ongoing study, state health officials will monitor and evaluate the extent of fecal coliform pollution throughout the Eagle River drainage basin. Concern has also been raised regarding leaching from the old landfill off Hiland Road draining into Eagle River. Recent tests conducted by the Department of



Environmental Conservation have, however, shown that a surface stream draining this old landfill area meets water quality standards including those for organics and heavy metals. However, the Municipality will be monitoring ground water quality from the results of one well in this area and will remain alert to the need for further study of this issue.

Water quality should continue to be an important concern in the management of the Eagle River Greenbelt. The division should work closely with the Municipality and the U.S. Corps of Engineers to make sure any developments within or adjacent to greenbelt lands are carried out without degradation of water quality.

## **G. Land Status**

### **1. Land Use**

The predominant developed land use is rural residential. This large lot land use pattern with on-site water and wastewater service, is dispersed along either side of Eagle River Road. A similar pattern of dispersal along or adjacent to Hiland Drive occurs on the south side (i.e., Bernard, R7R and Riverview Estates subdivisions). The exception to this pattern is the detached single family subdivisions served by public water and sewer between Eagle River Road and the bluff bordering Eagle River. Many of the early homesteads still exist, while others have been subdivided. On the south side of the valley beyond South Fork, several (less than ten) adjacent intact homesteads may still be found. The land use pattern here is still very much "frontier", a remote, almost inaccessible area located between Chugach State Park to the south and the undeveloped Eklutna, Inc.-held valley bottomlands to the north.

Aside from the residential land uses ranging in intensity from suburban to remote homesteads, institutional land use is also found in the valley. Chugach State Park frames the whole valley at higher elevations both on the north and south sides. Lion's Park at Eagle River Road and Eagle River Loop Road, the Hiland Mountain Correctional Center and the Division of Forestry Plant Materials Center are adjacent public facilities located near the greenbelt. Future public land use includes up to three alternative school sites which have been identified to serve anticipated future growth. These include elementary sites equally spaced in the upper valley between Eagle River Road and Eagle River. The

most downstream of these sites has been identified as either a high school or elementary site. Finally, on the south side, an elementary school site has been identified between the proposed bridge connection and the Glenn Highway, across from Gruening Junior High. These sites may or may not be developed in the near or even distant future. (Figures 7-10)

Recreational use of the land and water in Eagle River Valley is increasing and has led to several trespass situations. The Knik Kanoers and Kayakers, which represents the largest organized recreational use of the river, believes strongly that Eagle River is the most heavily used whitewater kayaking stream in the state. Recreational use of the valley is high despite the relatively undeveloped nature of facilities for such use. Additionally, if the king salmon enhancement plans for Eagle River are as successful as they have been at other streams in southcentral Alaska, the greenbelt will receive a significant increase in use by sport anglers. Sport fishing could become the largest recreational use of the greenbelt below the Eagle River Visitor Center. The Alaska Department of Fish and Game program of sport fishing in Eagle River was introduced late in the planning process. Therefore, it is not included in this plan. The issue will be addressed in a separate planning process involving the Division of Sport Fish (ADF&G) and the public.

## **2. Zoning**

Recent areawide rezoning for Eagle River Valley has resulted in the first identification of a planned community district in advance of any project plans. Areas within this district, particularly at the lower valley end, may not be such long-term development prospects, however. In any event, the detailed plan review requirements of this district will provide information on the quality, quantity, and timing of such development.

The Regulatory measures associated with the zoning districts are based upon features such as slope or special limitations related to greenbelt protection of recreation. Land within these zoning districts is undeveloped at present and represents virtually all of the area encompassed in the greenbelt. Thus, these controls, unlike floodplain regulations or wetlands permitting, are yet to be used in guiding development.

The controls imposed by these districts vary. In general, the more intensely developed portion of the valley is downstream, adjacent to the existing Eagleridge and Eaglewood subdivisions. This pattern was continued in the rezoning action. Thus, the R-3 (SL) adjacent to these existing, large developments has several specific controls which should serve to protect and maintain a greenbelt along the river to accommodate a trail corridor. On the south side, the correlation between higher residential densities and increased controls is again maintained in the downstream end with the R-1A (SL). Most of the land bordering the greenbelt will, however, be subject to lower density development and controlled either by the detailed plan review required for the Planned Community District (predominantly on the north side) or the much less stringent R-6 limitations and simple plat review on the south side.

The Division of Parks and Outdoor Recreation should monitor plans for subdivision development to assure protection of water quality, wildlife, and recreational use of the Eagle River Greenbelt.

### **3. Land Ownership**

The Eagle River Valley "bottomlands" have remained undeveloped and used for recreation for decades due largely to the ownership history for this area. In 1925, federal land managers withdrew much of the Eagle River Valley from land disposal for possible future use in hydropower projects. While settlement occurred along the margins of this land withdrawal following World War II, no development was permitted in the federal power reserve withdrawal. Those lands now identified for the greenbelt were wholly within this reserve and were, in fact, managed by the Bureau of Land Management (BLM) as an area of open space which allowed for the continuation of recreational use. In 1970, Chugach State Park was created by the State Legislature with boundaries incorporating these reserve lands. Management agreements were forged between the State Division of Parks and Outdoor Recreation and other state agencies as well as BLM permitting Chugach State Park to exercise management authority over the federal power reserve lands (up to 500' elevation) and the State Mental Health and University Trust lands as well. Thus, the use and management of these lands for recreational purposes was reinforced.

With the passage of the Alaska Native Claims Settlement Act in 1971, Eklutna Village Corporation was formed entitling it to ownership of certain land base which it would manage for the benefit of its shareholders. Eklutna, Inc. subsequently selected these valley "bottomlands" and in 1979 received patent to these lands. From 1979 to 1987 Eklutna managed the lands as undeveloped open space. In 1987, the State acquired title to 3,505 acres through a land exchange with Eklutna, Inc. In this exchange, Eklutna, Inc. acquired several State-owned lots in downtown Anchorage that had been previously slated for a State office building.

Three other private landowners own land within the greenbelt. CBS Real Estate owns 75 acres in the mid-valley area. The Bear family owns 12 acres in the lower valley of both greenbelt land and the southwest portion of the South Fork Park site. Barbara Gross owns 19 acres of the South Fork Waterfalls site bordering the lower waterfalls. The Division of Parks and Outdoor Recreation acquired 8.25 of the 19 acres in 1990. Finally, the state owns 88 acres within the Eagle River Campground and South Fork Waterfalls sites while the Municipality owns 10 acres of greenbelt lands in the lower valley.

Ownership of four other land parcels within the greenbelt (those owned by Lee, Donnelly, Eklund and Carr), are in dispute. One other parcel outside the greenbelt is also in disputed ownership. Though all the disputed land is patented to Eklutna, Inc., this issue is under litigation at present and would cloud acquisition and development of land for the greenbelt in this area.

#### **4. Land Acquisitions**

The Municipality of Anchorage identified three areas totaling 33 acres, which they viewed as important additions to the Eagle River Greenbelt due to their outstanding scenic quality, or close proximity to the river. The three areas include the Lower Falls of the South Fork, a portion of the Bear homestead, and a portion of CBS Real Estate property.

The 8.25 acre South Fork Waterfalls site consists of a portion of the Riverview Estates Subdivision on the south side of Eagle River. Part of this subdivision straddles the South Fork of Eagle River and includes the Lower Falls of South Fork. It is recommended that the additional 9.75 acres be purchased by the state in the future.

The Bear homestead is a 40 acre private parcel near the confluence of South Fork and Eagle River on the south side of the river. The 10 acre, relatively flat, wooded northeast corner of this property adjacent to South Fork was recommended for purchase in the Municipality's Eagle River Greenbelt Plan. The site is viewed as a major river access point and as a needed community park for both the wider population and South Fork residents. It is recommended that the State or the Municipality purchase or enter into a land exchange for this 10 acre site.

The CBS Real Estate property involves some 61 acres of mostly preservation wetlands. Because the CBS property comes so close to the river, it is important that approximately 5 acres of this property be acquired in order to provide the necessary corridor buffer from the river. This could provide enough land to successfully plan a trail the entire length of the greenbelt along the north side of the river. It is recommended that the State or the Municipality purchase this 5 acre parcel.

The Municipality recommended other parcels, in descending priority, to be added to the Eagle River Greenbelt. These are listed in Appendix C. It is recommended that these parcels also be purchased if funds become available in the future, however a priority should be given to the three parcels listed above.