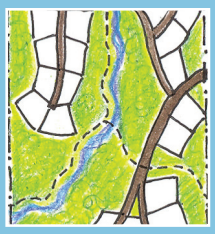
Hillside District Plan

Adopted April 13, 2010



MUNICIPALITY OF ANCHORAGE

Acknowledgements

A number of dedicated people volunteered their time and input to make this planning process successful and a reflection of the desires, values, and needs of Hillside residents and Anchorage citizens.

The Municipality of Anchorage and the team of professional consultants who worked on the Hillside District Plan thank all those who attended meetings and workshops. A special thank you goes to the members of the Citizen Advisory Committee in recognition of their work and commitment in the Hillside District Plan process.

Hillside District Plan Citizen Advisory Committee

- David D'Amato
- Lori Davey
- Cheri Ford
- Carol Fries
- Chris Hamre
- Dee High
- David Lappi
- Victor Mollozzi (Vice Chair)
- John Reese (Chair)
- Niel Thomas
- John Weddleton
- Wayne Westberg

Hillside District Plan

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Adopted April 13, 2010
Assembly Ordinance 2010-22

The Hillside District Plan is a project of the Municipality of Anchorage. This report was prepared with assistance from MWH; Agnew::Beck Consulting, LLC; HDR Alaska, Inc.; Larsen Consulting Group, LLC; and Blue Skies Solutions.

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Hillside District Plan

Table of Contents

Maps, Tables and Figures

Chapter I. Introduction

Chapter 2. Land Use

Chapter 3. Drainage

Chapter 4. Transportation

Chapter 5. Water and Wastewater: Public and On-site Systems

Chapter 6. Implementation

The maps in this document were compiled using data courtesy of the Municipality of Anchorage, Anchorage Water and Wastewater Utility, Alaska Department of Natrual Resources and HDR. The maps were compiled for and by the Municipality with assistance from Blue Skies Solutions, Agnew : : Beck Consulting, HDR, Larsen Consulting Group, and the Boutet Company. The maps are all projected using Alaska State Plane, Zone 4, NAD 1983.

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Preface

The Hillside District Plan (HDP):

- Is adopted as an element of the comprehensive plan, which sets the goals, objectives, and policies governing future land use and development;
- Implements an important Anchorage 2020 strategy;
- Replaces the Hillside Wastewater Management Plan and updates the Maximum Perimeter of Public Sewerage;
- Adopts the official Land Use Plan Map for the Hillside, which provides greater specificity than the Anchorage 2020 Land Use Concept Plan and replaces the 1982 Generalized Land Use Plan. The Hillside Land Use Plan Map will be incorporated into the Anchorage Bowl Land Use Plan Map to be adopted in 2010;
- Updates the Hillside portion of the Areawide Trails Plan map and adopts recommendations for connections to Chugach State Park; and
- Adopts recommendations and policies in areas of drainage, roads, on-site water and wastewater systems, zoning and subdivision standards, and funding and management of public services.

The Municipality of Anchorage comprehensive plan consists of a range of elements, from the most general (Anchorage 2020 Anchorage Bowl Comprehensive Plan) to specific (Anchorage Downtown Comprehensive Plan), recognizing that functional plans like the Areawide Trails Plan overlap in study area with these other plans. The current code states that "if elements of the comprehensive plan conflict, the element most recently adopted shall govern." This is important guidance, especially given that the establishment of the trail network, for example, may change over time.

The HDP, once adopted by the Anchorage Assembly as an element of the comprehensive plan, is a significant implementation action of Anchorage 2020. Development on the Hillside was identified as one of the seven key planning issues that influence future growth. Anchorage 2020 mandates that the HDP cover a wide range of issues, including the levels of public services, wastewater disposal and water supply, drainage, land use, and delineation of the urban-rural boundary. As a subarea plan, the HDP is consistent and in accordance with Anchorage 2020 but provides more

specificity and a greater level of analysis than Anchorage 2020. The HDP implements and provides further clarity and refinement on a number of Anchorage 2020 policies.

The HDP replaces the Hillside Wastewater Management Plan, and updates the Maximum Perimeter of Public Sewerage. While the HDP provides transportation recommendations, it is not intended to and does not officially amend either the Long-Range Transportation Plan or the Official Streets and Highways Plan (OS&HP).

The HDP implements Anchorage 2020 by examining in detail the Hillside land use and development issues identified in Anchorage 2020 for future planning. Finally, it will be more recent than Anchorage 2020. As such, while both the HDP and Anchorage 2020 will guide future development decisions on the Hillside, it is generally expected that the details provided in the HDP will provide the majority of guidance on decisions about land use, transportation, and other public issues. The Land Use Plan Map in the HDP will replace both the 1982 map and the Land Use Policy Map in Anchorage 2020 for the Hillside.

It is usual for a comprehensive plan to lay the foundation to make changes in the code, whether for a specific area or more broadly. Anchorage 2020 provides the basis for the full revision to Anchorage's zoning code, and the HDP adopts policies specific to the Hillside that require additional changes to municipal code to take effect. These code amendments should be consistent with the general policy intent of the HDP, but must go through additional public review and adoption through the Planning and Zoning Commission and the Anchorage Assembly. These subsequent steps are necessary to refine the specifics of the amendments.

Similarly, the HDP makes recommendations that direct the Municipality of Anchorage (MOA) to adopt standards that are contained in policy documents rather than code. Under Assembly adoption and plan direction, portions of the Anchorage Design Criteria Manual (DCM) will be developed or refined to establish criteria consistent with plan-recommended standards. HDP recommendations that require additional implementation steps are to be interpreted as clear intent of the Municipality to follow through on these changes to municipal policy.

HDP Appendix B provides a summary of plan implementation actions. The table lists all plan recommendations, assigns responsible parties to carry out the action, and provides an approximate timeframe for each.

Chapter 1. Introduction

Purpose of the Hillside District Plan

The purpose of the Hillside District Plan is to establish sound public policy that reflects the vision of Hillside residents and landowners, and the interests of the full community of Anchorage. The plan must address both current needs and future growth. The primary challenge of the Hillside District Plan is to protect the qualities that both residents and users of the area value about the Hillside while accommodating future development. Under existing zoning, if all buildable vacant land in the Hillside District were developed, the area would grow from 8,500 to nearly 14,000 homes. This capacity for growth includes a combination of infill in already developed portions of the Hillside, and development of large tracts of private, vacant land, most of which are located in the southeast Hillside. The pink areas on Map 1.1 show the location of these vacant Hillside lands. Map 1.2 shows the current zoning in the area.

The Hillside District Plan provides greater specificity for policy on land use and public services than the Anchorage 2020 Comprehensive Plan and replaces the Hillside Wastewater Management Plan. Specific issues covered in the plan include the density and character of residential development; infrastructure needs including drainage, roads, trails, and water and wastewater service; the recreational needs of residents and visitors; and protection of environmental quality, particularly water quality.

The adopted Anchorage 2020 Comprehensive Plan provides broad direction for the future of the Anchorage Bowl, including the Hillside District. The 2020 plan also includes an allocation of the Hillside's share of Anchorage's overall growth. Decisions regarding the timing of that development will be made by market forces. The Hillside District Plan provides guidance for the character and location of future growth, and the infrastructure needed to support this development.

Building on the Anchorage 2020 Comprehensive Plan, work by the Municipality of Anchorage, the Hillside Citizen Advisory Committee, and input from the public, the plan aims to achieve the following:

- Maintain the rural character of the area, including preserving natural vegetation and access to open space, particularly in the large portion of the district where housing densities are low.

The Citizen Advisory Committee

Assembly members Janice Shamberg, Chris Birch and Jennifer Johnston appointed the members of the Citizen Advisory Committee (CAC). Our committee includes property developers, geologists, community activists, engineers and even some normal people. Members of the CAC live throughout the district. A very broad range of experience and knowledge was brought to the Hillside District Plan project by the CAC.

Advisory committees are often not much more than window dressing. Not so with this group. The MOA department representatives and the contractors hired to help with this project have filtered all of the issues and research and proposals through this group, facing insightful, probing and persistent questioning. A couple of times CAC members "went to the field" to do their own research and writing on specific topics so the plan would represent accurate information, accurately presented. We have been very involved in the details as well as in the wider policies presented in this plan. We have used our knowledge, experience and the advice of our many neighbors in doing this work, and we endorse the plan with only minor reservations (noted in sidebars in a few places). This plan is very good and we hope the Planning and Zoning Commission and the Assembly will agree after careful review.

The CAC has worked very hard and, I believe, has played a vital part in producing a plan that will greatly improve the Hillside and make all of Anchorage a better place to live for the next ten years and beyond.

– John Reese, CAC Chair

Hillside residents value the beauty and privacy that comes with tree-cover and natural vegetation, as shown above. Other, newer Hillside District developments have preserved less vegetation and retained fewer trees, as shown below. Development standards can help retain buffers of natural and planted vegetation to maintain the character of the Hillside.

- Identify specific areas of the Hillside that can, over time, absorb more intense residential development than is possible under current zoning, as called for in the Anchorage 2020 Comprehensive Plan. In addition, identify places that should support less intensive residential development than is allowed under current zoning.
- Maintain the overall integrity and health of the Hillside natural environment, including water quality and wildlife habitats.
- Improve the road system, particularly to provide better emergency access and connectivity, to reduce congestion and increase safety, and to support expected growth while maintaining neighborhood character.
- Preserve and connect trails. Develop facilities to respond to the steadily increasing demands for access to Chugach State Park. Improve management of trails and trailheads to increase the quality of the trail system, and to reduce impacts on adjoining residential areas.
- Take action to reduce drainage problems, both for new and existing development. Find better ways to keep ice off roads; keep streets, basements and garages free of water; and keep streams and wetlands clean.
- Preserve the viability of on-site water and wastewater systems; ensure the continued quality of well water. Provide opportunities for new forms of wastewater treatment.
- Building from the Title 21 Rewrite, a project to update the municipal zoning code, establish standards so new development is suited to the environmental conditions of the Hillside (e.g., standards to retain native vegetation, reduce runoff, and reduce wildfire hazards). Improve the development approval and review process so the process works well for developers, landowners, and residents.
- To make achieving many of these goals possible, establish new funding and management mechanisms that provide for locally directed improvements in roads, drainage and trails, and to better monitor and protect water quality.

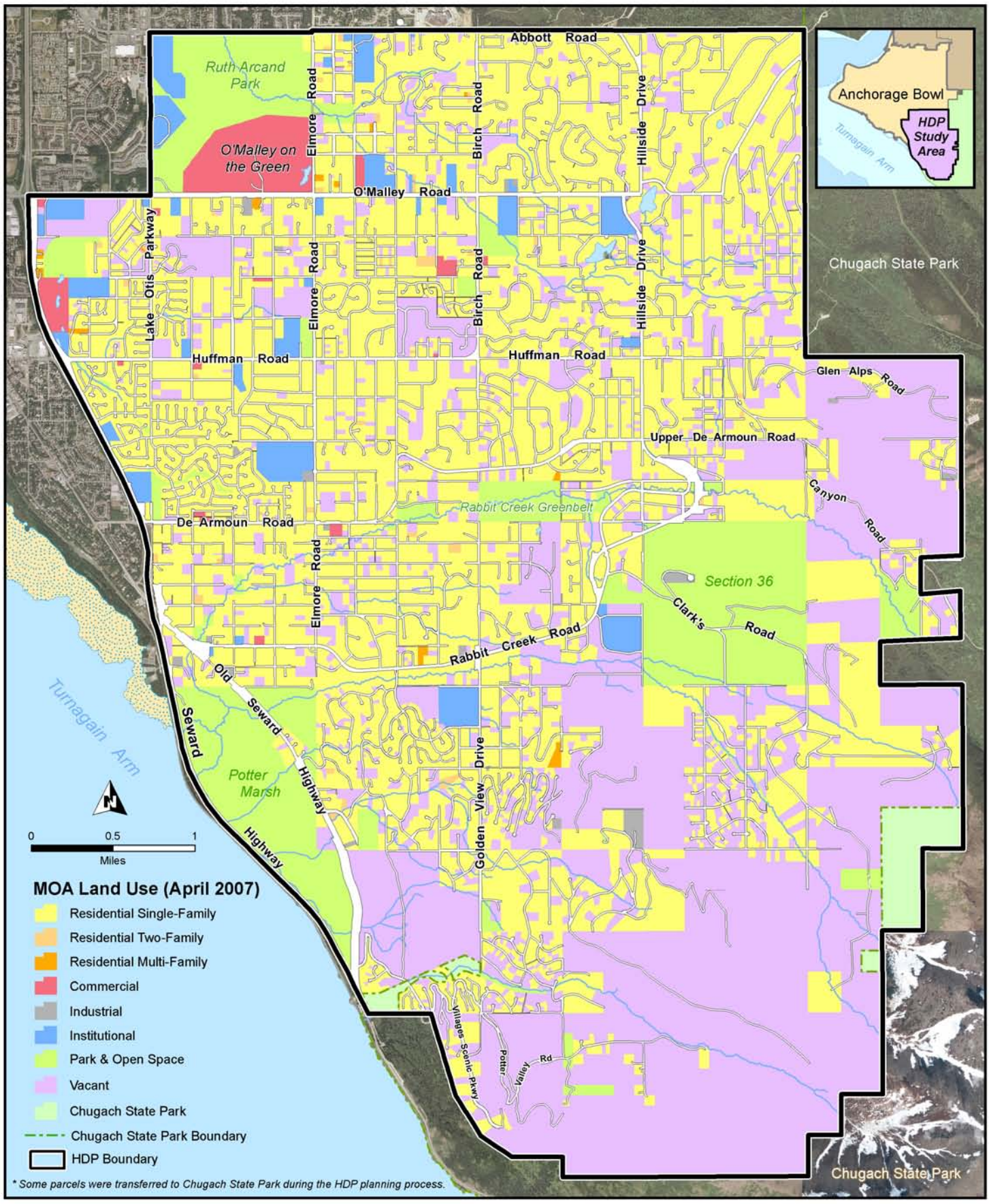
Overall, as the public survey showed, residents are very satisfied with their quality of life on the Hillside and want to maintain those qualities that make their home a special place, even as the area continues to grow.

Map 1.1

Existing Land Use

(Lavendar areas are vacant, undeveloped land. Remaining areas are developed or committed.)

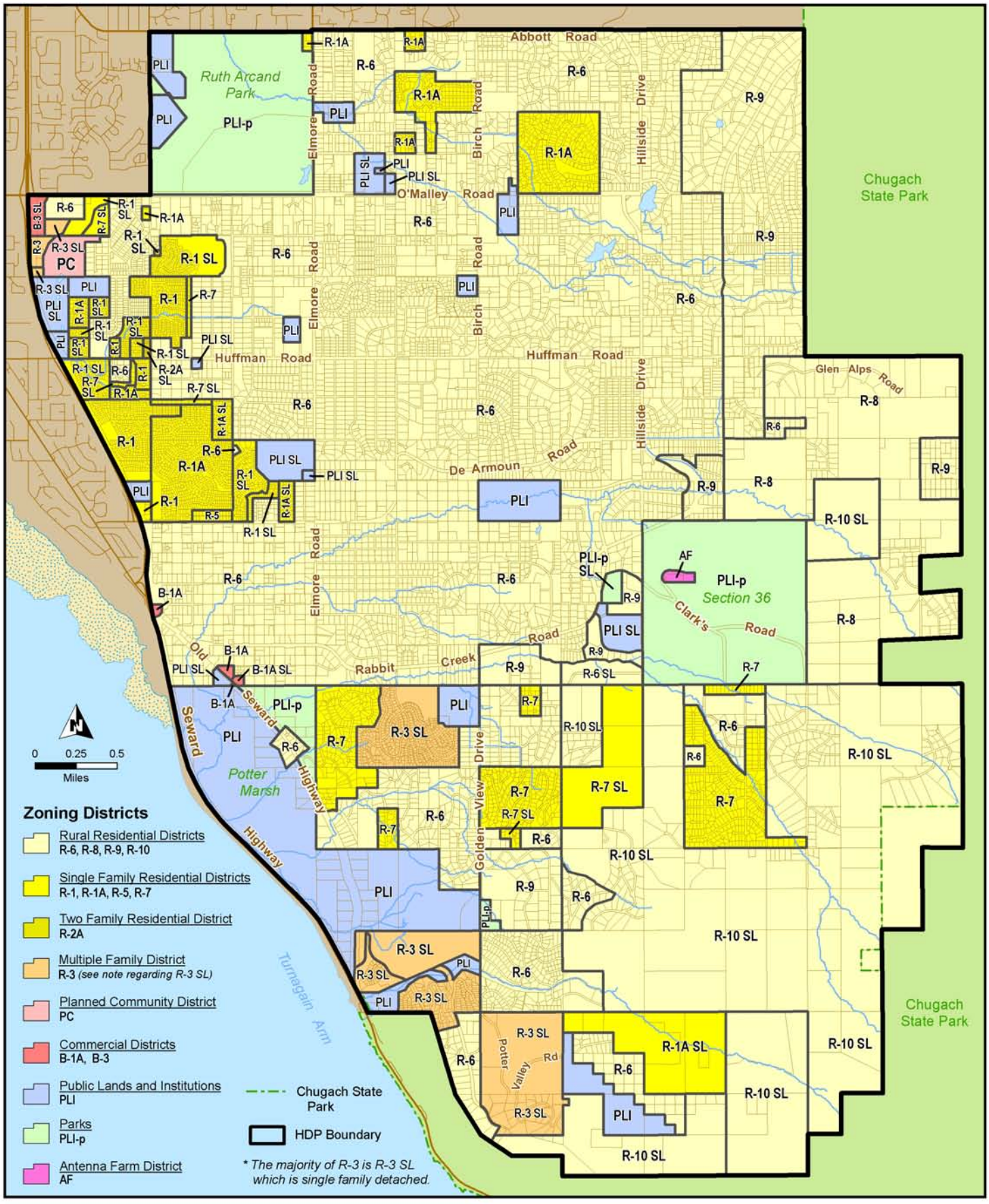
Hillside District Plan



Map 1.2

Hillside Zoning Districts

Hillside District Plan



Hillside District Plan Process

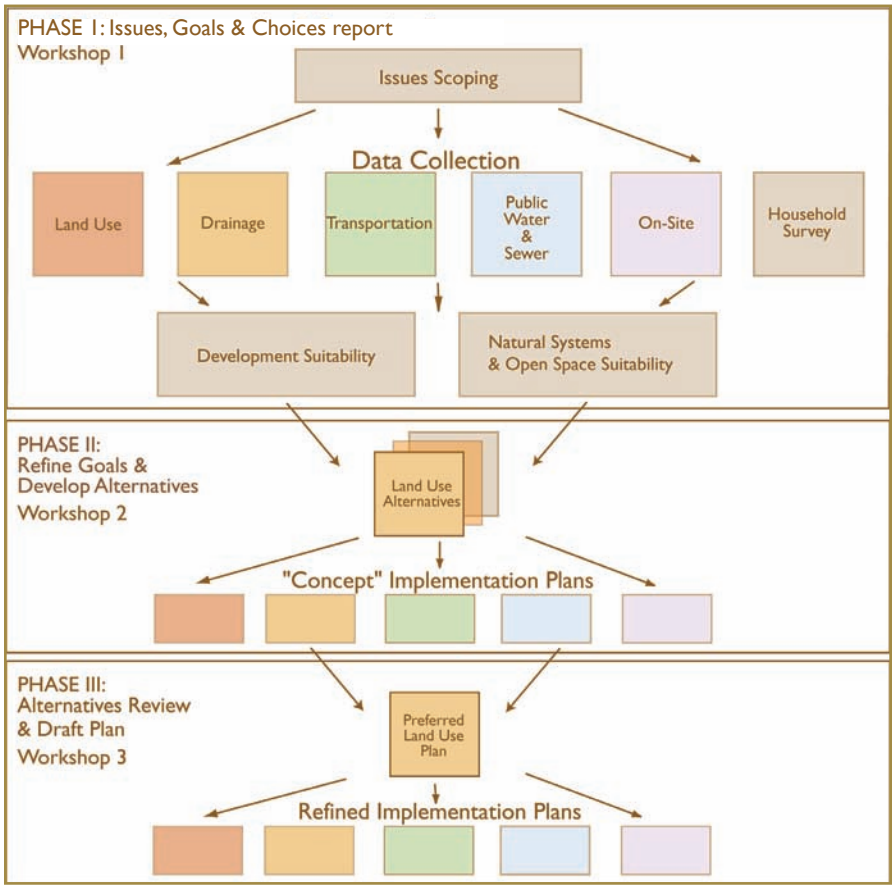
The planning process began in autumn 2006. Since that time, the Citizen Advisory Committee met more than 25 times; three rounds of public workshops were held; a survey was completed by 2,157 Hillside residents and landowners; and numerous individuals and community groups contributed their ideas and opinions through mail, email and the Hillside District Plan website.

In the fall of 2008, a Public Review Draft Plan was circulated for comment, then revised to reflect a consideration of feedback, producing the Public Hearing Draft. The Public Hearing Draft Plan was reviewed and approved by the Anchorage Planning and Zoning Commission (PZC Resolution No. 2009-047) and adopted by the Anchorage Assembly (AO 2010-22). This is the officially adopted Hillside District Plan.

Figure 1.3 and the text on the following pages explain the process for preparing this plan.

The purpose of the Hillside District Plan is to guide decisions on the location and character of future development on Hillside and the necessary infrastructure needed to support this development. Decisions regarding the general amount of development have already been made through the Anchorage 2020 comprehensive planning process. Decisions regarding the timing of development will be made by market forces.

Figure 1.3
Hillside District Plan Phasing Diagram



The Hillside District remains a highly desirable place to buy a home in Anchorage.


New construction is occurring throughout the Hillside, as shown here near Potter Valley.

Plan Review and Approval Timeline

Release Public Review Draft Plan:
October 9, 2008

Public Review:
October 9 - November 24, 2008

Release Public Hearing Draft:
May 7, 2009

Planning and Zoning Commission Public Hearing:
June 15, 2009

Planning and Zoning Commission Resolution No. 2009-047:
Passed and approved October 12, 2009
Adopted December 7, 2009

Assembly Public Hearing and Plan Adoption:
April 13, 2010

The Hillside District Plan process was developed in three phases:

Phase I – Issues

In this initial phase the Planning Team gathered information about issues the plan would address. This included meetings of the Citizen Advisory Committee (CAC), a three-day public workshop series (March 2007), and a household survey mailed to every home on the Hillside. With this information and the assistance of the CAC, consultants and municipal staff prepared a series of background reports intended to better understand and share information about the complex issues that emerged. The resulting documents, a series of topical White Papers and the HDP Issues, Goals, and Choices report were distributed for public review (referenced in the list of Hillside District Plan Supporting Documents, Appendix A).

Phase II – Refine Goals and Develop Alternatives

This phase began with a second multi-day public workshop series (October 2007) to review the White Papers and the Issues, Goals, and Choices report. From the technical studies and feedback gathered at the workshop, municipal staff, contractors and the CAC worked together to identify alternatives to respond to issues. This information was presented in the report "Hillside District Plan Alternatives – A Framework for Public Discussion." This document (released in April 2008) combined the initial direction provided by the Anchorage 2020 Comprehensive Plan with input received from the CAC, residents, community organizations, landowners and municipal departments, plus the findings from studies on the district's drainage, transportation, and water and wastewater systems.

Phase III – Alternatives Review and Preparation of Draft Plan

The third phase of the project began with a third multi-day public workshop series (April 2008) where the framework document was presented for public review and discussion. At this workshop (and from comments submitted by mail, email, and the Hillside District Plan website) the Planning Team gathered feedback on the alternatives in the framework report. Based on that feedback, municipal staff, contractors and members of the CAC developed the Public Review Draft of the Hillside District Plan. The Public Review Draft was released in the fall of 2008, with a public review period of 46 days. The review process included one well-attended public workshop. Comments were summarized and made available on the project website.

Based on this additional public input, a revised draft plan, the Public Hearing Draft was prepared. The Public Hearing Draft was released for an additional round of public review, and was then reviewed and approved by the Anchorage Planning and Zoning Commission (PZC Resolution No. 2009-047) and adopted by the Anchorage Assembly (AO 2010-22). This final Hillside District Plan reflects the specific changes mandated by the PZC and Assembly as condition for approval and adoption, included in AO 2010-22 and three amendments.

All background documents prepared as part of the HDP process and occasionally referenced in this report (including the Hillside District Plan Whitepapers, the Hillside District Plan Issues, Goals and Choices Report, Hillside District Plan Alternatives - A Framework for Public Discussion, and the Public Review Draft of the Hillside District Plan) do not establish policies for the Hillside District. These documents offer background on how the HDP policies evolved, technical references, etc., but only the Public Hearing Draft of the Hillside District Plan as amended was adopted by the Anchorage Assembly and became an official municipal policy document.

The overall goal of the Hillside District Plan is to take active steps to retain the qualities of the Hillside most enjoyed by the residents and the area's visitors – including quality residential neighborhoods, natural vegetation, views, trails and access to open space – while accommodating the Hillside District's share of Anchorage's growth, as determined by the Anchorage 2020 Comprehensive Plan.

Hillside Character

Physical Landscape

The Hillside environment offers both opportunities and challenges for development. Opportunities include a still relatively intact natural setting and, in many areas, excellent views. Constraints include steep slopes, avalanche danger, shallow soils, high winds, longer snow-cover and colder temperatures, especially where solar access is limited by shadow. Winter conditions can last as much as six weeks longer on the Upper Hillside than in the flatlands.

Anchorage's varied terrain reflects a unique combination of marine coastal influences, glacial movement, northern climate and the earthquake activity due to the area's complex tectonics. Large-scale glaciers have advanced down Knik and Turnagain Arms. These glaciers and the materials they have deposited, such as dense, gravel-bearing, silty sediments (tills), are one of the primary forces shaping Anchorage's landscapes, and are especially evident on the Hillside.

Southern Hillside District from the air.

As shown in Map 1.4 Terrain Complexes for Drainage Planning, the Hillside District is characterized by gentle slopes in the northwest, giving way in the southeast to steeper mountain ridges separated by alpine valleys. Streams collect snowmelt and runoff from nearby peaks and flow down these valleys into the forests and wetlands of the lower Hillside, and ultimately into the tidal flats of Turnagain Arm. Rabbit Creek, which traverses the center of the district, cuts a significant canyon through the lower Hillside.

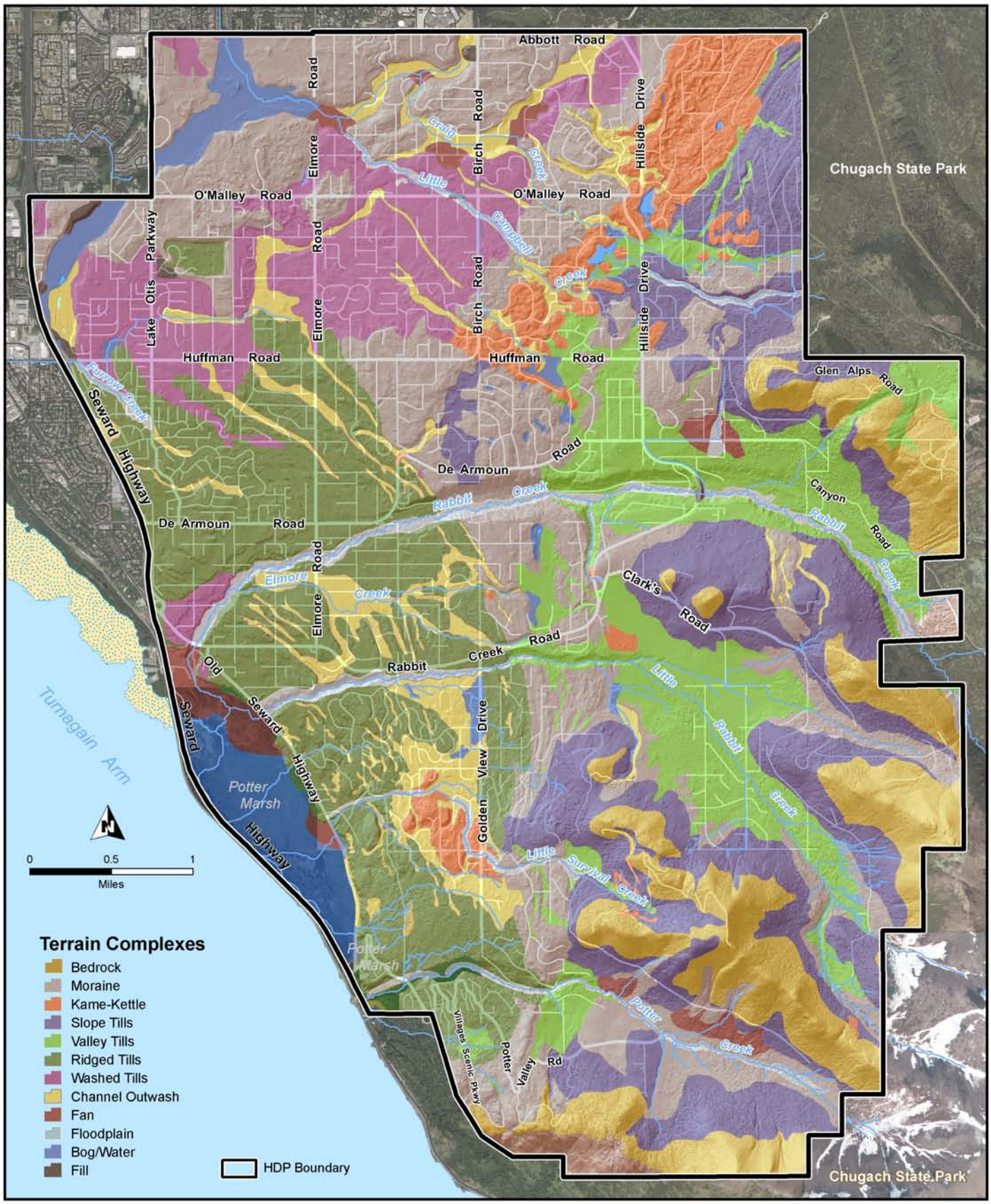
A review of the Terrain Complexes map paints a helpful picture of the underlying physical structure of the Hillside. The eastern half of the area has two main components. One is the set of higher elevation ridges coming down from the Chugach Mountains. These open alpine areas are largely composed of exposed bedrock and slope tills. They are characterized by steeper slopes, thin but generally well-drained soils, and good views. Between these ridges are alpine valleys with milder terrain, formed of valley tills and moraine materials. These areas are located at the edge of timberline and include scattered spruce, hemlock, birch, aspen and cottonwood. Soils are deeper than on the adjoining ridges, and wetlands and saturated soils are common. Most of the southeastern Hillside, with its higher elevation ridges, glacial valleys and mountain streams, remains undeveloped.

Much of the transitional land between the steeper eastern and gentler western areas of the Hillside is made up of lands defined as Kame-Kettle topography and moraines. These areas include ridges, pits, and swales of coarse boulder-like sediment manipulated by glaciers. In some areas the moraine landforms extend west into the lower Hillside. These transitional areas tend to have a jumbled topographic character, with variable slope conditions and mixtures of well drained and saturated soils.

Map 1.4

Terrain Complexes for Drainage Planning

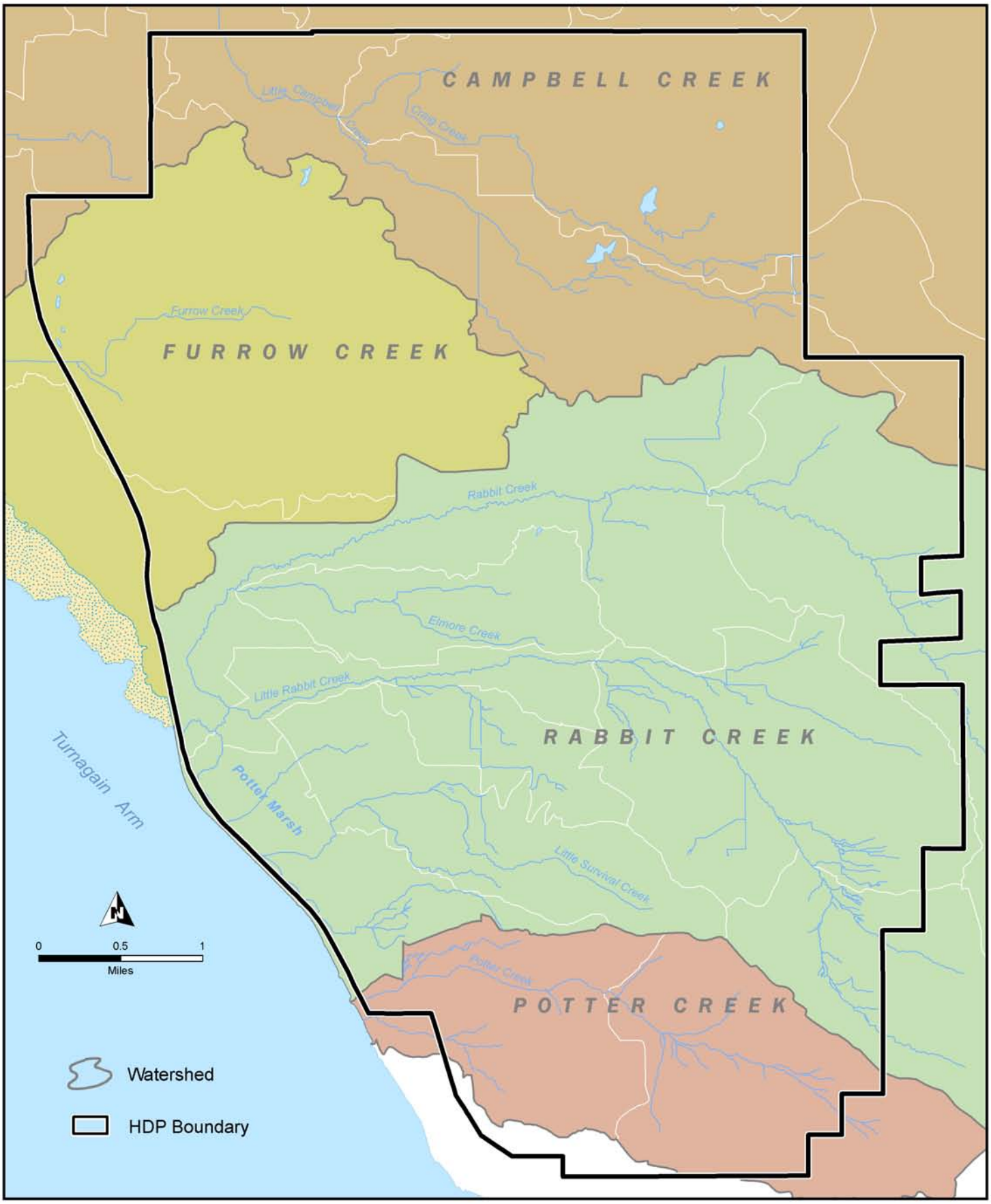
Hillside District Plan



Map 1.5

Watersheds

Hillside District Plan



The flatter lands in the western portions of the Hillside are made up largely of washed and ridged till soils. Compared to other parts of the Hillside, a higher percentage of these areas have well-drained soils suitable for development, although there are still a number of areas with poorly drained soils. The combination of better-than-average building conditions and access to infrastructure extending from the west has allowed more intense development to occur in this part of the Hillside.

One of the defining features of the Hillside is the spectacular view, both into the Chugach Mountains and, from the upper Hillside out towards the Anchorage Bowl, Cook Inlet, Turnagain Arm, and the Alaska Range. As the gateway to Chugach State Park and the mountain range that frames the city of Anchorage, the visual quality of the Hillside, especially the upper Hillside, is important to Hillside residents, visitors, and Anchorage citizens alike. Visual quality is one important consideration in Hillside District Plan policy regarding roads and vegetation retention, buildings, and other man-made structures.

Vegetation, Hydrology, Wildlife

Vegetation patterns on the Hillside follow the terrain. Lowland portions of the Hillside, like much of the rest of Anchorage, are characterized by mixed spruce and birch forest. Cottonwoods and other riparian vegetation grow in floodplains along Rabbit Creek and other larger water courses. Vegetation thins as the elevation climbs, with spruce and birch giving way to hemlock and alder. Above the treeline, dense brush composed of willow and alder dominate. In areas above 2,000 feet, the landscape is a mix of alpine tundra plant species and open outcrops of rock, often covered in lichens. Wetlands are found along streams, in the troughs and depressions of the moraines and terraces left by glaciers, in areas overlying clay, and on flattened portions of steep slopes on shallow bedrock.

Many streams flow through the Hillside District Plan area. As is shown on Map 1.5, these include (generally from south to north) Potter Creek, Little Survival Creek, Little Rabbit Creek, Rabbit Creek, Elmore Creek, Furrow Creek, Little Campbell Creek, and Craig Creek, and numerous unnamed or locally named tributary streams.

Potter Marsh, located between the Old and New Seward Highways, is one of the most distinctive natural features of the Hillside. Like Westchester Lagoon, this area was "created"

The Hillside is far from homogenous. The district encompasses a diversity of land forms and landscapes. Examples above show homes built on alpine ridges and in flatlands comparable to the rest of Anchorage.

when the railroad was constructed, creating a berm that captured freshwater runoff and transformed tidal flats into an area of marshes and shallow ponds. Potter Marsh is part of the Anchorage Coastal Wildlife Refuge (ACWR), which was established in 1988 to protect waterfowl, shorebirds, salmon, and other fish and wildlife species and their habitat. The refuge is managed cooperatively by the Alaska Department of Fish and Game and the Alaska Department of Natural Resources. Today Potter Marsh is framed to the north and east by a wooded slope of spruce, cottonwoods, and alders that reaches up the hill to low-density residential development. To the south and west, the railroad embankment separates the marsh from Turnagain Arm, although several culverts through the embankment allow exchange of water between Turnagain Arm and the marsh. In addition to the boardwalk at the northern end, two highway pullouts at the southern end of the marsh allow for viewing and photography. Within the Hillside District, the Rabbit Creek and Potter Creek watersheds are important water sources for this freshwater marsh, making maintaining water quantity and quality in this watershed important to maintaining the marsh itself.

Potter Marsh is a popular wildlife viewing area, featuring a 1,550-foot boardwalk with interpretive signs (and often, local naturalists) that provides access to the northern part of the marsh.

Rabbit Creek, Little Rabbit Creek, and Little Survival Creek all support populations of pink, Coho, and Chinook salmon and Dolly Varden char. With its nutrient-rich environment and mix of fresh- and salt-water, Potter Marsh is an important juvenile fish-rearing area. Salmon fry, sticklebacks, and sculpins are found throughout the marsh, providing food for summer birds, such as arctic terns. Arctic grayling have also been observed occasionally.[1] Potter Marsh is a stopping point for a range of bird species including Canada geese, mallards, northern pintails, northern shovelers, American widgeons, canvasbacks, red-necked grebes, horned grebes, yellowlegs, northern phalaropes, arctic terns, and mew gulls. Other birds that have been sighted include trumpeter or tundra swans, snow geese, short-eared owls, Pacific loons, northern harriers, and bald eagles.

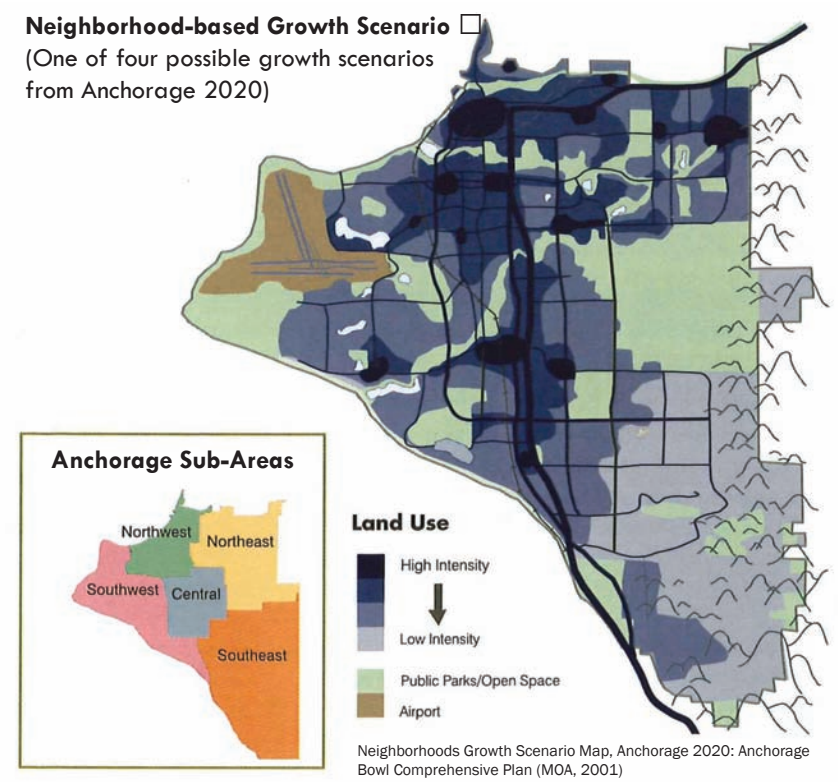
The Hillside presents a rich habitat for wildlife within the Anchorage Bowl. The area's mountainsides, forests, stream corridors, lakes, and marshes support a number of fish, bird and mammal species. Approximately 80 species of birds have been identified in Chugach State Park, of which approximately 20 are year-round inhabitants. These species include golden eagles, bald eagles, hawks, owls, woodpeckers, ducks, and many species of warblers, according to the Chugach State Park Management

1 - Note: Alaska Department of Fish and Game, Wildlife Conservation Division website http://wildlife.alaska.gov (Accessed June 16, 2008).

Figure 1.6
Hillside District Growth and Character in Context

Hillside District in Context

The map to the right is one of four growth scenario maps that were prepared for the Anchorage 2020 Anchorage Bowl Comprehensive Plan. The map shows the potential distribution of development intensity for the Bowl if the Municipality chooses to direct growth (both commercial and residential) in ways that support distinct neighborhoods as focal points for community life under existing zoning. The adopted Anchorage 2020 Land Use Plan is based on a blend of this and the Urban Transition scenario, which shows less density for the Hillside area.



Neighborhoods Growth Scenario Map, Anchorage 2020: Anchorage Bowl Comprehensive Plan (MOA, 2001)

Plan. Terrestrial animals include moose, Dall sheep, mountain goat, grizzly and black bear, coyote, wolf, red fox, lynx, wolverine, mink, weasel, marten, porcupine, marmot, several species of squirrel, beaver, and others. Many residents of (and visitors to) the Hillside value their interactions with wildlife, making habitat protection one important goal for the area.

The Human Landscape

From the city's modest beginnings in the early 1900s, Anchorage's development has gradually spread outward from the original tent city at the mouth of Ship Creek. As Anchorage has grown, development has slowly reached into the Hillside area. Maps from the 1940s and 1950s show just a handful of marginal roads into the Hillside, generally corresponding to section line easements, and providing access to early homesteads. The original Seward Highway provided access into the southern sections of the Hillside, and at one point included a small commercial district with a gas station in the area just north of Potter Marsh. This

Prominence Pointe (above) and Goldenview Park (below). These subdivisions, along with Potter Valley further south, are examples of relatively recently developed subdivisions, served by public water and sewer, which bring areas of higher density development into the southern Hillside.

commercial hub faded as South Anchorage grew and traffic transferred to the New Seward Highway.

Over the years, Hillside lands have developed on a parcel-by-parcel or subdivision-by-subdivision basis. Development practices have evolved over time on the Hillside. As the Hillside has grown, issues such as drainage problems, congestion, and loss of trails and open space have become more frequent and visible, creating a need for the Hillside District Plan.

The Hillside district encompasses a range of development intensity, from middle density suburban character in the northwestern portions of the area, to an increasingly rural character with scattered, large-lot homes nestled among forests and open glacial valleys on the upper Hillside. Overall, the area is dominated by single-family residential development and vacant private land zoned for additional single-family residential use. The Hillside does have significant numbers of nonresidential uses, including numerous churches, the Alaska Zoo, a golf course, a number of horse stables, several municipal parks, and a variety of home-based businesses. A handful of retail and service commercial uses exist on the Hillside (shown on Map 2.4). In general, though, most of the Hillside District remains low-intensity residential.

Roads and Trails

Previous Hillside District Plan background reports and the remainder of this plan provide a thorough review of Hillside infrastructure. This section provides a brief summary of that information. The Hillside area currently does not have many of the public services and facilities that are common in the rest of Anchorage and Eagle River. This lack of services is seen as a benefit by many Hillside residents. At the same time, as the area continues to grow, the lack of such services, particularly drainage, roads and trails, is proving to be a problem.

Currently on the Hillside, the State of Alaska is responsible for the major roads in the area. Road maintenance on secondary and residential roads is covered in portions of the Hillside by Local Road Service Areas (LRSAs) and Rural Road Service Areas. Homeowners associations and other "independent areas" have no government-assisted system for road maintenance and rely on efforts organized by local residents. No management authority exists for drainage; this is a critical Hillside issue. Roughly 80 percent of all Hillside homes rely on on-site water and well

service. The remainder of the area, mostly in the western portions of the Hillside, is served by public water and sewer systems. Police and fire services are provided by the Municipality as they are in the remainder of the Anchorage Bowl. Roughly three-quarters of the Hillside is within the Anchorage Bowl Park District. The upper elevation portions of the southeastern Hillside are currently outside this area, preventing the Municipality from spending money on parks and trails in this area where many Hillside recreational needs are greatest.

The character of the Hillside road system generally follows the density of the residential areas surrounding them. The flatter, denser areas of the lower (northwestern) Hillside have a well-developed primary road network on a one-mile grid generally aligned with section lines, only interrupted where large wetlands or rough terrain prevent easy road construction. The secondary road network in the interior of this grid typically has a more organic structure, wending its way to and through neighborhoods and subdivisions of varying age. In many areas, smaller roads are narrow gravel country lanes, reinforcing the rural character dear to many Hillside residents. The primary road system in the fast-growing southern half of the study area is less well developed, except for Golden View Drive, this area's one primary north-south route.

The Hillside road system has generally sufficed in the past but as the area continues to develop, a number of smaller roads and several intersections are increasingly congested, particularly near schools. Safety issues have also increased, with growing speeds and volumes of traffic on roads that are often icy and slick. With fewer route options, the existing lack of connectivity in the upper reaches of the Hillside creates additional difficulties for emergency access and public services.

The Hillside has an extensive but informal and often disconnected trail system. This set of routes, ranging from roadside paths to sketchy game trails, serves hikers, equestrians, bicyclists, and an array of winter users. In addition to the use of trails, many Hillside residents enjoy walking on the (mostly) quiet roads in their neighborhoods. Many well-used trails cross currently vacant private lands that will likely be developed in the future. Trails are an important form of community infrastructure, valued for recreation, transportation, socializing, health, and economic reasons. Multi-use trails and sidewalks (in and around

Roadside trails (often little more than the shoulders of busy roads) form the back bone of the Hillside trail system.

Better, more active management of recreation on the Hillside is critical if trailheads and trail use are going to be good neighbors in residential areas. The Transportation and Implementation Chapters outline planned locations of trails and trailheads and means to increase funding for trail-related uses.

Hillside Trailheads: Demand for ready access to alpine areas is much greater than access to lower-elevation, forested areas. These two photos, taken within the same minute on a sunny Thursday at the beginning of July, show more than 100 cars at the Glen Alps parking lot (below), as opposed to five vehicles at the Upper Huffman parking lot (above). This plan aims to establish several new trailheads providing ready access to alpine terrain, along with a system to properly manage and maintain these areas.

neighborhoods, near schools, and along key arterials) provide mobility and accessibility. In many places on the Hillside, trails infrastructure (parking areas, trash services, signage, and general management of trails use) has not kept pace with demand. Evidence of this problem includes overflowing parking areas, parking in places not intended as trailheads, and, on occasion, problems with trespass, trash, and vandalism.

Hillside Character Summary: Implications for Development

The Hillside District Plan is designed to respond to the particular physical characteristics of the Hillside, which include the development that has occurred there during the past 50 years. The same qualities that attract people to the area, including scenic views, a mountain setting, and contact with the natural world, also present challenges for development.

This plan and the Municipality of Anchorage recognize these physical constraints and opportunities. The potential implications for development of these environmental features are presented in Map 1.7 (Development Suitability). The map shows weighted and combined environmental constraints that have been divided into three categories:

1. Lands generally suitable for development,

2. Marginally suitable lands, and

3. Lands generally unsuitable for development.

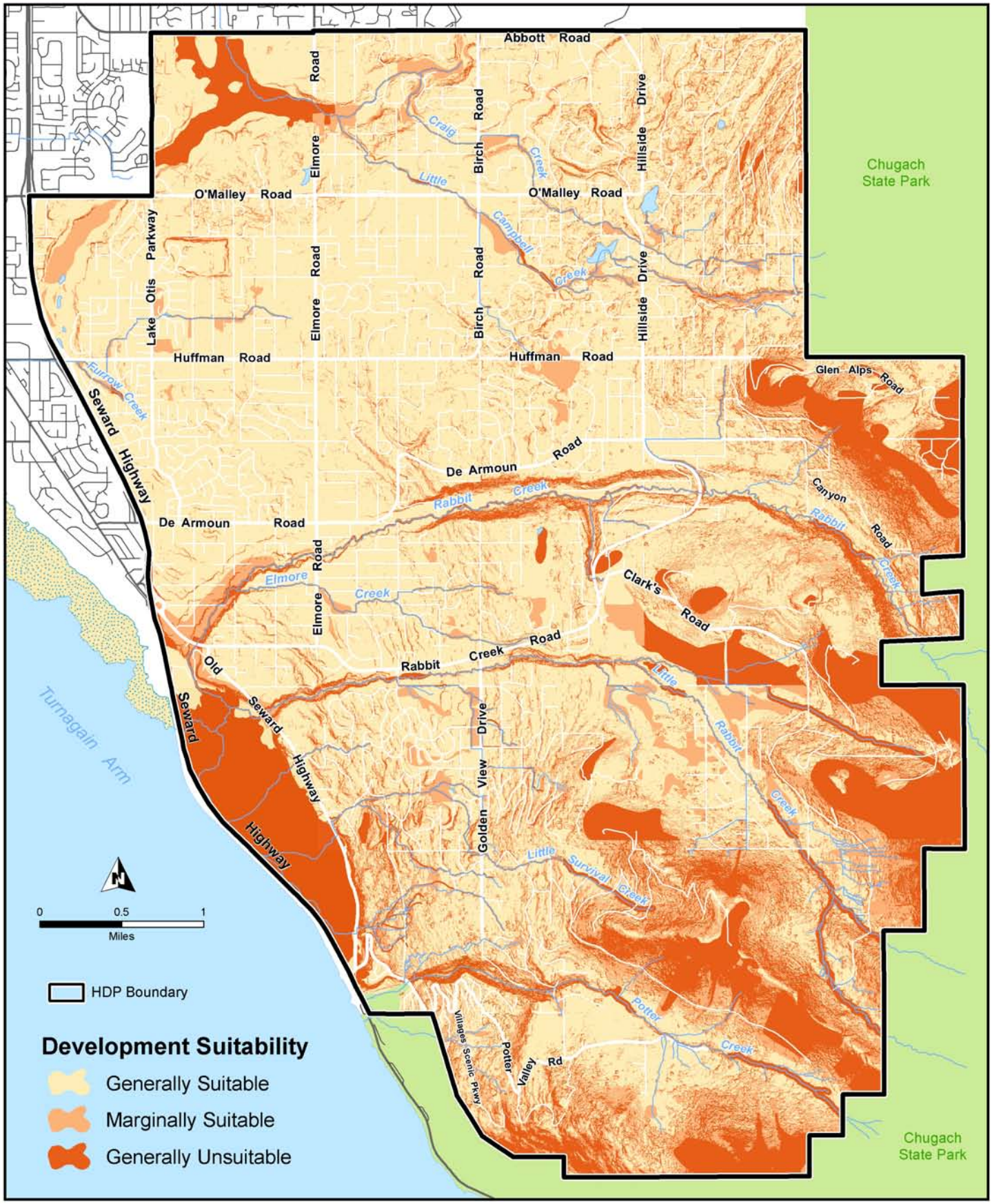
Generally suitable lands are considered minimally affected by any of the more significant environmental constraints of the other two categories. Marginally suitable lands include those affected by moderate avalanche hazard, slopes between 25 and 45 percent, Class B and C wetlands, and/or areas with high seismic activity. Generally unsuitable lands include high avalanche hazard areas, slopes greater than 45 percent, floodplains or flood ways, stream setbacks, Class A wetlands, bedrock, and/or lands that experience very high seismic activity.

Map 1.7

Development Suitability

Physical Constraints and Opportunities for Development

Hillside District Plan



Expectations for Growth

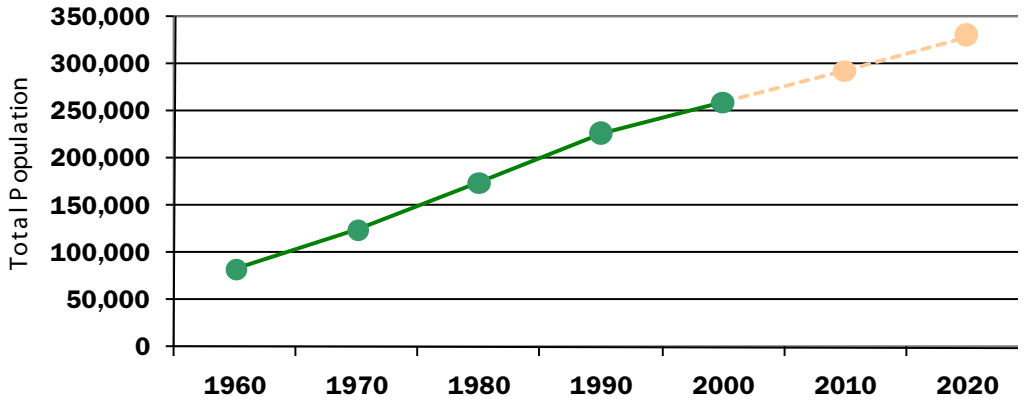
Depending on market conditions, full build-out could occur in the next 15 years or the next 50 years. The fundamental challenge for the Hillside District Plan is to find ways to accommodate this growth, while retaining the qualities that make the Hillside a special place.

The Hillside is a special place. The qualities that residents most treasure (and those most often cited in public comments during the HDP planning process) include large-lot living, rural atmosphere, a country road feeling, visual separation from neighbors, privacy, seclusion, and the sense of elbow room. These comments paint a picture of a low-density residential area with ample vegetation, owner-built homes, quiet streets, dark night skies, and easy access to undeveloped open space. Hillside residents also enjoy convenient access to the amenities of city life: good jobs, shops, services and entertainment, to name a few.

This proximity, however, also presents challenges. Anchorage is a young and growing city. As Figure 1.8 shows, the population of Anchorage has more than doubled during the past 50 years. Within the past ten years, the Abbott Road area east of the New Seward Highway has developed into a major commercial center.

There are two main ways to think about the amount of growth expected on the Hillside. One view is offered by the Anchorage 2020 Comprehensive Plan; the other is to look at existing zoning. Both lead to the same general conclusion.

Figure 1.8
Municipality of Anchorage Population, 1960-2020



Source: Historical data from Alaska Department of Commerce, Community and Economic Development (Alaska DCCED). Projections from Economic Projections for Alaska and the Southern Railbelt 2004-2030 (ISER, 2004).

Anchorage 2020 establishes general allocations for estimated citywide growth across five major districts of the Anchorage Bowl (Anchorage 2020, Anchorage Bowl Comprehensive Plan, p58-59). As the sidebar on the following page explains, the plan aims to concentrate most of the Anchorage Bowl's future growth in the Northwest (Downtown), Northeast (East Anchorage), and Central (Midtown) sectors of the Municipality, with the goal of creating more compact urban development in areas with established infrastructure. The 2020 plan allocates 13 to 20 percent of the Municipality's growth to the Hillside District (called the Southeast district in the 2020 Plan). The Hillside is expected to absorb more single-family rural housing units than other sectors of the Bowl, in keeping with the character of the Hillside and because it contains the most privately owned vacant land available for development in the Municipality. The plan also assumes that a limited amount of medium-density and multi-family housing development will occur along the western portion of the lower Hillside.

Located 7 to 15 miles from downtown Anchorage, Hillside residents enjoy living in a low-density setting with access to well-paying jobs, a range of shops and services and the many amenities that urban environments provide. Maintaining these qualities while the area develops is the central challenge of the Hillside District Plan.

The second way to estimate the amount of future Hillside growth is to look at existing zoning. The Hillside District contains almost two-thirds of the Anchorage Bowl's vacant residential land. The MOA Planning Department estimates that 5,030 additional dwelling units could be built on the Hillside under existing zoning and considering physical constraints on development. Table 1.9 estimates the amount of growth possible under existing zoning. This includes the infill of existing subdivisions as well as new subdivisions in the process of being platted, approved and developed (3,040 homes). It also includes an estimate of the housing units that could be developed on vacant land not yet subdivided (1,990 homes). At an average of two to three people per household, this translates into an additional 10,000 to 15,000 Hillside residents.

Residents from all parts of Anchorage, as well as visitors to the city, access the Chugach State Park through trailheads located in the Hillside District. The infrastructure to meet this demand (including trails, trailheads, and parking areas) is not adequate to support the current and growing level of use. Pictured above is the popular but undeveloped access point in the Rabbit Creek Valley.

While Table 1.9 estimates the number of homes possible at complete build-out, it does not project the pace of this growth. Depending on market conditions, full build-out could occur in the next 15 years or the next 50 years. The fundamental challenge for the Hillside District Plan is to find ways to accommodate this growth while retaining the qualities that make the Hillside a special place.

Where should the next 100,000 people live? How did the Anchorage 2020 Plan allocate 4,000-6,000 new dwelling units to the Hillside?

As part of the Anchorage 2020 Comprehensive Plan, the University of Alaska Anchorage's Institute of Social and Economic Research (ISER) projected that the Anchorage Bowl would increase by approximately 100,000 people or 31,600 households between 1998 and 2020. The Anchorage 2020 Plan allocated this growth projection across five sectors as shown below (see map in Figure 1.6 for boundaries of these areas):

Central	5,000 – 7,000 (17-23%)
Northwest	7,000 – 9,000 (23-30%)
Northeast	5,000 – 7,000 (17-23%)
Southwest	4,000 – 6,000 (13-20%)
Southeast	**4,000 – 6,000 (13-20%)**

Overall, growth is allocated somewhat evenly among the five subareas. The Southeast planning sector, which corresponds to the Hillside District Plan area, has the largest land area of the five subareas, and by far the largest amount of vacant private land, but is one of the two subareas with the smallest growth allocations.

The market will determine the rate of growth. The most important aspect of the growth allocations outlined in Anchorage 2020 is that it sets a target of 13 to 20 percent of Anchorage's growth (4,000-6,000 units of 30,000 total) to occur on the Hillside.

The Hillside allocation assumes that most residential development will follow established settlement patterns and densities. However, Anchorage 2020 also assumes that within the "urban" portion of the proposed Urban/Rural Service Area Boundary, limited revisions to existing zoning will be allowed (where it is cost-effective to satisfy demand for small-lot home sites). The plan also assumes that some medium-density multi-family housing development will occur along the western portion of the Lower Hillside. (Source: Anchorage 2020 Comprehensive Plan, pages 26-28 and 58-61).

As previously noted, the Hillside is also experiencing steady growth in demand for trails and access to recreation areas. At least 200,000 users per year come to the Chugach through the Hillside area (from the Hillside and from all across Anchorage and beyond) usually seeking a parking spot first, and then some form of access to open land. Most of these visitors want to reach the scenic alpine country and ridges found in the state park. Some walk through land that might appear to be state parkland, but is in fact private property. The infrastructure to meet this demand (including trails, trailheads, and on- and off-street parking areas) is not adequate to support the current and growing level of use. Developed trailheads such as Glen Alps are frequently overflowing. Traditional, but undeveloped, trailheads are experiencing many more cars and people than they can accommodate. Newly established trailheads are also experiencing demands well beyond their capacity. Some landowners are frustrated by the issues sometimes associated with trail use, including maintenance of private roads, trash, and traffic.

Table 1.9
Estimated Build-Out in the Hillside District, Based on Existing Zoning

	Number of Housing Units	
	Built	Total
Existing homes as of 2000	7,730	
Total increase in homes since 2000*	862	
Existing homes as of March 2007		8,590
Additional homes based on infill development, pending development and preliminary plats**	3,040	
Additional homes based on vacant land analysis adjusted for physical constraints	1,990	
Total additional homes		5,030
Total homes possible at build-out		13,620

* The information from 2000 is used to compare growth since the adoption of *Anchorage 2020*.

** This includes 400 units of the undeveloped by approved Legacy Pointe Development. Estimates updated by the Municipality Planning Department, as of January 2008.

The Municipality of Anchorage Planning Department projects that under existing zoning, 5,030 additional dwelling units could be built in the Hillside District. These estimates have been updated by the MOA Planning Department as of January 25, 2008.

Summary of Plan Policies

The Hillside District Plan addresses a wide range of issues, but the plan's most fundamental actions are captured in the five sets of policies outlined below:

1. **Maintain the Hillside's Existing Low-Density, Rural Residential Character.**

In response to the strongly expressed opinions of the majority of Hillside residents and the Citizen Advisory Committee, the HDP largely leaves intact the low-density land use designations currently in place on the Hillside. Consistent with this policy, the plan supports continued reliance on on-site water and wastewater for the large majority of the Hillside. Part of the Furrow Creek area in the lower Hillside is recommended for increased density, with development standards to help protect the rural feel of the Hillside.

View from Chugach State Park, over Bear Valley and the southern Anchorage Bowl.

2. **Maintain and Improve the Functioning of On-site Water and Wastewater Systems; Establish a Well Water Protection Program.**

Consistent with low-density development, the plan supports continued reliance on on-site water and wastewater for the large majority of the Hillside. While accepting the continued reliance on on-site systems, the plan establishes direction for new standards for the installation and maintenance of septic tanks. The plan also recommends a research and monitoring program to provide more complete, current, and accurate information about Hillside water quality, and a proactive program to educate users on best management practices for well and wastewater system operations. Together these actions are intended to help allow the Hillside to successfully rely on on-site water and wastewater for the long term.

3. **Establish New District-wide Approaches to Infrastructure Funding and Management.**

The Hillside District Plan calls for the creation of new ways for the Hillside to fund and manage the provision of roads, drainage and trails. The key objective is to approach roads, drainage, and trails issues from a district-wide (or watershed-wide) basis. This is essential to resolve issues such as drainage, which can't be solved subdivision-by-subdivision. The plan's recommendation is to establish a Hillside District-wide roads, trails and drainage funding and management entity, similar to the locally controlled

Terms Used In This Plan

Plans and planners are full of words like goals, objectives, policies, standards, guidelines and implementation actions. Different planning documents use these terms for different purposes, and at times these words seem to be used interchangeably, which can be confusing. For this document we have adopted the following definitions, ranging from the broadest (goals) to the most specific (standards). The line between some of these terms is not always precise.

- Goal: a desired end; no single goal has priority over others and there may be conflicts between individual goals.
- Strategy: a general approach or method of arriving at a goal.
- Policy: a rule for action on a specific issue. This term takes in a range of measures, including land use classifications, development standards, capital improvements.
- Standard: measures to guide the form and character of development. This term covers a spectrum of measures, from those that would ultimately be adopted as law in Title 21 (e.g., a specific vegetation rule), to generalized guidelines (e.g., encouraging the use of rain gardens).

Chugiak-Birchwood-Eagle River Rural Road Service Area (CBERRSA). Existing LRSAs, RRSAs, and independent areas will continue to exist and will focus primarily on winter road maintenance of neighborhood roads.

4. Improve Roads, Trails, and Access to Chugach State Park.

The Hillside District Plan identifies a system of primary and secondary roads, and a comparable system of primary and secondary trails, to better meet existing and future needs. This set of improvements is designed to improve connectivity and emergency access in the area while retaining neighborhood quality. The Hillside-wide service area concept will help implement these improvements, in particular providing funds for a higher level of trails management and maintenance. The plan also establishes several strategies to maintain and improve access to Chugach State Park, including identifying a system of trail heads, and recommending the establishment of a Bowl-wide approach to fund needed improvements.

5. Establish New Approaches to Development.

The Hillside District Plan calls for a set of new development policies and procedures guiding future development. This includes establishing a built/green infrastructure system (an integrated system of roads and trails, drainage ways, and open space) that connects across and serves multiple subdivisions; using the conservation subdivision process to provide developers more flexibility and incentives to protect environmental features; and creating a set of Hillside-specific development standards to control issues like runoff and vegetation removal from individual lots and subdivisions.

Chapter 2. Land Use

Overview

The Hillside District encompasses three distinct realms: a remarkable natural environment extending from tidal marshes to alpine tundra; a diverse residential community with over 20,000 people located within Alaska's largest metropolitan area; and a much loved outdoor recreation destination serving many thousands of resident and visiting hikers, bikers, skiers, berry pickers, and sightseers. Current Hillside zoning allows the area to grow from 8,500 units today to almost 14,000 units in the future, a potential increase of more than 5,000 units, or an additional 10,000-15,000 people.

Maintaining the environmental, residential, and recreational quality of the Hillside while accommodating this growth will not happen without new approaches to development. Key land use strategies to address this challenge include:

1. For the most part, retain the status quo in land use designations.
2. Develop and utilize a system of "built/green infrastructure" to encourage more efficient and effective connectivity of stream corridors, roads, trails, and natural drainage systems. Part of this strategy is better up-front identification of these features at the early stages of the subdivision process.
3. Use new processes for residential development to provide more flexibility in lot layout, reduce the impacts of anticipated growth, and protect the Hillside's rural character and natural environment; in particular, encourage the increased use of Hillside Conservation Subdivisions.
4. Establish new development standards for particularly sensitive environmental and visually prominent areas, specifically steep slopes, higher elevation areas, and ridgelines.

The role of community planning and land use planning is to take into account current issues and projected growth in order to plan future development, anticipate and prevent adverse impacts, and to enhance the quality of Hillside life. Growth will occur with or without the Hillside District Plan. The policies agreed upon through this process will shape and guide the character of that growth, ultimately helping to define what kind of community this area will be for decades to come.

Context: Planning Issues Summary

New residential development in the lower Hillside, on approximately 8,500-square-foot lots served by public water and sewer. This type of housing meets a demand for growth in Anchorage. However, the style and density is very different than much of the rest of the Hillside District.

Trees have a significant impact on neighborhood character. These photos show two areas of the same subdivision. Where even a limited number of original trees were kept (lower photo), the character of the neighborhood is different from the area where all vegetation was removed.

Diversity and Size

As described in the previous chapter (Chapter 1. Introduction), the Hillside is far from homogenous. It ranges from areas served by public water and sewer with townhouses and small-lot, single-family developments, to traditional low-density suburban development, to large-lot, rural residential areas, and at higher elevations, vacant wild land. The Hillside also contains commercial uses and opportunities for expanded neighborhood commercial. The Hillside is also bigger than many people realize: the area is roughly seven miles by five miles, a total of about thirty square miles. Plan policies need to reflect this diversity.

Quantity of New Growth

The Introduction chapter describes the existing pattern of development on the Hillside and the potential for future development. This plan takes a supply-side approach to the predictions of future Hillside growth. The plan presumes that the ultimate amount of growth on the Hillside will be governed by the supply of private land in the area, which is primarily located in the southeast Hillside. This area poses the greatest challenges to continued development due to its location and physical characteristics. Variations in the housing market will determine the rate at which build-out occurs. As noted above, the Hillside District is currently zoned to allow development of an additional 5,000 dwelling units.

Options for Water and Wastewater

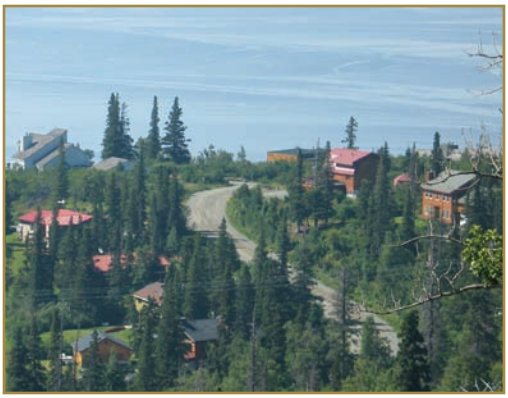
Hillside residents have generally expressed strong support for maintaining the viability of on-site well and septic systems across the district. There are, however, a few particular areas where these systems have performance problems. The Water and Wastewater Chapter of this plan describes this issue in detail, and recommends strategies to maintain Hillside water quality and address problem areas. The possibility of extending the maximum perimeter of public sewerage and allowing increased residential densities in the Furrow Creek watershed was in part a response to poor soils that create performance issues for traditional septic systems in portions of this area.

Environmental Quality

The land use pattern on the Hillside is largely established. Almost all the land is privately held and used for residential purposes. Most tracts are already subdivided into individual homesites. The most common zoning is for 1.25-acre residential lots. Most Hillside parcels have already been built upon. Options to protect natural resources, habitat, views, and other open space values are therefore somewhat limited, and rest largely with individual private property owners. In response to this situation, future development on the Hillside will be guided by built/green infrastructure, the use of conservation subdivisions, and new development standards.

Development Standards and the Development Review Process

Public comment has emphasized the need to improve the development review, approval, and enforcement process, the process that ultimately determines the character of Hillside development. New policies and standards are only as effective as their enforcement. The ongoing process to update Title 21, Anchorage's municipal land use ordinance, and recent updates to the Municipality's Design Criteria Manual have led to substantial improvements in development standards and procedures. The enforcement process is also much improved over what it was in decades past. Further improvements are possible, including improved Hillside-specific development standards and expanded requirements for submittal materials.



Two neighborhoods with similar sized lots (Paradise Valley and Prominence Pointe) display very different characters. Differences between the two are explained by the different ages of the subdivisions, as well as different approaches to grading, retention of natural vegetation, house size, and the fact that Paradise Valley is only 50 percent developed, whereas Prominence Pointe is largely built-out.

Goal and Policy Summary

GOAL 1. Location and Intensity of Development Guide the amount and location of future development while maintaining the quality and diversity of the Hillside District as a place to live, ranging from low-density rural areas, to single-family suburban neighborhoods, to areas with duplexes and multi-family housing.	
Primary Policy	**Implementation**
Hillside as a Whole	
1-A. Encourage a greater proportion of future Hillside growth to occur in the lower Hillside, in areas located closer to existing services and infrastructure; to a limited degree reduce the amount of future development in the southeast Hillside.	HDP Policies 1-B and 1-E.
Southeast Hillside Residential	
1-B. Maintain policies for the amount of development as adopted under current land use designations. Shift the current boundary of the Maximum Perimeter of Public Sewerage in the Upper Potter Valley area west to Greece Drive, south of England Avenue. *(See HDP Maps 2.2 and 5.7.)*	Maximum Perimeter of Public Sewerage boundary changed with adoption of the Hillside District Plan.
Central Hillside Residential	
1-C. Maintain the same land use designations and zoning in this area as were established prior to the beginning of this plan.	No action required.
Lower Hillside Residential	
1-D. Retain the current land use designation for the Furrow Creek area. Conduct a planning study to determine the future need and location of a sewer trunk as backbone infrastructure required based on land use patterns and development potential, evaluation of the data resulting from HDP recommendations and programs, soils, topographical conditions, lot sizes, failed septic systems and groundwater nitrate levels to determine the appropriate sewer service area boundary and cost feasibility.	MOA Planning Department, Anchorage Water and Wastewater Utility (AWWU).
Land Use Plan Map	
1-E. Adopt the official Land Use Plan Map for the Hillside, which provides greater specificity than the *Anchorage 2020* Land Use Concept Plan and replaces the 1982 Generalized Land Use Plan.	The Hillside Land Use Plan Map will be incorporated into the Anchorage Bowl Land Use Plan Map to be adopted in 2011.

GOAL 2. Character of Development Guide the character of development of individual properties, homesites and subdivisions to help maintain assets such as quiet, trees and other natural vegetation, natural drainage systems, wildlife habitat, good views, access to open space, access to clean water, and dark night skies.	
Primary Policy	**Implementation**
2-A. Establish new standards for development, addressing drainage, grading, and retention of vegetation, to apply in the upper elevation and steeply sloping areas of the Hillside.	Objectives are established by the Hillside District Plan; codification by MOA through AMC Title 21, other actions.
2-B. Revise the current subdivision approval process to require submittal and approval of site environmental information at the pre-application meeting.	Objective established by the Hillside District Plan; MOA Planning Department.
2-C. Establish a new "Hillside Conservation Subdivision" ordinance allowing flexibility in subdivision layout to better protect environmental and neighborhood character.	Objective established by the Hillside District Plan;codification by MOA through AMC Title 21.

GOAL 3. Infrastructure and Efficient Growth Patterns Plan land use, transportation infrastructure and other infrastructure to serve anticipated growth to be efficient in terms of public expense, energy use, and other resources.	
Primary Policy	**Implementation**
(Plans for Infrastructure to Serve Anticipated Growth) A range of drainage, transportation, and water/wastewater policies.	See HDP Chapters 3-5.

GOAL 4. Public Facilities Retain land to serve anticipated needs for public facilities and public use areas, such as schools, drainage-related facilities, fire stations, parks, greenbelts, or other natural resource conservation areas.	
Primary Policy	**Implementation**
4-A. *(Schools)* The Municipality of Anchorage and the Anchorage School District will continue a joint effort to identify school sites on the Hillside to accommodate future growth.	Yearly review of ASD monitoring of demographic trends and population growth as part of ten-year CIP.
4-B. *(Fire Stations and Other Public Facilities)* Carry out site selection study to identify needed sites.	Cooperative effort by MOA Planning Department and MOA Fire Department.
Other Public Faciities	
(Drainage) Addressed in HDP Policy 5B. The built/green infrastructure approach identifies areas to be used for community drainage functions.	See HDP Policy 5-B and Chapter 3.
(Parks, Greenbelts, and Natural Resource Conservation Areas) Addressed in HDP Policies 2-C, 5-A, 5-B, 5-C, 6-A, 6-B, 10-A, 10-B, 10-C, 12-A, 12-B, 12-C, 12-D, 14-A, 14-B, 14-C, and 14-L.	See HDP Policies 2-C, 5-A, 5-B, 5-C, 6-A, 6-B, 10-A, 10-B, 10-C, 12-A, 12-B, 12-C, 12-D, 14-A, 14-B, 14-C, and 14-L.

GOAL 5. Environmental Quality Protect environmental quality on the Hillside, including: providing corridors for drainage, protecting natural systems such as aquifer recharge areas and stream corridors, protecting wildlife travel corridors and habitat, and providing open space for views and recreation.	
Primary Policy	**Implementation**
5-A. Maintain and protect environmental quality at three scales: 1) individual lots, using new development standards 2) subdivisions, using a combination of new development standards and the conservation subdivision approach, 3) watershed, using the built/green infrastructure approach and other plan strategies.	See related HDP policies in other plan chapters (specific citations included later in this chapter).
5-B. Working at the watershed scale, implement a mapped overlay of built/green infrastructure and use this information to guide the layout of future subdivisions.	Built/green infrastructure map approved with adoption of Hillside District Plan; Memorandum of Understanding among MOA Planning Department, MOA Project Management and Engineering Department (PM&E) apply this overlay to specific projects.
5-C. Create a Riparian Greenbelt Acquisition Program.	See HDP Policy 6-A.

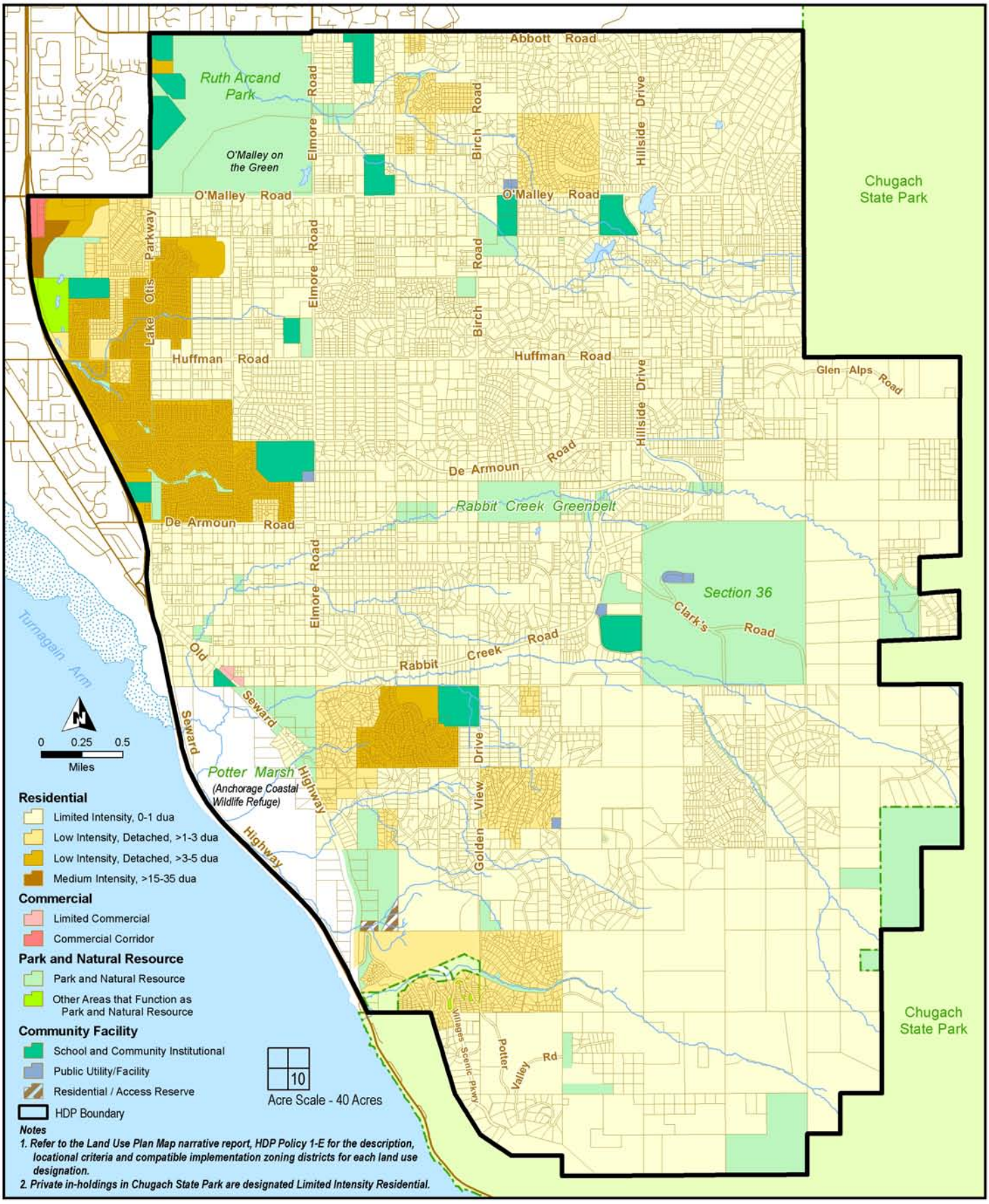
GOAL 6. Parks and Open Spaces Maintain, supplement and enhance a system of parks, trails, open spaces and other active and passive recreation areas.	
Primary Policy	**Implementation**
6-A. Establish priorities and implementation methods to meet deficiencies in neighborhood and community parks, develop natural resource and greenbelt acquisition programs and funding, conduct additional greenbelt and natural resource inventory planning, and enhance the Hillside built/ green infrastructure system.	Heritage Land Bank (HLB), MOA Planning Department, MOA Parks and Recreation Department, MOA Project Management and Engineering Department-Watershed Management Services, in consultation with the Alaska Department of FIsh & Game (ADF&G) or other natural resource specialists.
6-B. Parks development should be phased and scaled to fit the level of road service, the limitations of on-site water and septic systems, and the rural character of the neighborhood. The design shall consider user and neighborhood safety and security and minimize overall impacts on the surrounding neighborhood.	MOA Parks and Recreation Department, review agencies and boards.

GOAL 7. Visual Quality Protect views, both looking out from the Hillside and views of the Hillside as seen from the rest of Anchorage (for example, by maintaining vegetation, limiting cut-and-fill, and guiding the location and character of new residential development).	
Primary Policy	**Implementation**
7-A. Overall strategy: Maintain and protect views through protection of natural vegetation, drainage corridors, significant natural features, and topography at the scale of watersheds, subdivisions and individual lots.	Covered under other plan sections.
7-B. Establish new standards to reduce the visual impact of development on select, identified prominent ridgelines (identified on HDP Map 6.8).	Objective established by an overlay district; MOA.

Map 2.1

Hillside Land Use Plan

Hillside District Plan



Policies and Policy Background

Goal 1. Location and Intensity of Development
Guide the amount and location of future development while maintaining the quality and diversity of the Hillside District as a place to live, ranging from low-density rural areas, to single-family suburban neighborhoods, to areas with duplexes and multi-family housing.

Hillside as a Whole

Policy 1-A

Encourage a greater proportion of future Hillside growth to occur in the lower Hillside, in areas located closer to existing services and infrastructure; to a limited degree reduce the amount of future development in the southeast Hillside. (See Map 2.1, discussed in greater detail in HDP Policy 1-E.)

Background

Land use patterns on the Hillside are largely established. While the area will continue to grow, dramatic changes from these patterns are neither desirable nor practical. The Hillside District Plan directs a slightly higher percentage of future Hillside growth to lower Hillside areas closer to established services (jobs, commercial uses, roads, drainage and public water sewer), which in turn reduces driving, makes transit more practical and provides for more efficient provision of other public services. At the same time, this plan, through changes in the boundary of public sewer, will reduce the intensity of future development in one outlying portion of the southeast, upper Hillside.

Southeast Hillside Residential

Policy 1-B

Maintain policies for the amount of development as allowed under current land use designations. Shift the current boundary of the Maximum Perimeter of Public Sewerage in the Upper Potter Valley area west to Greece Drive, south of England Avenue (shown on Map 2.2 and Map 5.7).

Background

The southeast Hillside is defined as the area generally above Hillside Drive, south of Glen Alps and south of Rabbit Creek Road. This area takes in much or all of the Rabbit Creek and

What is Title 21?

The Hillside District Plan includes many references to Title 21. Title 21 is the land use section of the Municipality's regulatory code, and includes rules on zoning, subdivision, platting, and project review and approval processes.

Title 21 is in the process of a major revision. For more information, view the Municipality of Anchorage's Planning Department website.

www.muni.org/planning

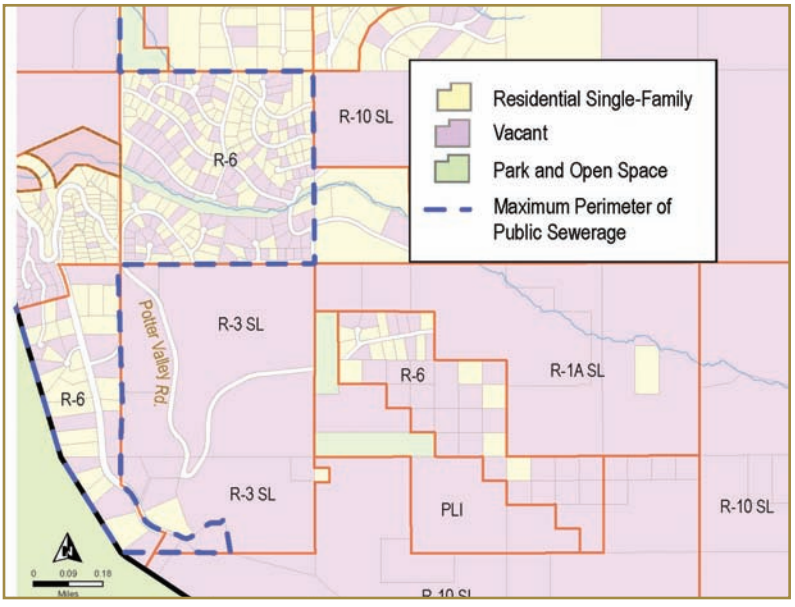
Rabbit Lakes trail above Canyon Road. This image reveals many of the issues facing the Hillside. The Hillside retains a sense of wild Alaska lacking in much of the rest of Anchorage. This rural character (larger lots, good views, trees, trails and a location at the gateway to Chugach State Park) makes the area both a great place to live and a great place to recreate. Because of these characteristics, and because of the Hillside's location within Alaska's largest metropolitan area, the area will inevitably grow and change. This chapter and the rest of this plan is designed not to say "no" to this growth, but to be more proactive in managing future development than has been the case in the past.

Potter Creek watersheds (shown on Map 1.5). This area includes most of the steeper and higher-elevation sections of the Hillside District.

While the Southeast Hillside provides a large expanse of vacant land, and has potential for home sites with beautiful views in a rural setting, the area also presents significant development challenges. Of the approximately 6,000 acres in the area, only about 1,700 acres of vacant private land are judged to be physically suitable for development. The limitations that make the majority of the area physically unsuited for development include steep slopes, shallow water tables, high winds and other environmental constraints. Past development has created a range of problems in this area, including problems with drainage, traffic, and (in some areas, such as Rabbit Creek Heights) poorly performing on-site wastewater systems.

This plan maintains existing residential land use designations and zoning in the southeast Hillside. As is shown on Maps 1.2 and 2.2, the majority of the area is classified for residential intensities of one dwelling unit per acre and much is currently zoned R-10. The R-10 zoning district was created for alpine and sloped areas and establishes minimum lot sizes based on slope: the greater the slope, the greater the minimum lot size. New development can occur in these areas, but will follow the new development standards and the built/green infrastructure approach.

Map 2.2
Southeast Hillside Maximum Perimeter of Public Sewerage as Established in the HDP (Southern portion of Hillside depicted below)



The Hillside District Plan shifts the Maximum Perimeter of Public Sewerage west to Greece Drive, south of England Avenue to match the land use designation in this area which is Limited Intensity, 0-1 DUA (see also Map 5.8).

Residential intensity in one area of Potter Valley in the 1982 Generalized Residential Intensity Plan calls for less than one dwelling unit per acre. The area, however, is currently zoned R-1A, which permits up to five dwelling units per acre. This plan calls for a shift of the Maximum Perimeter of Public Sewerage west of this area, to Greece Drive, south of England Avenue, meaning this area will have to develop under the requirements for on-site water and sewer. This change is warranted because this area is not physically wellsuited to support more intense residential development and is located at the periphery of the Municipality. (See Map 5.8.)

Overall, the recommended changes to the Maximum Perimeter of Public Sewerage boundary are not intended to drive land use decision making, rather land use decisions are intended to drive changes to the sewer boundary.

Central Hillside Residential

Policy 1-C

Maintain the same land use designations and zoning in this area as were established prior to the beginning of this plan.

Background

The central Hillside includes much of the northern half of the Hillside District, from Elmore Road east to Chugach State Park. Watersheds in this area include the systems that feed into Campbell Creek, the headwaters of Furrow Creek, and the lower portions of the Rabbit Creek watershed.

This area was developed earlier than the southeast Hillside. The large majority of private property in the central Hillside area is already subdivided and built upon. Most residents in the area are satisfied with the on-site well and septic systems that serve their homes. Extending public water and sewer services into this area would be very costly and is not likely in the foreseeable future. This is due to the area's location and distance from existing public water and sewer, and because it has largely already been subdivided at low densities. As a result, no changes in zoning are proposed. Infill development is likely to continue at a market-driven pace, ultimately adding about another 300 units in the area. The central area will be included in the district-wide service area for roads, trails, and drainage. Like the lower and southeast Hillside, this area needs better solutions to drainage, road and trail issues than can be provided by the existing collection of LRSAs and ad hoc neighborhood maintenance (described in detail in Chapter 6. Implementation).

Lower Hillside Residential

Policy 1-D

Retain the current land use designation for the Furrow Creek area. Conduct a planning study to determine the future need and location of a sewer trunk as backbone infrastructure required based on land use patterns and development potential, evaluation

Lower Hillside

Central Hillside

Southeast Hillside

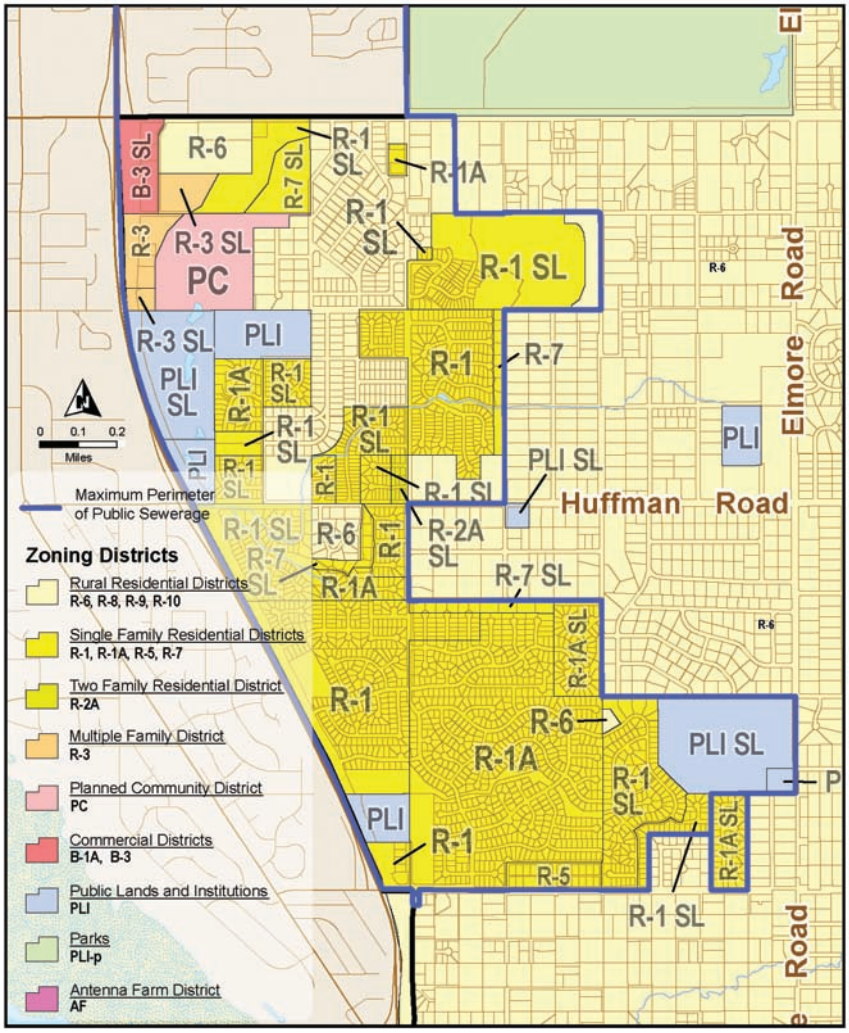
These photos provide a sense of the diverse character of different parts of the Hillside.

of the data resulting from HDP recommendations and programs, soils, topographical conditions, lot sizes, failed septic systems and groundwater nitrate levels to determine the appropriate sewer service area boundary and cost feasibility.

Lower Hillside Background

The lower Hillside takes in the lower reaches of two watersheds, Furrow Creek and Rabbit Creek. The lower Hillside extends to the western edge of the Hillside District (generally the New Seward Highway) and is bounded on the east by the north-south line that coincides with Elmore Road and between O'Malley and Huffman Roads, and between Huffman Road and Flyway Avenue west of Pintail. The lower Hillside contains the greatest mix of residential densities of any part of the Hillside. It includes large areas of larger-lot, low-density residential development served by on-site water and septic as well as substantial areas of moderate-density residential development served by public water and sewer. The lower Hillside is also closer to concentrations of commercial services and major transportation corridors than any other portion of the Hillside.

Map 2.3
Lower Hillside Zoning Designation



This map shows existing zoning in the lower Hillside and the existing location of the Maximum Perimeter of Public Sewerage.

The lower Hillside is made up of two subdistricts, each roughly one square mile in size. The northern subdistrict is generally bordered by O'Malley Road to the north and Huffman Road to the south, but includes one subdivision south of Huffman Road. This area is referred to as the Furrow Creek watershed, referencing the small stream that drains this area. (This area is not the existing, higher density Furrow Creek subdivision, located to the south.) The Furrow Creek watershed includes a range of lot sizes, including several relatively dense residential areas.

As Maps 1.2 and 2.3 show, the lower Hillside has a mix of zoning: Most of the western portions are currently zoned R-1

or R-1SL Single-Family Residential; portions farther east are zoned R-6 Suburban Residential, with one small transition area that is zoned R-7 Intermediate Rural Residential. All the R-6 and R-7 areas lie outside the municipally defined Maximum Perimeter of Public Sewerage. There are also two small areas zoned PLI and PLI SL, Public Lands and Institutions; and several commercial areas zoned B1A (to the south of area depicted in Map 2.3).

The Anchorage 2020 Comprehensive Plan (pages 60-61) states that "limited revision to existing zoning is allowed, where practicable and cost effective, to satisfy the demand for small-lot home sites. Some medium-density multi-family housing development is assumed to take place along the western portion of the lower Hillside."

This plan examined opportunities to expand medium-density housing in the Furrow Creek area, but determined that these increases were not possible for the following reasons:

- The desire of the community to maintain the existing low densities that exist on much of the Hillside.
- The reality that the land use pattern in the area is already set to a significant degree and not easily altered.
- The fact that the one portion of the Hillside that still contains substantial undeveloped land is located at higher elevations, on sensitive terrain, well removed from jobs and commercial services, and is therefore not an area appropriate for higher density residential uses.

The Furrow Creek area as described above also has the following existing conditions:

- Includes a number of lots with a history of poorly performing on-site wastewater systems, as well as a large church and school currently relying on holding tanks;
- Is located next to existing areas of higher-density residential that are already served by public water and sewer;
- Has greater proximity to major transportation corridors and commercial areas; and
- Is within the Anchorage Roads and Drainage Service Area (ARDSA) and the Regulatory Commission of Alaska certificated service area; and
- Includes several 5- to 20-acre groupings of contiguous lots which have potential for development or redevelopment.

Rural – Urban Line

The concept of a Hillside urban/rural services boundary is referred to in the Anchorage 2020 Comprehensive Plan (page 56), "the concept matches municipal government and utility service levels with intensity of development." This concept is used in some other parts of the country, where the boundary line separates areas planned for growth and requiring a full array of urban services from rural areas where a much lower level of public services and infrastructure is expected and provided. Service levels in these situations are strongly correlated with land use: in rural areas service levels are uniformly low; in urbanized areas these services are expected and provided.

For the Hillside district, a single line separating "urban" and "rural" is not helpful because levels of service are not closely linked to the density of development. For example, the Hillside recently voted to add areas along Golden View Road into the Anchorage Roads and Drainage Service area because of a desire for a higher level of road maintenance, even though properties adjoining the road are outside the service area. This request was not linked to any change in land use intensity. Similarly, service levels for schools, police, fire, and recreation services are uniform across the large majority of the Hillside, irrespective of variations in density of residential development. In the limited instances where density and service levels *are* tightly connected (public sewerage and land use density) the Hillside District Plan does make clear where this boundary is located, and is also clear about residential land use densities (see the maps in the Land Use and Water and Wastewater Chapters for details).

View looking west down Huffman Road from the southeast corner of the Furrow Creek area, with the familiar McDonald's logo in the background.

Policy Background: Furrow Creek

The Hillside District Plan Framework document evaluated two alternatives in the Furrow Creek watershed area. One option allowed for modest increases in residential density. The other alternative (called the "base case" alternative) left zoning as it exists today. Ultimately, the adopted plan selected the base case scenario.

With regards to the issues of water and wastewater provision to the area, further evaluation and continued monitoring will occur with implementation of the actions and programs outlined in Policies 13-H through 14-D. This evaluation and planning will determine the future need and location of a sewer trunk as backbone infrastructure based on land use patterns, development potential, evaluation of the data from the new collection efforts, soils, topographical conditions, lot sizes, failed septic systems, and nitrate levels to determine the appropriate sewer service area boundary expansion potential and cost feasibility.

The southern portion of the lower Hillside, located between DeArmoun Road to the north and Rabbit Creek Road to the south is sometimes referred to as the "BLM lots." This area has a greater number of large lots than the Furrow Creek watershed, including many 2.5-acre lots (the size of the lots in this area's original subdivision). The defining natural feature of the BLM lots is Rabbit Creek canyon, slicing through the area from northeast to southwest. This area is outside of ARDSA and does not have the history of on-site wastewater problems found in the Furrow Creek area.

Compared to the rest of the Hillside, the BLM lots area has good proximity to major roads and established commercial centers, and borders on an area of relatively high-density suburban development. In one regard, the BLM lots are a better candidate for increased densities, because the area has a larger number of large lots and more undeveloped land than the Furrow Creek area. The plan concludes that these large lots are a stable and fundamental feature of the character of this area, such that no increase in residential intensity is warranted.

Land Use Plan Map

Policy 1-E

Adopt the official Land Use Plan Map for the Hillside, which provides greater specificity than the Anchorage 2020 Land Use Concept Plan and replaces the 1982 Generalized Land Use Plan.

Hillside Land Use Plan Map Background

Once adopted, the Hillside District Plan will update the Municipality of Anchorage Comprehensive Plan. The Hillside District Plan Land Use Plan Map is a policy document designed to guide future development decisions in the Hillside area. As such, it provides a broad plan for the overall pattern and distribution of future growth in the Hillside. The Hillside Land Use Plan Map,

once adopted, updates the 1982 Generalized Land Use Plan and Residential Intensity Plan for the study area.

The Land Use Plan Map provides a visual representation of long-term policies; it is not a detailed blueprint for future development, nor is it a zoning map that establishes specific land uses on a lot-by-lot basis. Rather, it is, in conjunction with the Hillside District Plan, a policy guide and legal basis for future zoning changes and other development decisions. The Municipality's Title 21 Land Use Regulations establish rules regarding development. These regulations are applied as zoning districts on the Official Zoning Map, which delineates zoning district boundaries in the Hillside area. Future amendments to Title 21 regulations, zoning changes and other land use decisions are intended to conform to the Comprehensive Plan, which includes the Hillside District Plan and Land Use Plan Map.

Amendments to the Land Use Plan Map

The Land Use Plan Map is a framework for future growth through the year 2029 and beyond. This framework provides a district-specific context for coordinating decisions regarding the development and redevelopment of various areas. The Land Use Plan Map is not intended as a fixed predetermination of land use through 2029. It can be updated and amended, just like other parts of the Comprehensive Plan. As the community continues to grow and change, it is anticipated that the Land Use Plan Map will also change. Proposed Land Use Plan Map amendments may be reviewed concurrently with other development proposals. For instance, if a proposed rezoning is demonstrated to have community-wide benefits and responds to new issues, needs, or opportunities not addressed in the Hillside District Plan or other elements of the Comprehensive Plan, an amendment to the Land Use Plan Map may be appropriate. Conflicts between a development proposal and the Land Use Plan Map should be resolved using the guidance of Comprehensive Plan and Hillside District Plan policies. The implications of proposed amendments to the Land Use Plan Map that would result in significant land use changes should be considered and analyzed on a community-wide basis. Changes to the Land Use Plan Map constitute an amendment to the Comprehensive Plan. A proposed amendment should be demonstrated to be consistent with the Hillside District Plan, the Comprehensive Plan, and the overall Anchorage Bowl Land Use Plan Map framework for locating future population and employment, and the community-wide allocation of sufficient lands to meet forecasted growth.

Land Use Plan Designations

The Land Use Plan Map identifies different land use designations to illustrate the location and extent of categories of land in the Hillside Area. The designations define the building intensity and density for each area. The pages that follow define the land use designations. The description of each designation includes a generalized description of predominant uses, intensity of use, and essential physical characteristics of development. The designations are consistent with those utilized for the Anchorage Bowl Land Use Plan Map, though in some cases they have been altered specifically for the Hillside. Most designations conclude with a set of bulleted location criteria. These provide the rationale for where each use is recommended to be located. The location criteria for each designation apply in combination rather than individually. However, it is not necessary that all criteria be achieved in every location.

Residential Designations

The residential designations identify areas substantially developed for residential purposes that are expected to remain residential. They also identify vacant lands best suited for residential development. In addition to the residential characteristics described below, other uses such as schools, churches, parks, child care facilities, and other public or institutional uses may be allowed in residential areas, if determined to be compatible with and oriented toward the needs of the immediate neighborhood.

The residential density ranges are generalized descriptions of the type of development considered appropriate for a broadly defined area. The measure of housing units per gross acre is based on area-wide densities rather than specific densities for individual parcels. This allows the Land Use Plan Map to indicate the intended overall distribution of population and housing units for entire contiguous geographic areas of the Hillside community.

The measure of housing units per gross acre includes streets, open spaces, leftover or unusable lands and small nonresidential uses within a residentially designated area on the Land Use Plan Map. It is not intended to be applied directly as the measure of how many housing units may be allowed on each lot or development site. The Title 21 Land Use Regulations and Official Zoning Map will determine how many housing units may be allowed on each lot or development site.

Limited Intensity Residential 0 – 1 dwelling units/acre
Intent: The Limited Intensity Residential designation provides for large-lot, single-family residences in a rural environment, much of which is served by private wells and septic systems.

Description: The predominant land use consists of detached houses on lots one acre or larger in size. The intended overall density for new development is less than one housing unit per gross acre. This type of development results from a combination of preferred lifestyles, a lack of public infrastructure, remoteness, and environmental constraints. Lot size, setbacks, the variety of custom housing designs and the presence of natural vegetation help retain the rural and natural environment. This designation is implemented by the R-6, R-8, R-9, and R-10 zones.

Location Criteria: As with all other land use designations, these apply in combination rather than individually. However, it is not necessary that all be achievable in every location:

- Areas with an established large-lot, rural development pattern;
- Areas outside of the water/wastewater service boundaries;
- Areas furthest from employment and services, where higher density development would impact traffic congestion on local roads and generate higher vehicle mileage citywide;
- Areas constrained by limited road access; and
- Areas where environmental constraints preclude more intense site development.

Low-Intensity Residential, 1 – 3 dwelling units/acre
Intent: Low-Intensity Residential designation provides for neighborhoods with a semi-rural atmosphere and consisting generally of single-family homes on half-acre or larger sized lots with flexibility for a slightly smaller size lot when utilizing a clustered type development with applicable open space standards.

Description: This designation is generally implemented by the R-7 zoning district. The intended overall density for new development is one to two housing units per gross acre, but provides flexibility for a slightly higher density for new development using a Hillside Conservation Subdivision or Planned Unit Development (PUD). Building scale and landscaped setbacks of new development, as well as low traffic volumes on local streets, contribute to a low-intensity living environment.

Location Criteria: As with all other land use designations, these apply in combination rather than individually. However, it is not necessary that all be achievable in every location:

- Areas with established half-acre single-family, semi-rural development pattern;
- Areas within boundaries of service areas or served by public sewer and/or water;
- Areas not severely impacted by land uses of incompatible scale or intensity; and
- Areas not subjected to high volumes of through traffic.

Low-Intensity Residential, 3 – 5 dwelling units/acre

Description: The predominant land use consists of conventional single-family detached houses on individual lots generally 6,000 to 8,400 square feet or more in size. The intended density range is three and up to five housing units per gross acre. Detached houses, building scale, landscaped setbacks, and low traffic volumes on local streets contribute to a low-intensity living environment. This designation is implemented by the R-1 and R-1A zones. This designation generally reflects existing development in R-1 and R-1A zone districts.

Location Criteria: As with all other land use designations, these apply in combination rather than individually. However, it is not necessary that all be achievable in every location:

- Areas with an established single-family detached development pattern;
- Areas served by public sewer and water;
- Areas not severely impacted by land uses of incompatible scale or intensity; and
- Areas not subjected to high volumes of through traffic.

Medium-Intensity Residential, >15 – 35 dwelling units/ acre

Intent: The Medium-Intensity Residential designation provides for a compatible mix of multi-family and attached housing choices and an efficient use of residential land near community services and Commercial/Mixed-use Centers. It is also intended to provide for an attractive, high-quality living environment with design amenities for residents.

Description: Predominant land uses consist of two- to four-story multi-family complexes and townhouses at an intended overall density of greater than 15 and up to 35 housing units per gross acre. A critical mass of housing at this density threshold supports a diversity of housing choices, efficient provision of public infrastructure and more frequent transit service. New development provides design amenities such as private open space and recreation areas. It also provides transitions and buffering between lower and higher density residential areas.

This designation may accommodate additional density of up to 40 housing units per gross acre adjacent to designated Commercial/Mixed-use Centers except for those at the neighborhood scale. Qualifying projects should provide "town center" oriented urban design features as defined in the land use regulations. This designation is implemented primarily by the R-3 zone.

Location Criteria:

- Areas with an established multi-family housing development pattern;
- Areas of transition between intense uses or high traffic volumes and lower density residential designations;
- Areas accessible to arterials without the need to travel through less intensive uses;
- Areas within walking distance of parks, schools and other community facilities, transit routes, shopping, and employment;
- Areas that can provide housing density in transit-supportive development corridors or near Commercial/Mixed-use Centers;
- Areas once designated for lower density residential that are well positioned for redevelopment and designated by an adopted plan for more intensive use;
- Areas formerly designated for nonresidential use that are underutilized and well positioned for residential redevelopment.

Commercial Designations

Commercial Corridor

Intent: The Commercial Corridor designation provides for local and regional retail sales and services on major street corridors that are already developed for commercial purposes.

Description: Some Commercial Corridors are automobile dependent, characterized by individual low-rise, single-use retail buildings or strip malls with multiple tenants. Predominant land uses include a range of retail sales and service uses, as well as similar commercial uses such as fast food, vehicle services, and entertainment uses that generate customer vehicle traffic. It is important that site development be situated to have minimal impact on residential areas.

Other Commercial Corridors may be designated for transit-oriented development. These areas often feature older, smaller lot development patterns, frequent transit service, and are well positioned for intensive, pedestrian-friendly redevelopment.

This designation is implemented by the B-3 zone in automobile dependent corridors. It is implemented by the NMU and CMU zones in transit-supportive development corridors. NMU and CMU are designations used in the Title 21 Rewrite.

Locational Criteria:

- Linear street corridors with single-use retail sites or multi-tenant strip malls; and
- Existing commercial corridors designated by an adopted plan for transit-oriented (re)development.

Not intended for significant geographic expansion at the expense of areas classified as Residential or Industrial.

Limited Commercial

The Limited Commercial designation refers to the existing commercially zoned parcels at Potter Marsh.

Description: limited commercial use area utilizing the existing regulatory controls built into the existing zoning, including special limitations in AO 82-52 and AO 2003-156 on the existing commercially zoned properties, with a focus on commercial activities associated with recreational uses at Potter Marsh; however, the plan does not establish any new regulatory framework beyond the existing regulatory controls built into the zoning special limitations.*

*One parcel zoned PLI SL (AO 2003-156) requires that prior to issuance of a site grading and excavation permit for any development, a site plan be prepared that:

- meets the general standards of AMC 21.50.200;
- follows design standards from AO 82-52;
- includes neighborhood buffer landscaping and transition standards space;
- includes a Potter Marsh Natural Vegetation buffer and Trail Connection;
- prohibits outdoor storage;
- addresses trash receptacles;
- addresses signage;
- addresses parking lot illumination and compatible scale.

The B-1A special limitations also have regulatory controls limiting uses and structure sizes, requirement for a site plan review, which addresses design standards, access, circulation, buffering and landscaping, tree retention, site obscuring fence, drainage, and limits hours of operation.

Location Criteria:

- Existing B-1A commercially zoned lots and PLI-zoned lot at Potter Marsh.

One parcel zoned PLI SL (AO 2003-156) requires that prior to the issuance of a site grading and excavation permit for any development that a site plan meeting the general standards of AMC 21.50.200; design standards from AO 82-52; neighborhood buffer landscaping and transition standards space; Potter Marsh Natural Vegetation buffer and Trail Connection; prohibits outdoor storage; addresses trash receptacles; signage; parking lot illumination and compatible scale. The B-1A special limitations also have regulatory controls limiting uses and structures sizes, requirement for a site plan review, which addresses design standards, access, circulation, buffering and landscaping, tree retention; site obscuring fence, drainage, and limits hours of operation.

Park and Natural Resource Designations

Park and natural resource use areas designated on the Land Use Plan Map are generally either existing or known planned areas. The Land Use Plan Map is intended to be updated as new park lands are acquired or other changes occur.

Park and Natural Resource

Intent: Park and Natural Resource designation provides for active and passive outdoor recreation, conservation of natural areas, and trail corridors connecting neighborhoods.

Description: Uses include neighborhood, community, and natural resource use area parks, special use parks, golf courses, greenbelts, and other municipal open spaces that are dedicated or designated by an adopted plan for parkland or natural conservation. Other municipal lands of high natural value that are environmentally unsuitable for development are also included.

Special purpose facilities such as sports complexes or interpretive centers that support park, recreation and natural resource functions may be allowed subject to special reviews defined in the Title 21 Land Use Regulations. This designation is implemented by the PR and PLI zones. Most other zones may also be compatible implementation zones for non-dedicated park and recreation lands.

Other Areas that Function as Park or Natural Resource

Intent: This designation applies to non-municipal lands that, by adopted plan, formal agreement, subdivision or easement, function as part of the community system of parks, outdoor recreational facilities, or natural preservation areas.

Description: This designation comprises several kinds of non-municipal lands. It includes state or federal lands designated by an adopted plan as park or natural resource use, or lands that are environmentally unsuitable for development.

This designation also includes private lands that, by easement, subdivision, agreement, commercial activity, or severe environmental constraints function as park, outdoor recreation, or natural resource areas.

Some natural open spaces or buffer areas in this designation are not intended to provide public recreation access. This designation is implemented by the PLI or other zones or subdivisions depending on the location.

Community Facility Designations

Designated public facilities and institutions are generally existing or known planned facilities. The Land Use Plan Map is intended to be updated as new facilities are planned and public facility site selections made.

School and Community Institutional

Intent: The School and Community Institutional designation provides for small- to medium-scale institutions that can integrate into the scale of the local neighborhood and provide a community service or focus for the surrounding area.

Description: The most common use consists of public and large private schools with outdoor campus recreation facilities, including primary and secondary schools. Religious campuses ten acres or larger in size and/or containing large school functions also fall within this designation. Other community institutions include such uses as community centers, museums, cemeteries, and public libraries that serve the immediate area or that are similar to neighborhood-serving institutions in terms of physical scale and external impacts. This designation also allows for not-for-profit administrative office use. This designation is implemented by the PLI zone.

Public Utility / Facility

Intent: The Public Utility/Facility designation provides for public facilities and infrastructure that are industrial in character.

Description: Predominant land uses consist of public utilities: sewer and water treatment plants, power generation plants, industrial yards, water tank reservoirs, pump stations, and facilities for maintenance or fleet services. The designation also applies to facilities such as fire stations not oriented to on-site customer service. This designation is implemented by the PLI zones. Some utility facilities may be appropriate in residential areas with adequate review, taking into consideration surrounding development.

Residential / Access Reserve

Intent: The Residential Access Reserve designation is for land set aside that could be made available for roadway access or disposed of in the future.

Description: An area that follows the contour of a steeper slope section of the south end of HLB Parcel 2-136. This status places an approximately eight-acre triangular section in a reserve that could be made available or disposed of in the future for residential development and/or for utility and roadway access to future up-slope residential development to the east. Reserving this land as a combination residential/access tract might facilitate future residential expansion and associated infrastructure in an area with otherwise considerable physical constraints**.** The southern portion of HLB Parcel 2-135 is reserved for future right-of-way expansion, as is appropriate and required, for redesign of the adjacent switchback in the Potter Valley Road as described in the Potter Valley Land Use Analysis.

The Municipality's Land Use Regulations (Title 21 of the municipal code) is the primary tool for implementing the Comprehensive Plan. Title 21 establishes rules regarding the use of property and site development standards, providing detailed guidance for development based on the policies of the Comprehensive Plan.

Table 2.4 Land Use / Zoning Consistency Table[1]

Generalized Land Use Plan Map Designations	Specific Land Use Designations (residential density in housing units per gross acre)	Corresponding Implementation Zoning[1]
Residential	Limited Intensity (0-1) Low Intensity, Detached Housing (1-3) and (3-5) Medium Intensity (15.1-35)	R-6, R-8, R-9, R-10 R-1, R-1A, R-2A, R-7 R-3
Commercial	Commercial Corridor	B-3, NMU, CMU
Commercial	Limited Commercial	B-1A and PLI currently existing in Potter Marsh area
Park and Natural Resource	Park and Natural Resource Other Areas that Function as Park or Natural Resource	PR, PLI, PLI-p, and most other zones PLI and most other zones
Community Facility	School and Community Institutional Public Utility/Facility	PLI PLI, AF[2]

1. In addition to the zoning districts that appear in the table, the PR, PLI, and PCD zones may be used to implement some Land Use Designations.

2. Community facilities may be appropriate in residential areas with adequate review.

Note: The table refers to the zoning districts in Title 21 Rewrite Public Hearing Draft.

The Land Use Plan Map use designations do not affect current zoning boundaries on the Zoning Map. Only future changes to zoning and other land use decisions will conform to the Land Use Plan Map. The Land Use Plan Map is, in conjunction with Comprehensive Plan policies, the official guide for future development decisions, and is implemented through zoning and development review.

Commercial and Other Nonresidential Uses

The HDP planning process included extensive discussion of commercial and other nonresidential uses, ultimately concluding that, at least until this Hillside District Plan is updated, there will be only very limited expansion of neighborhood commercial in the area.

The Hillside has a significant collection of nonresidential uses including numerous churches, public and private schools, greenhouses, equestrian facilities, the Alaska Zoo, a golf course, and miscellaneous other nonresidential uses. Approximately 20 parcels are used for these nonresidential purposes, totaling approximately 271 acres. Only one of these parcels is zoned for nonresidential use; the majority is zoned residential or public lands and institutions. An additional 25 parcels are used for industrial purposes, totaling approximately 52 acres. Only seven of these industrial parcels are zoned for nonresidential uses, totaling approximately twelve acres. Map 2.5 shows the location and extent of these existing uses in the district. Not shown are the many small home-based businesses in the area. There are almost no retail stores on the Hillside, although the Carrs Huffman shopping center and the rapidly expanding Dimond/Abbott commercial area are located just west of the District's western boundary.

The Land Use Policy Map that accompanies the Anchorage 2020 Comprehensive Plan legend includes a note (page 50): "Potential sites for Neighborhood Commercial Centers on the Hillside will be determined through the Hillside District Plan." Anchorage 2020 defines Neighborhood Commercial Centers as "neighborhood-level commercial/retail facilities that serve smaller clusters of residential neighborhoods than town centers. This designation allows neighborhood-oriented commercial uses in and adjacent to residential areas. It has been created in response to increased urbanization, the need to reduce the number and length of auto trips, and a desire to improve quality of life in all neighborhoods. These commercial areas are intended to provide small-scale, attractive, and convenient services for residential areas..." "The approved uses, site design, and building design should produce attractive, friendly, quiet, non-obtrusive, neighborhood-compatible developments. The actual locations of neighborhood commercial centers are to be determined through a neighborhood or district planning process." (Anchorage 2020 Comprehensive Plan, page 54.)

Based on the direction of Anchorage 2020, the HDP Framework Alternatives document evaluated several alternatives for commercial uses on the Hillside. One alternative that was considered but not selected was the option for the development of a "rural country store" in the vicinity of the Rabbit Creek Fire Station (Fire Station #10) and the Bear Valley Elementary School. This use would have been required to comply with

Schools on the Hillside serve the area's large student population and generate substantial traffic.

Located along the Seward Highway, one of the few retail commercial areas on the Hillside includes an indoor water park and a sporting goods store. The business pictured above moved to a new location off of Dimond Boulevard, and this site will be used for a school.

Hillside has a significant number of churches, including a number of large facilities with programs that run throughout the week.

Map 2.5

Exisiting Nonresidential Uses

Hillside District Plan

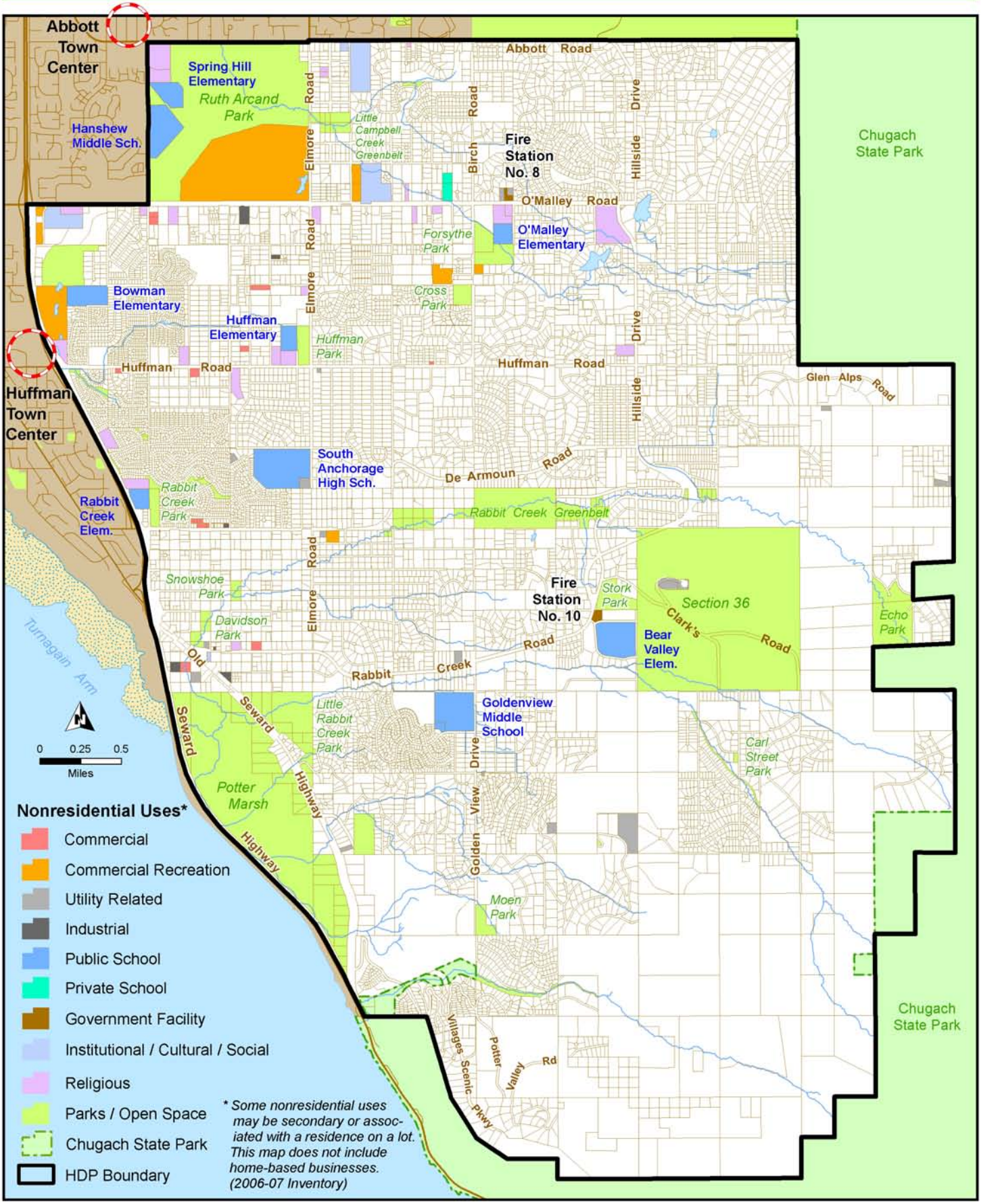
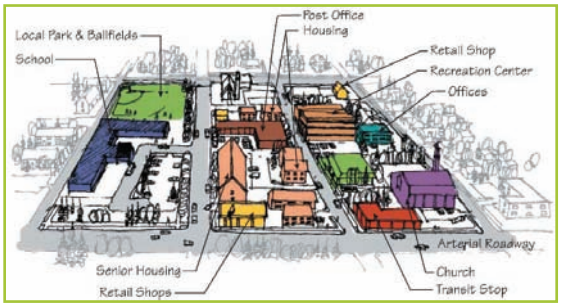


Figure 2.6
Overview of Anchorage 2020: Anchorage Bowl Comprehensive Plan Commercial Policy

TOWN CENTERS

Town Centers are intended to include a concentrated mix of retail shopping and services, public facilities and medium- to high-density residential. Though located outside the Hillside District, the Abbott and Huffman Town Centers serve Hillside residents.



NEIGHBORHOOD COMMERCIAL CENTERS

Neighborhood Commercial Centers are less intense, neighborhood-oriented commercial nodes, designed to fill the gaps between the town centers.

A small commercial district could serve residents and visitors to recreational areas. Businesses might include small grocery, restaurant, small office, bicycle rental.

OTHER HILLSIDE COMMERCIAL AND NONRESIDENTIAL USES

A variety of other types of commercial and nonresidential uses exist in the Hillside District, along with institutional and civic uses that are compatible with neighborhood and town centers.

Greenhouses

Home-based services

Equestrian operations

Commercial Recreation

Highway commercial development

Bed and breakfasts

Religious institutional

Map 2.5 (opposite page) shows that a variety of nonresidential uses currently exist on the Hillside, ranging from large, established businesses on commercially zoned parcels to home-based commercial operations (not shown on map) allowed under residential zoning. Anchorage 2020 (Figure 2.6) specifies two Town Center commercial nodes on the periphery of the Hillside District (Abbott Town Center and Huffman Town Center) and charged the Hillside District Plan to investigate potential sites for Neighborhood Commercial Centers within the Hillside District.

design standards controlling building appearance, site design, parking, landscaping, screening of dumpsters and other service or mechanical equipment, and trail and road connections. Objectives for this "country store" included providing a place to buy convenience goods, providing a community gathering place, improving access to commercial services for youth and others who don't drive, and finally, reducing the use of vehicles and related congestion and greenhouse gas emissions.

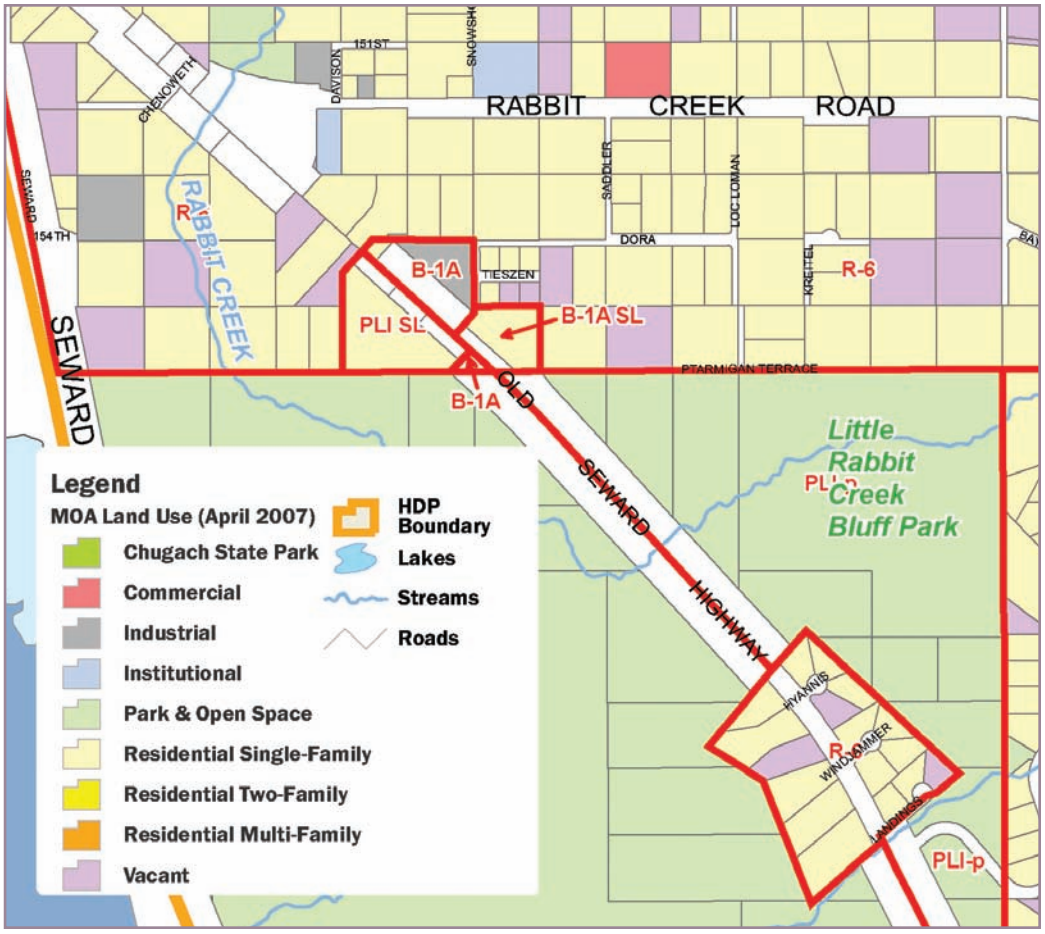
Responses from the Hillside resident survey and much of the public comment during this planning process revealed strong opposition to new commercial development on the Hillside. While a few spoke in favor of neighborhood commercial, the large majority opposed this idea. In light of these strong public views, the plan does not call for any new areas to be designated for commercial use. The plan notes that one small area adjoining Potter Marsh currently has several parcels zoned for commercial use.

The area along the Old Seward Highway near its junction with Rabbit Creek Road has a history of commercial use. Past uses include a gas station and the Rabbit Hutch restaurant. Currently, there are four small parcels zoned B-1A and PLI in the area along the Old Seward Highway near the junction of Rabbit Creek Road (shown on Map 2.7). There is an additional set of other nonresidential uses along this stretch of road, including a church and several grandfathered commercial uses.

Over the course of the HDP planning process, a number of individuals and a local non-profit organization (Friends of Potter Marsh) have expressed support for limited commercial uses on the existing commercially-zoned properties, with a focus on commercial activities associated with recreational uses at Potter Marsh. This plan supports this concept, but does not establish any new regulatory framework for the existing commercial land, as there are already regulatory controls built into the zoning special limitations for two of the three parcels in this area.

One parcel zoned PLI SL (AO 2003-156) requires that prior to the issuance of a site grading and excavation permit for any development that a site plan be prepared that: meets the general standards of AMC 21.50.200; follows design standards from AO 82-52; includes neighborhood buffer landscaping and transition standards space; includes a Potter Marsh Natural Vegetation buffer and Trail Connection; prohibits outdoor storage; addresses trash receptacles, signage, parking lot illumination, and compatible scale. The B-1A special limitations also have regulatory controls limiting uses and structure sizes, requirement for a site plan review, which addresses design standards, access, circulation, buffering and landscaping, tree retention; site-obscuring fence, drainage, and limits hours of operation.

Map 2.7
Potter Marsh Commercial Zoning



Revisions to Title 21

Independent of the Hillside District Plan, the Municipality is completing a multi-year revision of Title 21, the city's existing land use code. The standards required under the revised Title 21 regulations are stringent and represent a major step forward from the early days of Hillside development, when, as one landowner explained: "You could bury an old Volkswagen and use it for your septic system." The process of adding development standards to respond to the unique conditions on the Hillside will be coordinated with the ongoing revisions to Title 21. Options to codify these standards include adding standards to existing (or new) Title 21 code, or creating a new overlay district specifically for the Hillside District.

GOAL 2. Character of Development

Guide the character of development of individual properties, homesites, and subdivisions to help maintain assets such as quiet, trees and other natural vegetation, natural drainage systems, wildlife habitat, good views, access to open space, access to clean water, and dark night skies.

Policy 2-A

Establish new standards for development, addressing drainage, grading, and retention of vegetation, to apply in the upper elevation and steeply sloping areas of the Hillside.

Background

Goal A focused on the location and intensity of residential development. To ensure that future development is well-suited to Hillside conditions, HDP Policy 2-A sets objectives for new development standards and processes controlling the character of development. New standards are primarily focused on areas with slopes greater than 20 percent or over 1,000 feet in elevation, where potential impacts of development tend to be greatest. The objectives for these new standards are described below; the specific standards are presented in Chapter 6. Implementation.

- Vegetation: Retain natural vegetation to reduce drainage problems, maintain visual quality, and protect environmental quality. Balance the benefits of retaining vegetation with the need to reduce wildfire risks.
- Runoff: Reduce runoff from individual lots, for example, through reducing impervious surfaces and infiltrating water on site.
- Development Costs: Establish standards, considering their impact on development costs; where possible establish standards that help to reduce these costs.

Policy 2-B

Revise the current subdivision approval process to require submittal and approval of site environmental information at the pre-application meeting.

Background

In addition to standards that directly address the character of development, new standards are needed regarding the development review, approval and enforcement process. The goal is a development process that has less uncertainty and more frequently results in a satisfied public and a satisfied developer. The Municipality's development review process has been substantially improved in recent years to include new procedures encoded in Chapter 3 of the revised Title 21. Other improvements (in Title 21, Chapter 8) include new requirements for developer performance guarantees and requirements for the identification of stream channels prior to the submittal of preliminary plats. The MOA Development Services Department also has new procedures. Additional objectives for changes in the development review and approval process are listed below (Chapter 6. Implementation presents specific standards on these topics):

- Require improved up-front information as a starting point for the approval of subdivisions, including information on environmental characteristics and the connectivity of roads, trails, and open space with surrounding parcels. These requirements are facilitated by highlighting these features on the Hillside Built/Green Infrastructure Map.
- Standards: Establish standards, largely related to drainage, that reduce the impacts of development.
- Built/green infrastructure: Establish procedures to implement the Hillside built/green infrastructure system.
- Coordination and Enforcement: Revisit and, where possible, further improve the development review and enforcement process with a focus on coordination among different municipal departments responsible for the review and issuance of development approvals.

Terracing yards and building foundations reduces the disruption of natural drainage patterns, which reduces the need for off-site drainage infrastructure. These examples (the yard above and the terraced foundation below) are from an extensive hillside residential development in Silverton, Oregon. See the Development Standards section of Implementation Chapter for details on land use, drainage and transportation standards.

Policy 2-C

Establish a new "Hillside Conservation Subdivision" ordinance allowing flexibility in subdivision layout to better protect environmental and neighborhood character.

Background

Conservation subdivisions can help preserve natural features by allowing flexibility in lot sizes in response to the character of individual tracts of land. This allows better protection of streams,

Figure 2.8
Examples of Conservation Subdivisions

This example of conservation subdivision is reprinted from the National Lands Trust. It is called Plumsock at Williston in Pennsylvania. It features an average lot size of 0.5 acres. Seventy percent of the subdivision (50 acres) consists of wooded open space with ponds and streams.

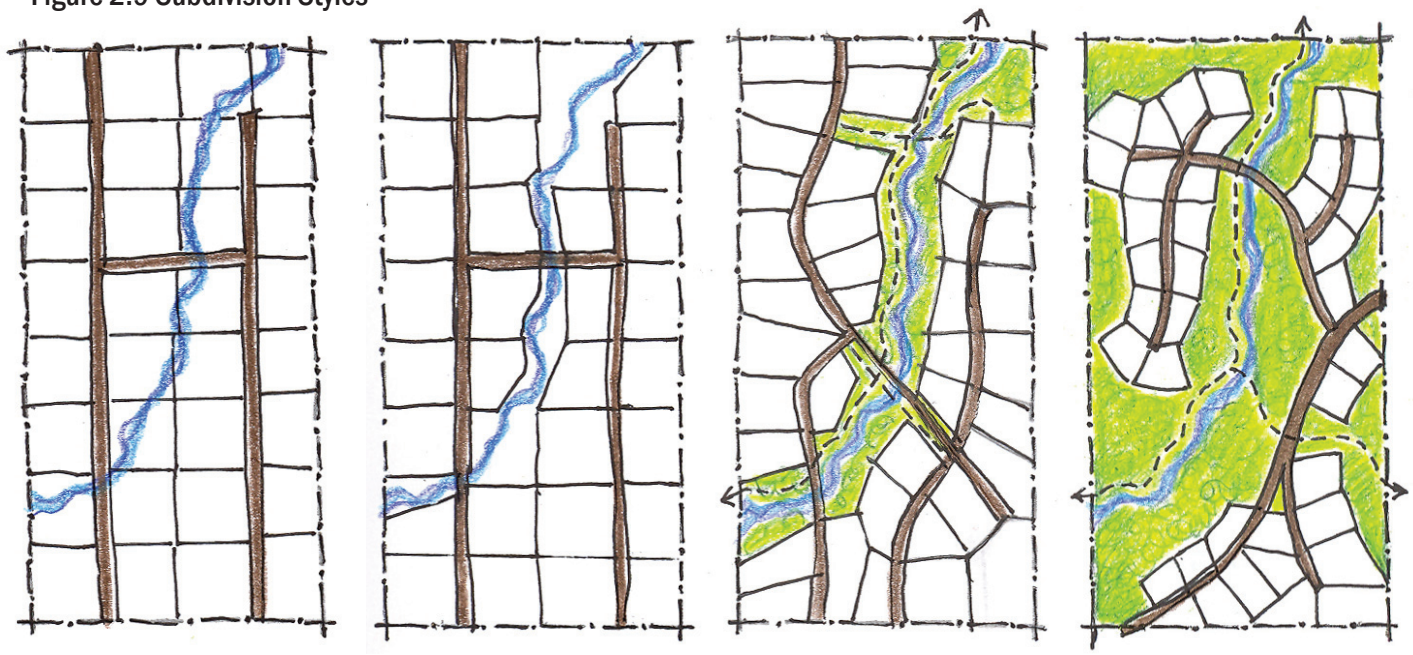
Plumstock at Willsonville, PA

Furrow Creek Subdivision,

Anchorage Hillside, AK

A local example of a conservation subdivision, Furrow Creek, located in the Hillside District. The original subdivision plat contained a greenbelt along the creek. It is an excellent example of the benefits of the conservation subdivision approach: The greenbelt and creek increased the property values of the houses adjacent to it, contained the flood zone, protected the creek, improved the creek's water quality, provided public access, and retained wildlife areas. The Furrow Creek subdivision is also an example of a less-than-perfect application of the green infrastructure approach. In this particular subdivision, the original creek followed a somewhat different route.

Figure 2.9 Subdivision Styles



A. Old-style "aliquot part" subdivision (all land is evenly subdivided, regardless of topographic features)

B. Traditional subdivision (excludes land that is difficult to develop)

C. Conservation subdivision #1 (creates access to usable open space)

D. Conservation subdivision #2 (smaller lots, more open space)

Illustrated above are four different approaches to subdivision design, all with approximately the same number of lots. The "aliquot part" subdivision is the lowest-cost approach to dividing land. This method was used to create the "BLM lots" between lower Rabbit Creek Road and lower DeArmoun Road. The other three options show a spectrum of approaches, each stepping toward a retention of a higher percentage of undeveloped land. Reserving more undeveloped land in the platting phase (see options C or D) creates smaller lot sizes while providing greater protection of waterways and natural systems. Conservation subdivisions can also increase the value of back lots by providing access to amenities such as stream corridors or open space. The development approval process for conservation subdivisions are more complex than for simple subdivisions. Consequently, a financial incentive (such as reduced infrastructure costs, a modest increase in number of lots, or increased lot values) can help entice developers create conservation subdivisions, rather than traditional or aliquot part subdivisions.

Definition of Terms: Conservation Subdivisions

Conservation subdivisions are possible in several slightly different forms in the Hillside District. As used here, a conservation subdivision refers to the general approach of allowing flexibility in subdivision layout. There are two specific variations of conservation subdivisions which apply to the Hillside District.

1. Title 21 Conservation Subdivisions: Chapter 8 of Title 21 allows for one form of conservation subdivision approach that permits lot sizes to be reduced but does not allow the number of lots to increase beyond what otherwise would be permitted. Title 21 conservation subdivisions are allowed anywhere in Anchorage.
2. Hillside Conservation Subdivision: This conservation subdivision allows developers a small increase in the number of lots (e.g., 15 percent more) provided they exceed otherwise applicable open space standards. Hillside Conservation Subdivisions are addressed in HDP Policy 14-L (described in Chapter 6. Implementation).

wetlands, trails or other natural features. Flexibility in the layout of subdivisions is a key part of the strategy to protect the continuity of corridors across multiple subdivisions. A "Hillside Conservation Subdivision" ordinance will allow for reduced lot sizes and a modest density bonus (e.g., 15 percent) in exchange for the permanent conservation of open space, protection of key environmental features or establishment of expanded recreational access, any of which must secure permanent substantial public benefits. General policy direction is established in HDP Policy 14-L (Chapter 6. Implementation); implementation requires an ordinance amending Title 21 following HDP adoption.

Commercial Uses on the Hillside

Home-based Businesses: There are many home-based businesses on the Hillside. Home occupations are allowed on residential lots with restrictions. The existing rules under Title 21 are generally acceptable on the Hillside and are summarized as follows.

- The size of the enterprise is limited to 500 square feet or 25 percent of the dwelling, or 200 square feet of an accessory building.
- No more than one non-resident employee is allowed.
- Only one unlit wall sign no bigger than one square foot in area is allowed.
- Traffic and delivery vehicles may not be more "than would normally be expected in a residential neighborhood."
- Equipment may not produce noise, vibration, glare, fumes, odors, power fluctuations, or radio frequency interference.
- Hours of operation are prohibited between 10 p.m. and 7 a.m.
- The new large animal ordinance also allows the boarding of horses for a fee.

Standards for Current and Future Nonresidential Uses: As part of this process, a number of public comments were voiced regarding the need for new, more stringent standards for existing nonresidential uses, including churches and domestic animals, to ensure that these uses do not damage the natural environment or detract from the area's predominantly residential character. Existing code regulations and the revisions to Title 21 now underway will address the majority of these issues. Improved regulations may be needed for specific nonresidential uses allowed under current zoning.

GOAL 3. Infrastructure and Efficient Growth Patterns

Plan land use, transportation infrastructure, and other infrastructure to serve anticipated growth to be efficient in terms of public expense, energy use, and other resources.

Background (No Policies Specific to this Goal)

The location and density of land uses can greatly affect the cost and efficiency of providing public services such as schools, roads, or police and fire services. Likewise, the pattern of development effects energy use, primarily due to variations in vehicular activity as a function of density. This plan addresses the two components of this goal as outlined below:

- Plans for infrastructure to serve anticipated growth (addressed in Chapter 3. Drainage; Chapter 4. Transportation; Chapter 5. Water and Wastewater).
- Guide land use to be efficient in public expense, energy use and other resources. Encouraging a greater proportion of future Hillside growth in areas that are comparatively close to established services results in relatively less demand for energy tied to vehicular use and more efficient use of existing public infrastructure (HDP Policy 1-A).

GOAL 4. Public Facilities

Retain land to serve anticipated needs for public facilities and public use areas, such as schools, drainage-related facilities, fire stations, parks, greenbelts, or other natural resource conservation areas.

Background

One function of a district plan can be to identify current and future needs for public facilities and public use areas such as schools, drainage-related facilities, fire stations, parks, and greenbelts or other natural resource conservation areas.

Schools

Policy 4-A

The Municipality of Anchorage and the Anchorage School District will continue a joint effort to identify school sites on the Hillside to accommodate future growth.

Background

The School District and Municipality have identified need for additional Hillside school sites since at least 2002, have carried out site investigations, and have been considering options for adjusting school site selection criteria to fit Hillside conditions. The 2003-2009 Six-Year Capital Improvement Plan identified site selections for a Golden View Elementary School and a South Anchorage Middle School. In October 2005, the School District issued a Request for Proposals to perform a "Southeast Hillside Elementary School Site Evaluation. The selected consultant, R&M Consultants, performed preliminary site investigations on three Southeast Hillside Elementary School sites. No suitable sites were found. In 2007, Planning staff concluded that "a thorough review of the site options, based on school site criteria, finds that none of the sites are environmentally ideal and are too expensive to develop." Planning staff discussed possible alternative options to consider:

- Revise the standard 15-, 30-, and 50-acre site criteria for elementary, middle and high schools to expand site options;
- Reduce minimum acreage requirements for schools;
- Review parking requirements and parking lot locations;
- Review standard site plan elements that may increase the amount of space needed, such as retention basins, open space, non-useable areas;
- Review the potential for combining outdoor athletic facilities;
- Use an alternate site search process (e.g., turnkey);
- Consider renovation or expansion of existing sites;
- Require that schools be located in areas designated for growth that already have sufficient existing infrastructure to support school facilities;
- Increase busing to better utilize existing school facilities;
- Adjust school boundaries; and
- Include vegetative buffers, setbacks and other constraints required under Title 21.

Fire Stations

Policy 4-B

Carry out site selection study to identify needed sites.

Background

The Anchorage Fire Department has identified a long-term need for future, smaller residential stations (housing a single-engine company or ambulance) on the Hillside. Fire and Emergency Medical Services (EMS) station locations are determined by response modeling based on national fire and EMS standards. Some areas of the Hillside do not meet these response standards. While no specific sites were identified for this plan, the plan's implementation summary (Appendix B) documents the need for a process to identify and reserve land for this purpose, including a site selection and public review process.

Other Public Facilities

Drainage

HDP Policy 5-B uses a built/green infrastructure approach to identify areas to be used for community drainage functions. Other drainage considerations are addressed in Chapter 3. Drainage and in Chapter 6. Implementation.

Parks, Greenbelts, and Natural Resource Conservation Areas

The need to acquire and enhance the system of parks and natural open space and to conserve wildlife habitat areas on the Hillside is recognized in the Anchorage 2020 Anchorage Bowl Comprehensive Plan and the 2006 Anchorage Bowl Park, Natural Resource and Recreation Facility Plan. The Parks Plan notes that "planning and securing specific critical elements" in a physical framework of parks, open spaces, and greenbelts "should be a key priority before growth limits the options."

Park, greenbelt, and other natural resource conservation areas are addressed in HDP Policies 2-C, 5-A, 5-B, 5-C, 6-A, 6-B, 10-A, 10-B, 10-C, 12-A, 12-B, 12-C, 12-D, 14-A, 14-B, 14-C, and 14-L.

Goal 5. Environmental Quality

Protect environmental quality on the Hillside, including: providing corridors for drainage, protecting natural systems such as aquifer recharge areas and stream corridors, protecting wildlife travel corridors and habitat, and providing open space for views and recreation.

Policy 5-A

Maintain and protect environmental quality at three scales: 1) individual lots, using new development standards; 2) subdivisions, using a combination of new development standards and the conservation subdivision approach; and 3) watershed, using the built/green infrastructure approach and other plan strategies.

Background

The natural and recreational qualities of the Hillside, its wildlife, large areas of undeveloped lands, close contact with nature, dark night skies, parks, and wilderness trails are treasured by both Hillside residents and visitors. The public expressed strong support for protecting these qualities, maintaining the integrity of the area's natural environment and rural character, and improving recreational opportunities. Maintaining water quality is a priority, particularly protecting well water and Potter Marsh. At the same time, there is recognition that the vast majority of land on the Hillside is private property already developed or destined for residential development, and that any actions to protect open space must respect the rights and expectations of landowners and residents.

Environmental and recreational quality on the Hillside will be protected through a combination of existing plans and policies, planning processes now underway, and new policies established in this plan.

Environmental and recreational goals are important components of the Anchorage Comprehensive Plan and other studies, including Anchorage 2020, the Anchorage Parks Plan, the Anchorage Trails Plan, the Living with Wildlife Plan, the Anchorage Coastal Management Plan, and the Anchorage Wetlands Management Plan. State and federal agencies also have existing regulatory authority over specific environmental issues, including wastewater systems and wetlands.

The Anchorage Wetlands Management Plan is the planning document that identifies wetlands and their relative functional values (including habitat values) and provides site-specific management strategies for each wetland. Management strategies are implemented via environmental permitting and relevant Title 21 regulations (e.g., platting).

The Anchorage Coastal Management Plan is a policy document that defines issues of local concern and guides the development needs of residents, businesses, and landowners within the Anchorage coastal zone boundary. It includes a description of Anchorage's coastal resources and an analysis of the impacts from uses and activities. It describes the enforceable policies that are to be used to implement the goals and objectives and provides standards for uses and activities within the designated area.

Anchorage 2020 sets Bowl-wide policies related to a broad range of park, open space, and natural resource planning. Policies include the identification and conservation of open spaces, enhanced access to these areas, and the protection and restoration of Anchorage aquatic resources. Anchorage 2020 promotes a number of implementation strategies for these policies, including an update to the Parks Plan and development of programs like the Greenbelt Acquisition Program and Natural Open Space Acquisition. Parks, trails, open space, and habitat policies will be addressed in more detail in on-going and/or upcoming plans, including the Section 36 Master Plan by the MOA Parks and Recreation Department, and the Chugach Access Plan by the State of Alaska Department of Natural Resources.

The 2006 Parks Plan supports acquisition and development of greenbelts along all major Hillside creeks, as well as two additional community-scale parks and recreation access to Chugach State Park and Potter Marsh. Consistent with Anchorage 2020, the Parks Plan and HDP objectives, future parks planning on the Hillside should include consideration of the need for and best way to create greenbelts, new parks, improvements to existing parks, improved parks management, provisions for habitat and water resources protection, and improved access and trail connections from Hillside neighborhoods. Improvements to the system of parks and open spaces can happen in a variety of ways including land trades, acquisition, and dedication of property through the subdivision process. The HDP endorses the extension and protection of greenbelts along major Hillside

Why Is Open Space Important?

" ... Why should we be concerned about protecting open space? In a nutshell, by preserving open space we protect streams and water quality, provide habitat for plants and animals, preserve rural character, provide recreational areas, protect home values, and reduce costs of municipal services. In short, land conservation makes our communities better places to live...The conservation subdivision approach involves small but significant changes to the subdivision design and review process. When integrated with comprehensive planning and zoning provisions which encourage the preservation of open space, a community can – over a period of years – protect an interconnected network of conservation lands. Developers can easily become the community's leading conservationists, as each new subdivision adds another link to an area-wide open space system."

Excerpted from Growing Greener: Conservation Subdivision Design, by Randall Arendt, Planning Commissioners Journal #33 Winter 1999.

streams. Implementing this broad objective requires detailed assessment of land ownership, physical characteristics, and other details of these corridors beyond the scope of this plan.

Hillside District Plan environmental protection strategies are woven into different parts of the plan, including policies in every chapter. These strategies, which work at three scales, are summarized below and in Figure 2.10.

1. Policies and Development Standards for Individual Parcels
The plan supports the standards proposed in the Public Hearing Draft of Title 21, to respond to the special characteristics of the Hillside, namely steep slopes and upper elevation conditions. General objectives for these new standards are introduced under HDP Goal 2 (Chapter 2. Land Use), and expanded in Chapter 6. Implementation. Topics addressed include retention of natural vegetation, setbacks from waterbodies, and improved runoff controls. There is a measure of public support for Hillside-wide standards to protect visual and environmental quality, particularly regarding impervious surface and retention of natural vegetation.

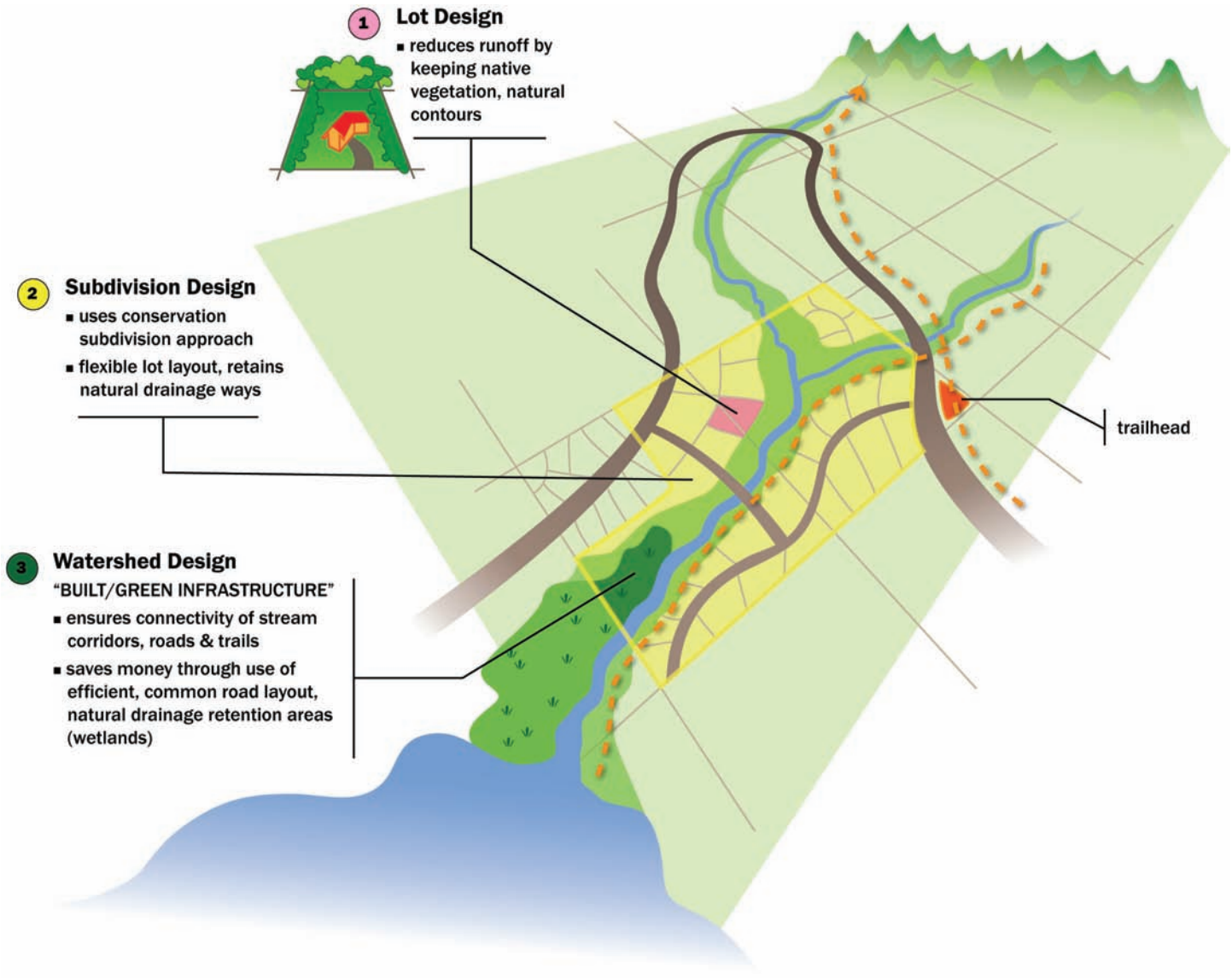
2. Policies and Development Standards for Subdivisions
To address the unique conditions on the Hillside, the plan develops Hillside-specific standards concerning subdivision layout options and submittal requirements. Objectives for these new standards are introduced in Goal 2 and HDP Policy 2-C of this chapter and listed in Chapter 3. Drainage and Chapter 6. Implementation. Topics addressed include changes in the subdivision submittal requirements and policies for Hillside-specific conservation subdivisions to provide greater flexibility and incentives for developers to protect open space, habitat, and recreational values within subdivisions. Habitat fragmentation is to be avoided, since it decreases wildlife movement and important supporting ranges.

3. Hillside-wide/Watershed-Scale Policies
In addition to actions at the level of individual lots and individual subdivisions, the plan also works at the Hillside-wide and watershed scale to better protect environmental and recreational values. The material below summarizes these policies:

Hillside Built/Green Infrastructure (HDP Policy 5-B):

- Recommends reserving open space corridors within and between subdivisions.
- Recommends trail corridors within and between subdivisions.

Figure 2.10
Integrated Development: Responding to Hillside Environmental Conditions at Three Scales



This graphic illustrates the integration of all the elements discussed on the previous pages: standards are developed to guide use of individual lots; the conservation subdivision process creates incentives and provides flexibility to allow for development while protecting streams and other natural features; and the overall built/green infrastructure approach ensures connectivity between subdivisions.

To reduce runoff and maintain visual quality, the plan establishes new, more restrictive development standards regarding retention of natural vegetation and the allowable extent of cut-and-fill.

- Encourages development to keep natural wildlife corridors and drainage systems intact and functional. Habitat fragmentation is to be avoided, since it decreases wildlife movement and important supporting ranges.

Other sections of the plan also establish policies important for environmental protection. These include:

- Visual Quality (HDP Goal 7).
- Hillside Drainage, Roads and Trails Service District (Chapters 3. Drainage, 4. Transportation, and 6. Implementation).
- Well Water Protection Plan (Chapters 5. Water and Wastewater and 6. Implementation).
- Trails and Chugach Access Policies (Chapters 4. Transportation and 6. Implementation).

Policy 5-B

Working at the watershed scale, implement a mapped overlay of built/green infrastructure and use this information to guide the layout of future subdivisions.

Background

In addition to policies for individual lots and subdivisions, the Hillside District Plan works at the watershed scale to create an integrated, connected system of open spaces, to provide for drainage, wildlife corridors and other open space uses, and to create a backbone road and trail system. Under this approach (referred to as "built/green infrastructure"), important features that cross multiple subdivisions, such as trails or stream corridors, are defined upfront so that future subdivisions can be designed in response to this integrated system. With this approach, the roads, trails, and open space within any single new subdivision become part of a larger system. This reduces both the costs and the impacts of new development.

While the term infrastructure typically connotes utilities like storm drains, the "green" infrastructure approach emphasizes the functional value of natural systems (for example, natural features such as stream corridors, wetlands and other aquifer recharge areas, and wildlife habitat). With a green infrastructure approach, instead of managing runoff primarily using costly storm water pipes, runoff can be directed to a system of streams and wetlands, as long as these are integrated so that the corridor

in one subdivision connects to a continuation of that corridor on an adjoining tract.

The "built" component of this approach refers to a system of primary roads and trails and some parts of the drainage system that serve multiple subdivisions and that can be identified prior to the development of any single subdivision. The value of this approach is in creating and integrating a connected system of roads and trails so that, for example, the trail that ends at one tract continues across the adjoining tract. This approach increases property values by creating an interconnected rather than a fragmented trail system, and reduces development costs and impacts by reserving the most efficient road route for a group of subdivisions, rather than requiring each subdivision to work out its own access plans.

Creating and Improving the Hillside Built/Green Infrastructure Map

Figure 2.12 gives the background to the creation of the Hillside Built/Green Infrastructure Map (Map 2.11). The map is based around three primary considerations: streams and related drainage features, roads, and trails. An important consideration in this process was the need to limit identified areas to those of highest value or greatest constraint. For example, the map is intended to identify the most important streams and wetlands, and the most important road and trails routes.

Once this plan is adopted, future subdivisions will be required to incorporate these built/green infrastructure elements into their designs. The map may be amended in the future, as more information becomes available on specific environmental features. Likewise, flexibility is needed in the application of the map to specific locations. For example, as long as the continuity of the road and trail system is preserved, a road or trail shown on the infrastructure map may be shifted to a slightly different location in response to future, more detailed site information. Likewise, while a dedicated public corridor is generally the preferred means to protect a stream, this could also be done in part through a simple development setback. More detail on the specific locations of proposed drainage and transportation elements can be found in the Drainage and Transportation Chapters of this plan. HDP Policies 14-G through 14-L (Chapter 6. Implementation) outline the specific process for incorporating this map into the subdivision development and approval process.

As the photos show, the Hillside includes a diverse section of Anchorage, from suburban to rural to wilderness. The Plan takes a three-part approach to protecting the Hillside's natural environment and recreation resources:

1. Establish development standards for individual parcels.
2. Create development standards for subdivisions.
3. Establish Hillside-wide and watershed-scale development policies.

To reserve elements such as roads, trails or stream corridors tht cross multiple properties, the plan identifies a system of "built/ green infrastructure." Map 2.11 identifies the most important drainageways, streams and wetlands, as well as known or likely future important trail and road corridors.

The Hillside Built/Green Infrastructure map data layers are updated on an ongoing basis. The Municipality of Anchorage Departments of Planning, Project Management and Engineering (PM&E), and Transportation Planning will need a memorandum of understanding to establish how and when the various layers are updated. At a minimum, the Hillside Built/Green Infrastructure Map should be updated annually. For example, it has been suggested that additional open space and wildlife corridors be shown on the map. Once identified, they could be included. Ongoing refinements to the map can be carried out administratively; for example, as drainage master plans or wetland boundaries are updated. Addition of entire new layers to the map, such as a major open space or habitat area, would require separate approvals and an HDP amendment.

Policy 5-C

Create a Riparian Greenbelt Acquisition Program.

Background

The acquisition of greenbelts on major streams in the Municipality has been a long-standing priority goal, but implementation has stalled in the Hillside area. The benefits of greenbelts on major streams extend to all residents of the Bowl and include water resources protection, connectivity of habitats, connectivity of neighborhoods, and recreation. This policy should be implemented pro-actively, drawing on diverse resources such as wetlands mitigation funds, private land trust efforts, and HLB-initiated land trades. It should not be left to the plat approval stage or to the local resources of a future Hillside infrastructure authority.

"Green infrastructure" refers to an integrated system of open spaces that serve as drainageways, wildlife corridors, floodwater storage, and recreational areas. Pictured above: lower Rabbit Creek canyon.

GOAL 6. Parks and Open Spaces

Maintain, supplement, and enhance a system of parks, trails, open spaces and other active and passive recreation areas.

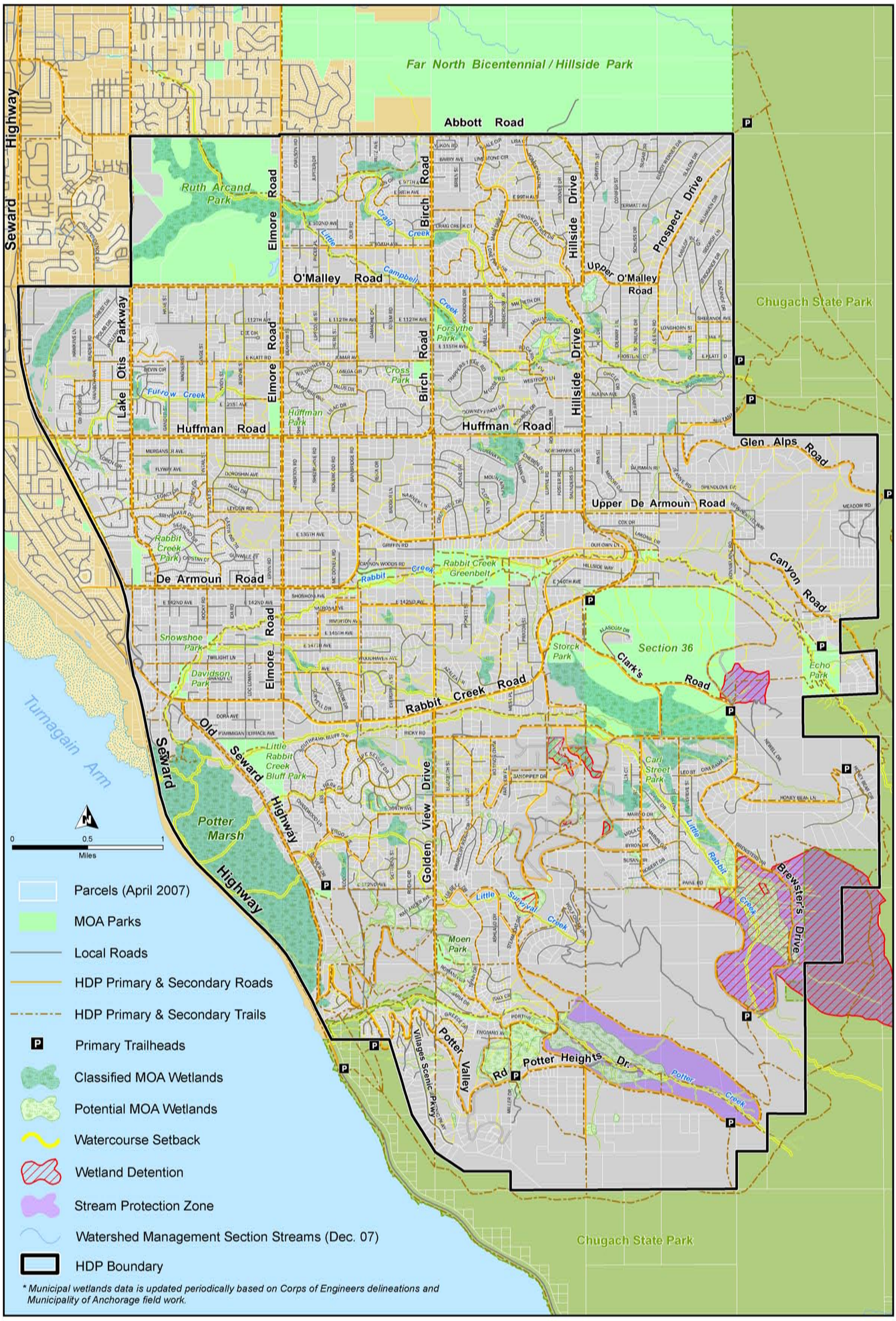
Policy 6-A

Establish priorities and implementation methods to meet deficiencies in neighborhood and community parks, develop natural resource and greenbelt acquisition programs and funding, conduct additional greenbelt and natural resource inventory planning, and enhance the Hillside built/green infrastructure system.

Map 2.11

Hillside Built/Green Infrastructure: a System of Stream Corridors, Major Roads, Trails, Wetlands, and Open Spaces

Hillside District Plan



** Municipal wetlands data is updated periodically based on Corps of Engineers delineations and Municipality of Anchorage field work.*

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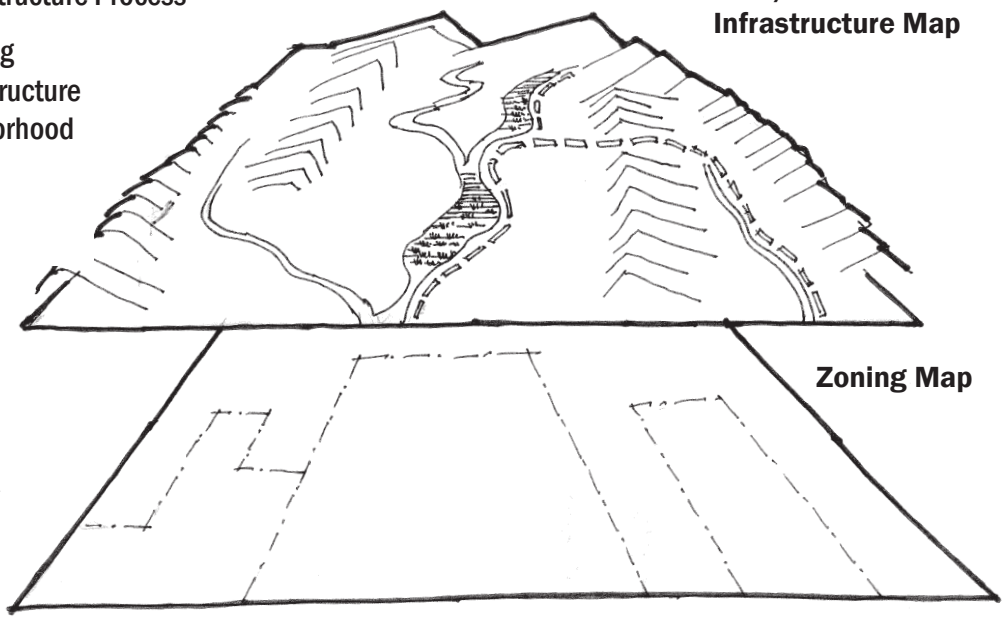
Figure 2.12 Built/Green Infrastructure Process

An Approach to Accommodating Development, Reducing Infrastructure Costs and Maintaining Neighborhood Character



PROCESS:

1. Map Functional and Environmental Values. Identify environmental features and processes (stream corridors, wetlands, aquifer recharge areas, etc.).

2. Map Recreation Areas. Identify recreation areas (trails, parks and other open space recreation use areas) that are best protected by allowing the land to remain largely undeveloped.

3. Map "Backbone Circulation." Identify a system of primary and secondary roads and trails (roads and trails that serve multiple subdivisions).

4. Layer maps of environmental features, open space and recreation, and roads and trails to create an integrated built/green infrastructure network map of particular features that cross multiple properties, such as stream corridors and trails. The layers that comprise the Hillside Built/Green Infrastructure Map (see Map 2.11) specifically include:

- Municipality of Anchorage (MOA) Parks
- Primary/Secondary Roads (described in Chapter 4)
- Primary/Secondary Trails (described in Chapter 4)
- Primary Trailheads (described in Chapter 4)
- "Classified MOA Wetlands" (The Municipality of Anchorage Physical Planning Division maps and maintains a database of wetlands based on fieldwork, photo interpretation, soils information, and delineations conducted by themselves and others. Classified MOA wetlands are included in the *Anchorage Wetlands Management Plan*.)
- "Potential Wetlands - require field delineation" (Potential wetlands are those not yet included in the *Wetlands Management Plan* and that require further field verification. Wetlands shown on Map 2.11 are current as of December 2007.)
- "Wetland Detention" areas and "Stream Protection Zones" (These areas are described on page 3-12. They will generally be designated based on watershed drainage plans. The areas shown on Map 2.11 are derived from the Pilot Watershed Drainage Plan for Little Rabbit Creek and Little Survival Creek Watersheds and Potter Creek Watershed Drainage Plan.)
- Watercourse Setback
  - "Streams (Dec. 07)" (The Municipality of Anchorage Watershed Management Services field maps and maintains a database of streams as defined in municipal code. The database is continuously updated based on new information. Streams shown on Map 2.11 are current as of December 2007, with 50-foot setbacks, described on page 6-30.)
  - "Drainageways" as defined on page 3.14. (Like streams, these are continuously updated based on new information. Drainageways are not able to be mapped at the scale of Map 2.11, but are formal layers of the built/green infrastructure. Drainwageways are current as of December 2007, with 10-foot setbacks, described on page 6-30.

5. Formally adopt the map, recognizing that site-specific developments may lead to changes in the features that need protection for particular development projects.

6. Overlay the green infrastructure map on the zoning map to define areas where natural resource functions and open space values should be maintained as land is developed. Require future developments to identify these features prior to submitting a preliminary plat. Use this approach to maintain the integrity of the system of environmental features shown on the green infrastructure map (for example, a drainage corridor crossing multiple parcels).

Policy 6-B

Parks development should be phased and scaled to fit the level of road service, the limitations of on-site water and septic systems, and the rural character of the neighborhood. The design shall consider user and neighborhood safety and security and minimize overall impacts on the surrounding neighborhood.

Background

Previous planning efforts have identified a number of specific areas for the acquisition of land or easements for public recreation or natural resource conservation. Advancement of these projects will occur incrementally, thus it is important to not foreclose on opportunities even if full implementation is not mapped out. Subdivision approvals, road extensions, bond propositions, and other municipal and interagency actions should be monitored for opportunities related to the following:

- Access points for Chugach State Park and connections among municipal parks, trails, and greenbelts to Chugach State Park where possible.
- Greenbelts along Rabbit Creek, Potter Creek, Little Survival Creek, Little Rabbit Creek, and Little Campbell Creek.
- Completion of the Rabbit Creek Trail connecting the Seward Highway to Chugach State Park.
- Enhancement of access to the Potter Marsh watershed.
- Protection of key drainages to the Potter Marsh watershed.
- Development of new neighborhood parks to serve Potter Creek area and areas of Huffman/O'Malley, Rabbit Creek, and mid-Hillside.
- Acquisition and development of community use parks in the Lake Otis Parkway area between O'Malley Road and DeArmoun Road, as well as O'Malley Road and Elmore Road area.

GOAL 7. Visual Quality

Protect views, both looking out from the Hillside and views of the Hillside as seen from the rest of Anchorage (for example, by maintaining vegetation, limiting cut and fill, and guiding the location and character of new residential development).

Policy 7-A

Maintain and protect views by protecting natural vegetation, drainage corridors, significant natural features, and topography at the scale of watersheds, subdivisions, and individual lots.

Policy 7-B

Establish new standards to reduce the visual impact of development on select, identified prominent ridgelines (identified on HDP Map 6.9).

Background

Development in locations that offer great views also can impact the visual quality of surrounding areas. A particular concern on the Hillside is the development occurring on a few highly visible ridgelines, where the addition of new homes can noticeably impact the character of views for residents and recreational users. Many communities around the country have adopted strict guidelines limiting development in visually prominent locations, to help protect the natural and/or rural character for all the people that might see such development. The HDP puts forth a less aggressive policy, intended to not prevent development in such locations but to reduce visual impact by establishing development standards. Chapter 6. Implementation presents the specific standards, which are summarized below. These policies only apply on specific ridgelines, identified on Map 6.9.

- Avoid construction of homes, towers, or other developed features directly on the top of ridgelines.
- Houses will be no more than two stories in height.
- Maintain natural vegetation.
- Use muted colors and non-reflective materials.

The Hillside often experiences extreme winds, particularly on exposed ridges. Complying with these standards not only helps maintain visual quality; it also reduces the very real hazards of constructing large homes on the top of windswept ridges.

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Chapter 3. Drainage

Overview

Drainage-related issues, including glaciation, erosion, and flooding, are a chronic and growing problem, particularly in the southeastern, steeper portions of the Hillside District. All development on the Hillside, existing and future, has some impact on drainage. As everyone knows, water runs downhill, so problems in one place are often the result of unrelated activities uphill.

During this and previous planning processes, a number of acute and chronic drainage problems were identified. Causes of these problems may be diffuse but cumulative effects lead to specific instances of property damage and safety concerns. Although not everyone experiences these problems, for those who do they are frustrating and costly.

Because drainage issues are the result of disconnected actions uphill, a new, better coordinated approach is required, both to fix existing problems and to proactively prevent future problems. As with so many aspects of land development, prevention is much cheaper than repair. This plan establishes three broad policies to address Hillside drainage issues:

1. Establish standards to reduce and better direct runoff from individual lots and subdivision development (for example, through retention of native vegetation).
2. Manage runoff on a watershed basis by developing and implementing watershed drainage plans. Emphasize the use of natural drainage ways and wetlands (green infrastructure); but where necessary, use ditches, retention basins, and storm drain pipes (built infrastructure). Incorporate these plans as municipal-wide master drainage plans.
3. Create a new Hillside drainage funding and management entity, to provide a new district- or watershed-wide means to solve existing and future drainage issues. This entity would enforce drainage policies, fund and implement construction of watershed-based drainage solutions and maintain drainage systems on the Hillside. Continuing to rely on the existing system of Local and/or Rural Road Service Areas is not adequate to solve drainage issues. Chapter 6. Implementation describes this policy in more detail.

Public concerns expressed during the planning process include:

- Removal of native vegetation leads to higher amounts of runoff.
- Excavation for roads and buildings causes discharge of shallow groundwater; this leads to increased surface drainage and winter glaciation problems.
- Disruption of historic flow paths and diversion of flows creates problems in areas that didn't have problems before.
- Lack of adequate planning for drainage results in ice on roads, water in basements, and degradation of water quality, especially in receiving waters such as Potter Marsh.
- A built drainage system to augment natural drainage should be considered, for certain problem areas and to address water quality concerns.

A major sentiment expressed was a willingness to pay for solutions if the work was managed properly, including enforcement of stronger standards, and if costs were equitably distributed.

The "do-nothing" approach to addressing Hillside drainage concerns is no longer a practical option. Unless a new management and maintenance approach to Hillside drainage is adopted, existing drainage-related problems will worsen and new problems will be created, particularly in the steeper, higher elevation areas of the Hillside.

Cutbacks on road edges increase runoff on the road and adjacent property (above). Glaciation is a problem on some Hillside roads.

Context: Planning Issues Summary

Hillside Watershed Basics

A watershed is the entire land area that catches runoff and drains it into a particular water body, such as a stream or wetland. Runoff is the result of rainfall, snowmelt, and discharge of groundwater exposed during excavation. Runoff in developed areas of the Hillside is typically conveyed in roadside ditches, culverts, and small natural streams. Most of these drainage systems were constructed to serve a single project and few, if any, are sized to convey runoff from adjoining development. Most of the existing subdivisions were not built to drainage standards now required in Anchorage. In some established areas of the Hillside, these systems work well. In others, particularly those in higher elevation areas and/or with higher densities, inadequate drainage structures (such as ditches and culverts) cause significant problems. Solving drainage problems by allowing all runoff to flow off site decreases the amount of water that formerly was taken up by plants, evaporated, or infiltrated to recharge aquifers. Lack of aquifer recharge in specific areas may cause localized problems.

Causes of Drainage Problems

Development affects runoff by disrupting natural drainage systems. Some natural drainage ways and wetlands have been damaged or diverted by land development. Remaining wetland, streams, and natural drainage ways provide vital storm water management functions but currently are not managed to serve this function on a sustainable basis. The roadside ditches and other drainage conveyance systems associated with existing development are often undersized and lack connectivity.

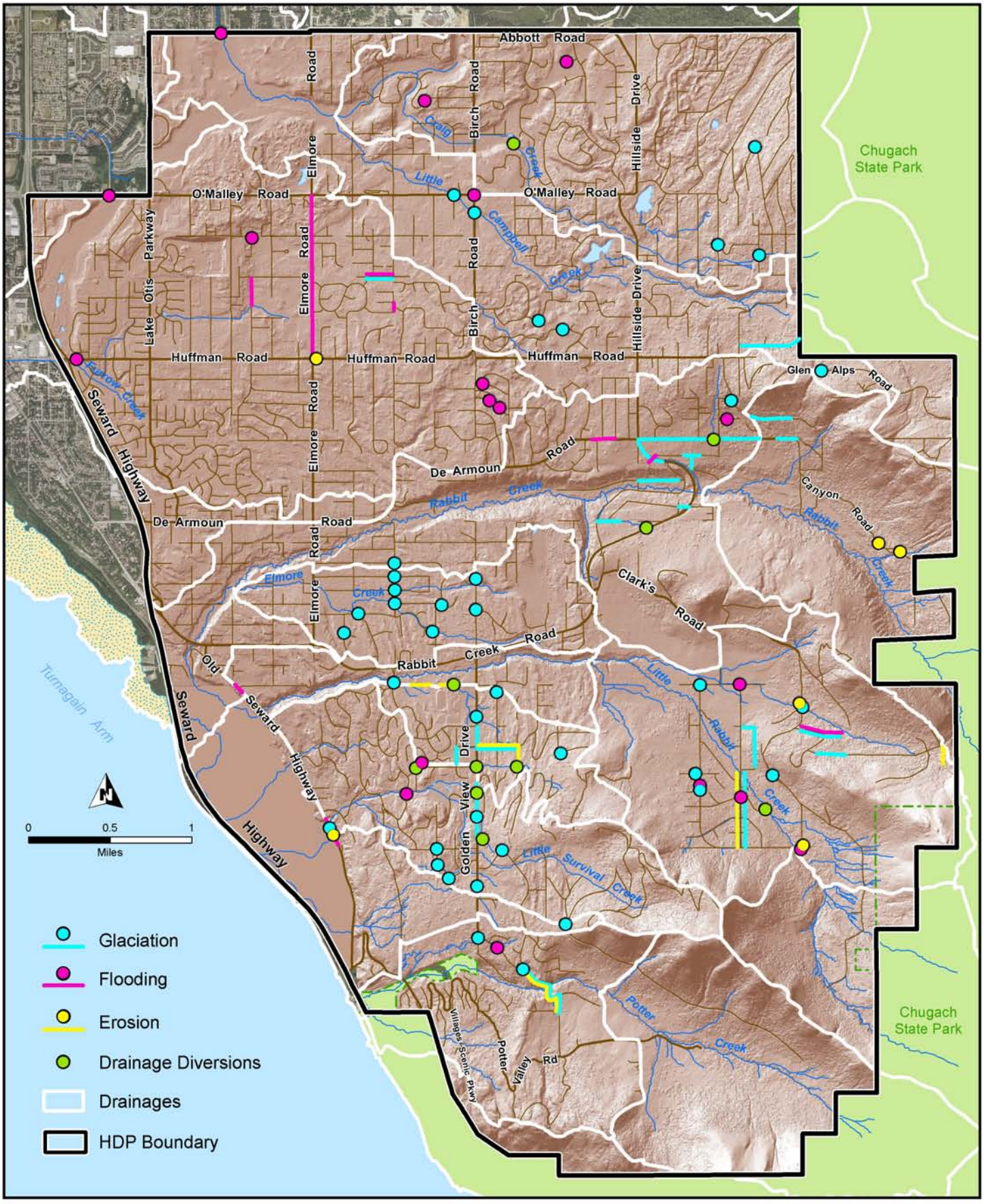
Development of the natural landscape also affects runoff by replacing permeable land with less permeable surfaces for buildings, roads, driveways, and landscaping. The character of residential development on the Hillside is changing, resulting in larger buildings, larger areas of impermeable surfaces, and larger areas cleared for landscaping. As natural land is developed and replaced by impermeable surfaces, the potential for runoff-related problems increases.

Parts of the Hillside have shallow groundwater that creates surface flows. In addition to naturally occurring seeps, groundwater is exposed during excavation for roads, buildings, and other development, through removal of vegetation and from extensive cut-slopes. In some of these areas, this groundwater continues to discharge as surface water seasonally or even year

Map 3.1

Drainage Issues on the Hillside

Hillside District Plan



round after construction is completed. These surface water discharges must either be diverted or handled by an adequate drainage system to prevent impacts on others, including flooding and winter icing conditions.

Existing regulations and drainage design criteria do not adequately address these and other unique conditions of the Hillside and are not always adequately enforced. Existing development built to old standards in conjunction with newer, denser development has a cumulative effect on downstream drainage and the potential to create or exacerbate drainage problems. Both existing and new development have a stake in managing drainage and solving drainage problems within a given watershed.

Previous Attempts to Address Drainage Issues

Drainage issues on the Hillside are not new and have been studied before. Between 1987 and 1995, the Municipality of Anchorage Department of Public Works conducted a Hillside Drainage study. The southern boundary of that study was Rabbit Creek Road. During the study process, an inventory of problems was compiled, a series of public workshops was carried out, and a drainage atlas was produced. Feasibility-level engineering solutions were developed for specific problem areas. The lack of a coordinated authority to perform construction was recognized and recommendations for forming a management authority were outlined. The study did not produce an implementation plan.

Lack of Management Authority

Today, the majority of Hillside roads and associated drainage ditches are located in, and maintained by, a patchwork of Limited Road Service Areas, homeowners associations, or informal neighborhood maintenance groups, who generally do not have the authority or resources to solve drainage issues. (See LRSA sidebar on this page and Map 6.1.) No single entity is responsible for managing drainage throughout each watershed, from top to bottom. Each of these entities – subdivisions, homeowners, and service area managers – independently attempt to convey runoff through or around their properties. This has resulted in disjointed, inadequate drainage systems, the inefficient use of funds being spent on repeat maintenance efforts, and overall higher maintenance costs. In addition, adjacent LRSAs may not agree on

Limited Road Service Areas (LRSAs)

LRSAs do not have the legal authority to take on capital improvement projects. While Hillside LRSAs spend a significant portion of their annual budget coping with drainage issues, these entities only have authority to do maintenance, primarily for roads. The two RRSAs on the Hillside (the Glen Alps and Goldenview Rural Road Service Area) do have legal authority to collect fees to construct capital improvement projects, including drainage-related improvements. However, drainage problems and solutions extend beyond the capability of any single LRSA or RRSA.

how to manage drainage, leading to an impasse on resolution of problems or a situation where one entity works at cross-purpose to another. The current uncoordinated approach offers no practical means to solve persistent problems caused by existing poorly designed or inadequate drainage facilities, nor means to plan for or construct new or upgraded systems to control increased runoff from upstream development.

Goal and Policy Summary

Background

The Hillside District Plan establishes a new approach to managing and maintaining drainage on the Hillside, focused on the use of natural systems. Natural systems are emphasized for several reasons:

- Natural systems offer a relatively low-cost approach, particularly compared to retrofitting the Hillside with a piped stormwater system.
- Retention and responsible use of natural drainage systems, of streams, wetlands, recharge areas and other natural water systems, also helps protect water quality and habitat and reduce flood risks.

To be successful, the approach recommended here requires the successful realization of this full set of policies. For example, relying primarily on natural drainage ways will only work if runoff from individual lots is minimized.

While the plan emphasizes the use of natural systems, there may be some locations on the Hillside where such systems alone are insufficient to handle anticipated runoff. In these situations, natural systems will be augmented by the use of roadside ditches and, in some instances, stormwater pipes.

Goal and Policy Summary

Goal 8. Drainage Management

Develop a functional, watershed-based drainage management system for the Hillside District to achieve the following:

- Create a practical, effective approach to manage the drainage needs of new and re-development.
- Ensure existing residents and landowners are protected when new development occurs.
- Resolve existing drainage problems and mitigate hazards and adverse impacts associated with inadequate drainage controls in existing developed areas.
- Protect existing stream and wetland functions by maintaining the natural quantity, quality, and periodicity of recharge to natural waterbodies and wetlands.

Primary Policy	Implementation
8-A. For steep areas, areas above timberline, lots with an unusually high percentage of developed impervious area, and important recharge areas, develop standards to reduce runoff from individual parcels and subdivisions. Such standards may include increasing retention of vegetation, using rain gardens, and retaining natural stream corridors.	Objectives are established by the Hillside District Plan; codification by MOA Planning Department and MOA Project Management and Engineering Department.
8-B. Manage runoff on a watershed basis. Define an integrated system of drainage features at the watershed scale (built/green infrastructure) by preparing and following watershed drainage plans for all watersheds within the Hillside. Identify parts of drainage corridors that are privately owned and implement an easement acquisition program.	Watershed drainage plans prepared by MOA Project Management and Engineering Department-Watershed Management Services.
8-C. Develop Hillside-wide and Anchorage Bowl-wide background material to enhance watershed drainage planning and built/green infrastructure mapping.	Cooperative effort of MOA Parks and Recreation Department and MOA Project Management and Engineering Department, in consultation with the Alaska Department of Fish & Game (ADF&G) or other habitat specialists.
8-D. Establish a new Hillside drainage management entity to help fund and manage needed drainage improvements for existing and future development and watershed protection and aquifer recharge efforts.	See HDP Chapter 6.
8-E. No net increase in runoff beyond existing peak flows for up to the 10-year event from development will be permitted unless regional facilities are in place and are adequate to accept the drainage.	Cooperative effort of MOA Planning Department, MOA Project Management and Engineering Department, and the MOA Development Services Department.

Policies and Policy Background

GOAL 8. Drainage Management

Develop a functional, watershed-based drainage management system for the Hillside District to achieve the following:

- **Create a practical, effective approach to manage the drainage needs of new and redevelopment.**
- **Ensure existing residents and landowners are protected when new development occurs.**
- **Resolve existing drainage problems and mitigate hazards and adverse impacts associated with inadequate drainage controls in existing developed areas.**
- **Protect existing stream and wetland functions by maintaining the natural quantity, quality, and periodicity of recharge to natural waterbodies and wetlands.**

Policy 8-A

Development Standards

For steep areas, areas above timberline, lots with an unusually high percentage of developed impervious area, and important recharge areas, develop standards to reduce runoff from individual parcels and subdivisions.

Background

HDP Policy 8-A is necessary to manage Hillside drainage issues by reducing runoff from new and redeveloped individual parcels and new subdivisions. Reducing runoff from new and redevelopment and the exposure of springs and shallow groundwater will decrease the size, cost, and maintenance of downstream conveyance systems. Less runoff will also help protect the quality of water and, at higher elevations, recharge underground aquifers that are the source of much of the Hillside's drinking water. Controls on the location and extent of cuts for roads, driveways, and buildings will reduce the exposure of shallow groundwater and springs.

The following list below describes the general objectives for these new standards; the specific standards are presented in Chapter 6. Implementation. As is stated in that chapter, incorporating these standards will require both Hillside-specific standards, and perhaps changes to the Design Criteria Manual and Title 21.

Figure 3.2
Runoff Controls

ADEQUATE RUNOFF CONTROLS

INADEQUATE RUNOFF CONTROLS

Minimizing impermeable surfaces and retaining natural vegetation reduces the amount of runoff from new development. These can decrease the cost of downstream water conveyance systems and help to protect water quality too.

To manage drainage, new developments could be required to include control measures to reduce runoff. Adequate drainage systems could be designed and installed up front, greatly reducing ongoing operations costs.

Runoff conveyed in roadside ditches.

Glaciation on a Hillside road.

- Retain native vegetation based on lot size and slope for individual parcels, and based on drainage and greenbelt continuity for larger tracts of land.
- Reduce allowed impermeable surface coverage such as driveway and building footprints.
- Capture roof runoff; for example, by using "rain gardens" or other features that infiltrate runoff using planted, gravel-filled retention areas.
- Connect driveway runoff to greenbelts or other infiltration sites, rather than an adjoining road swale.
- Require controls on cut-and-fill for building foundations; for example, requiring site-responsive stepped foundations versus cut pads.
- Develop new standards and procedures to address drainage issues associated with shallow groundwater.

Policy 8-B

Watershed Plans

Manage runoff on a watershed basis. Define an integrated system of drainage features at the watershed scale (built/green infrastructure) by preparing and following watershed drainage plans for all watersheds within the Hillside. Identify parts of drainage corridors that are privately owned and implement an easement acquisition program.

Background

The watershed approach is intended to:

- Provide continuity and capacity for drainage by systematically identifying solutions to existing drainage-related problems. Solutions may involve using a combination of natural features, new structures, and easement acquisition.
- Identify natural drainage corridors for preservation and acquisition.
- Present regional control structures within each watershed and provide developers with a clear understanding of the requirements.
- Protect and supplement natural drainage systems and high-quality wetlands with piped drainage systems (where necessary and cost-effective).

- Provide economies of scale and therefore overall lower costs to residents compared to the lot-by-lot or subdivision-by-subdivision approach.
- Manage road drainage and snow melt in a manner consistent with other drainage goals.

To carry out this approach, watershed drainage plans are needed for all watersheds within the Hillside District. These plans will identify integrated watershed-wide systems of drainage features at the watershed scale (built/green infrastructure) or all watersheds within the Hillside. The plans would identify solutions for existing drainage-related problems, plan for the adequate conveyance of flows associated with new development and redevelopment, and protect valuable resources such as streams and high-quality wetlands.

To demonstrate this watershed drainage planning process in a practical approach, a pilot watershed drainage plan (Map 3.3) has been developed for the Little Rabbit Creek and Little Survival Creek watersheds (an approximately 7.5-square-mile area). Work is now underway to develop a similar drainage plan for the Potter Valley watershed (Map 3.4).

For these and other watersheds, a rainfall-runoff model is developed which identifies drainage deficiencies under future land use conditions. Preliminary drainage solutions are ranked and assigned concept-level costs. Solutions include requirements for runoff controls from all new development, as well as existing system upgrades and controls to mitigate runoff from all new development. Map 3.3 graphically displays the recommended system upgrades and mitigation measures for the Little Rabbit Creek and Little Survival Creek drainages.

The following watershed drainage plans should be prepared and implemented:

- Little Rabbit Creek and Little Survival Creek Watersheds Drainage Plan (completed),
- Potter Creek Watershed Drainage Plan (completed),
- Little Campbell Creek (includes Craig Creek) Watershed Drainage Plan (underway),
- Rabbit Creek (includes Elmore Creek) Watershed Drainage Plan (not yet scoped), and
- Furrow Creek Watershed Drainage Plan (not yet scoped).

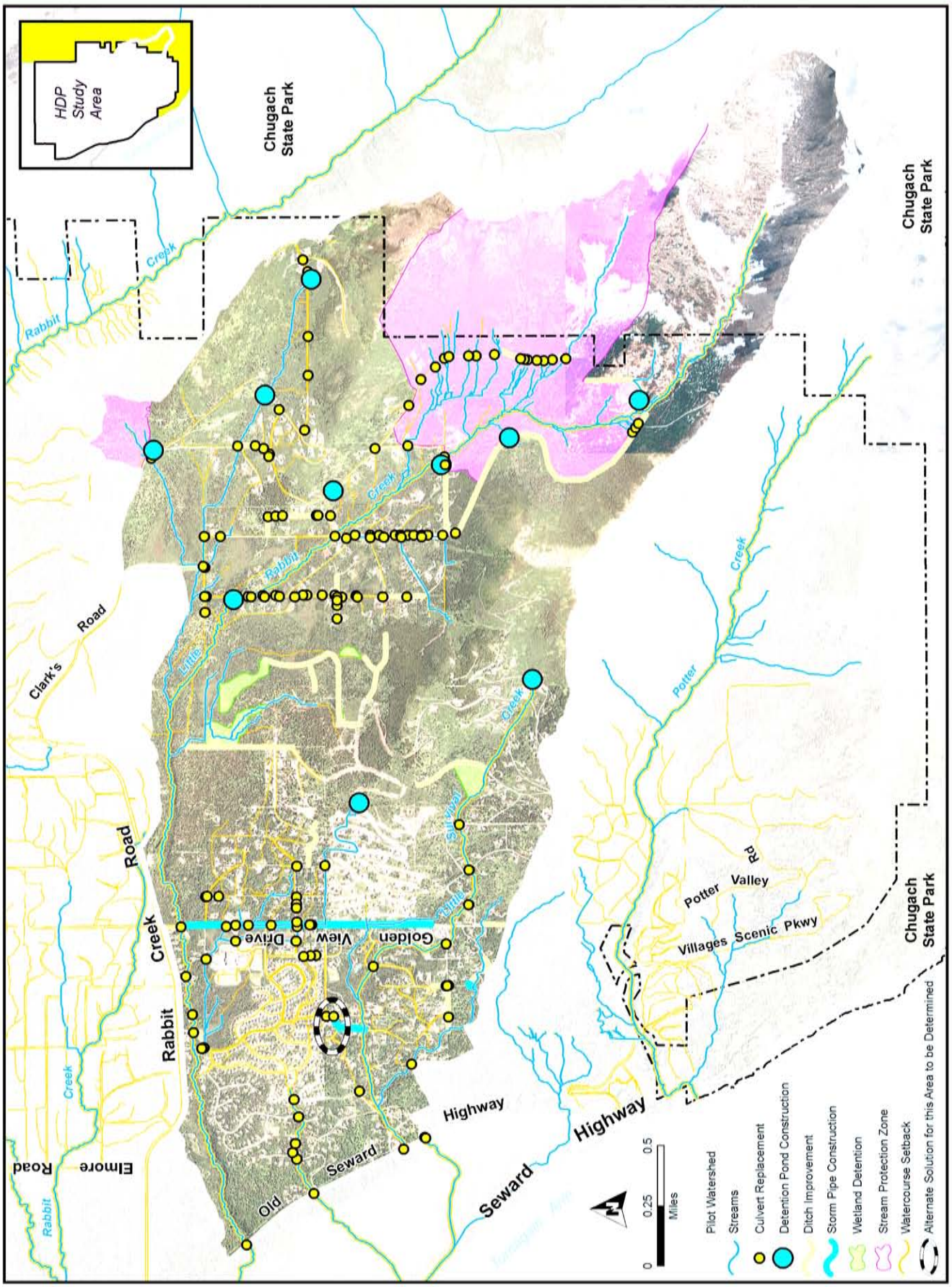
Evidence of the challenges of maintaining drainage infrastructure: culvert and drainage ditch along Clark's Road.

Map 3.3

Little Rabbit Creek and Little Survival Creek Watershed Drainage Plan

Hillside District Plan

A pilot watershed drainage plan has been developed for the Little Rabbit Creeek and Little Survival Creek watersheds to identify deficiencies under future land use conditions. Watershed drainage plans should likewase be developed for other Hillside watersheds in order to identify regional systems capable of fixing existing drainage-related problems, planning for adequate conveyance of future flows, and protecting valuable resources, such as streams and high-quality wetlands. The pilot watershed drainage plan prioritizes upgrades to deficient structures to guide phased implementation and recommends that future drainage infrastructure and controls be implemented as development occurs.

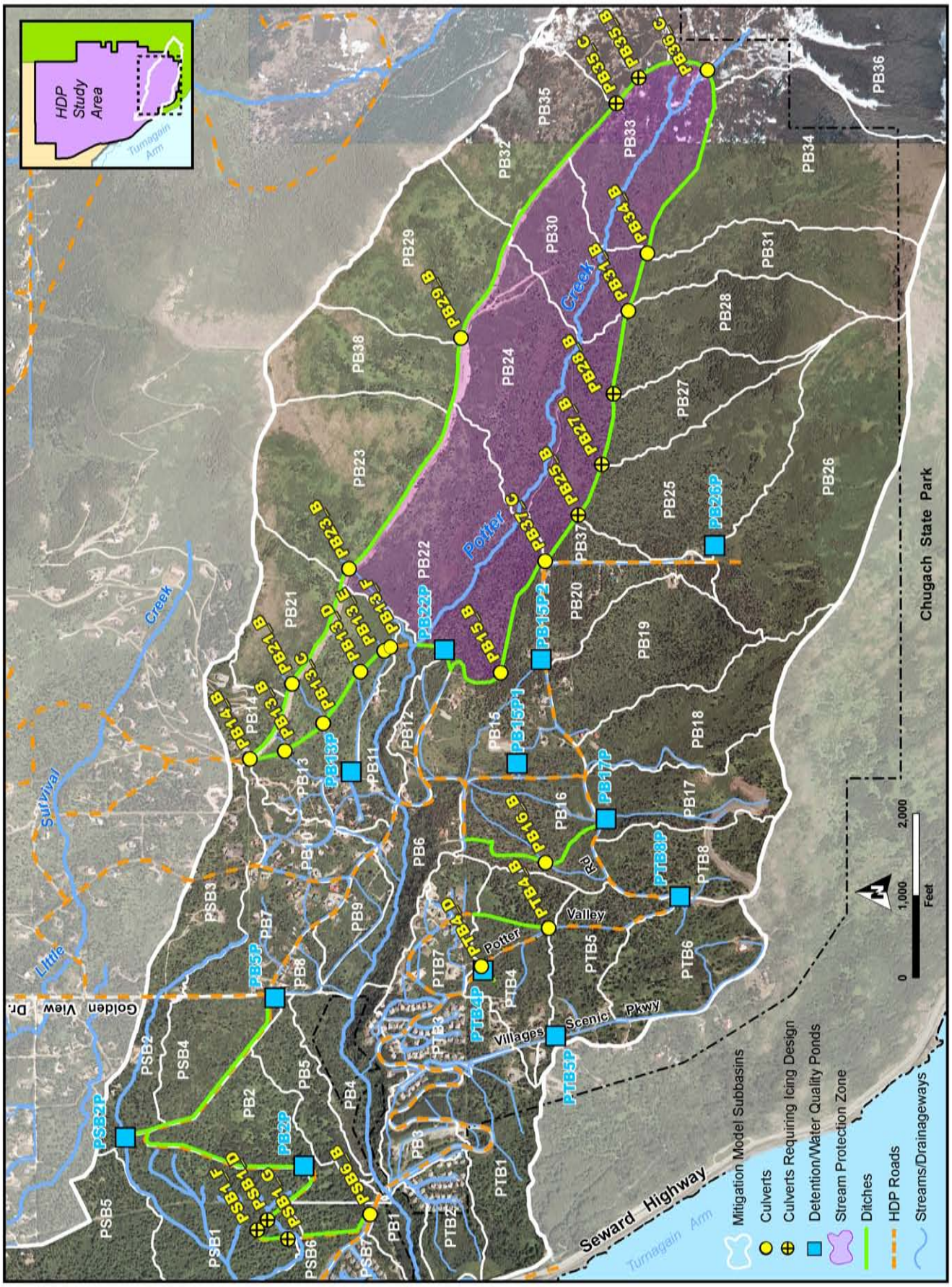


Map 3.4

Potter Valley Watershed Drainage Plan

Hillside District Plan

The Little Rabbit Creek and Little Survival Creek Pilot Watershed Drainage Plan is nearing completion, and the Potter Valley Watershed Drainage Plan is underway. The map below shows mapping of primary stream corridors and draft recommendations for watershed-wide drainage control.



Detention Ponds

Detention ponds have inherent problems of their own. The following must be considered:

- Who is responsible for maintenance?
- How will they be accessed?
- How will water be safely bypassed during winter snowmelt events when they are frozen?

The recommendations from the Little Rabbit Creek and Little Survival Creek pilot plan are summarized below. These illustrate the type of actions recommended in one watershed; other watersheds will each have their own unique drainage solutions. HDP Policy 8-D outlines the general strategy for managing and funding these improvements; Chapter 6. Implementation presents the specific development standards on these topics.

- **Culverts:** Replace existing culverts that are either undersized, severely damaged, or contribute to glaciation with appropriate structures. Construct new culverts to provide adequate conveyance for future flows.
- **Ditches:** Rehabilitate existing ditches that are undersized (not capable of conveying future runoff) or that contribute to glaciation in order to increase capacity or incorporate anti-glaciation features. Construct new ditches to provide adequate conveyance for future flows.

Figure 3.5 Rain Gardens

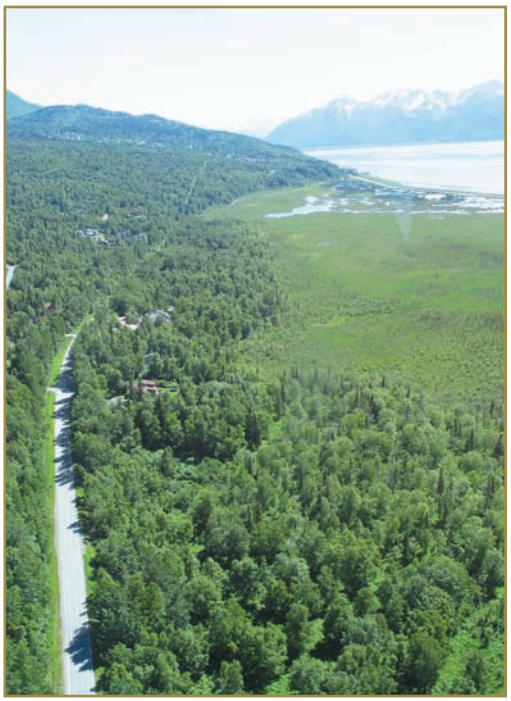
This image, by Garry Anderson of AnderDesigns, illustrates the "rain garden" concept. Runoff from buildings, driveways and other surfaces is directed to a planted infiltration area, which can be as simple as a shallow ditch filled with gravel and sand, and planted.

- **Storm Pipes:** Construct storm pipe systems to convey peak runoff in problem areas; for example, a system could be located along Golden View Drive. Consider long-term planning for a comprehensive piped system that may eventually take discharges of continual low and acute high flows and bypass them around the natural stream system.
- **Detention Ponds:** Construct storm water detention ponds regionally to detain the difference in peak flows between existing and future land use conditions for significant rainfall events (likely 2-year and 10-year events at minimum) and provide water quality improvement functions.
- **Wetland Detention Areas:** Protect areas identified as wetlands or potential wetlands that are strategically located to provide storm water detention and water quality enhancement. The sites will

likely require some modification, such as the construction of containment berms and the provision of runoff dispersal and collection systems.

- **Stream Protection Zones:** Designate areas with shallow groundwater, a dense system of streams, or other factors that make them unsuitable for regional detention ponds or other controls as stream protection zones. Avoid developing in these areas. If avoidance cannot be achieved, require development located in these areas to provide on-site controls to limit runoff to existing peak flows for up to the 10-year event or require lower density development than otherwise required by prevailing zoning.
- **Flood Hazard Evaluation:** Conduct a flood hazard study along a high-flood hazard risk section of Little Rabbit Creek located in Bear Valley to define the estimated flood limits for the 100- and 500-year flow events. These limits could then be used to develop mitigation measures to protect existing buildings located within the flood zone and protect future buildings from flood risk by establishing building setbacks.
- **Watercourses:** Establish policies to project the integrity and connectivity of water courses. The land immediately adjacent to watercourses (the riparian area) has the greatest potential to modify the character of storm water and shallow ground water flows before they enter receiving waters. A naturally vegetated riparian area detains storm water, buffers the stream from extreme flows, protects water quality by capturing and filtering pollutants, and aids in flood control and stream bank stabilization.
- **Drainage Easements:** Where drainage systems are discontinuous, acquire drainage easements through voluntary sales, or if necessary, through eminent domain. Drainage easements should be adequate for site access and at least ten feet wide on both sides of drainageways (HDP Policy 14-K).

The watershed management approach will provide the means to proactively manage drainage from the top to the bottom of the watershed.



Policy 8-C

Drainage Background Material

Develop Hillside-wide and Anchorage Bowl-wide background material to enhance watershed drainage planning and built/green infrastructure mapping.

Background

The Hillside District encompasses developed, upper reaches of a number of watersheds and does not receive runoff from any

Watercourses, streams and drainageways

The Municipality uses the term "watercourse" to include all natural or man-made channels or conduits that have been formed as the result of flowing water, or that do or are intended to convey surface water flows. Watercourse features include two general types: "streams" and "drainageways." These can be distinguished by differences in the source and longevity of flow. Streams always have relatively prolonged and (at least in their original unmodified form) natural sources of flow. Conversely, drainageways convey only ephemeral storm water flows, or those flows resulting from drainage or other construction.

upstream development. However, portions of three watersheds (Potter, Little Campbell/Craig, and Furrow) are served by ARDSA. Runoff and associated problems from above are passed downstream and do not respect the boundaries of the Hillside District. The watershed drainage plans developed for the Hillside area must be integrated into the larger framework of municipal-wide drainage. In addition, watershed drainage plans, the built/green infrastructure mapping, and drainage plans prepared for new subdivision approval will need to rely on credible natural resources information. To meet these integration goals, this policy calls for the following additional planning efforts.

- **Comprehensive Municipal Master Drainage Planning:** A municipal-wide master drainage planning framework should be developed so that individual watershed drainage plans can be incorporated into them. The master drainage planning framework should adhere to drainage planning criteria developed by the Municipality.
- **Hillside Area Natural Resource Protection Planning:**
  - Inventory and prioritize natural resources such as physical habitats, wildlife corridors, and aquatic resources.
  - Use this inventory as a basis for implementing green infrastructure concepts into development plans, including conservation subdivisions.
  - Develop a plan to acquire, preserve, protect, and restore high-priority natural resources.

Policy 8-D

Management Entity

Establish a new Hillside drainage management entity to help fund and manage needed drainage improvements for existing and future development and watershed protection and aquifer recharge efforts.

Background

HDP Policy 8-D is essential to solve Hillside drainage issues. The existing collection of LRSAs, RRSAs, and independent maintenance areas do not have the capacity to carry out comprehensive solutions to drainage-related problems. The "do-nothing" alternative is not acceptable. Therefore, a Hillside-wide service area or drainage authority will be created to manage drainage. This entity would enforce drainage policies, implement construction of watershed-based drainage solutions, and maintain

drainage systems on the Hillside. The service area or the authority would be guided by an areawide board of Hillside residents.

A particularly important responsibility will be to acquire wetlands and drainage corridors that serve important drainage functions and easements in areas where drainage connectivity is lacking.

Another important aspect is to implement procedures to monitor and oversee activities that affect drainage and surface-water quality. Such a procedure, for instance, in the form of a watershed permit, would track a project from the first land disturbance or clearing through construction, and installation of storm water facilities and their ongoing maintenance.

A newly established drainage management entity will be essential to creating and managing the built/green infrastructure system outlined in this document, in particular to reserve an integrated system of drainage features that cross multiple parcels. This approach is not possible without management oversight to plan the system and to raise funds to reserve, construct, and maintain elements like a drainage corridor that serves multiple landowners.

Funding and management details are presented in the Implementation chapter of this plan.

Policy 8-E

No Net Increase in Runoff up to the 10-Year Event

No net increase in runoff beyond existing peak flows for up to the 10-year event from development will be permitted unless regional facilities are in place and are adequate to accept the drainage.

Background

This policy provides a quantitative target for the development standards called for in HDP Policies 8-A, 14-I, and 14-J. Limiting peak flows to existing levels for up to the 10-year event:

- Provides an equitable standard for development that reduces the need for enlarging downstream conveyance ditches;
- Potentially reduces the maintenance requirements of downstream conveyance ditches;
- Generates opportunities for control measures that maintain or enhance ground water recharge;
- Limits increases in the number of runoff events that lead to stream instability and stream changes, such as widening, bank erosion, and stream steepening;
- Reduces degradation of aquatic habitat in receiving waters.

Easements and setbacks

A setback is a strip of land defined by a perpendicular distance measured from a specific feature. A stream setback is measured landward on both sides of the stream, either from the ordinary high-water mark or from the centerline of the stream if the stream is less than five feet wide at ordinary high water. A setback places restrictions on what can be done on the land within the setback. Setback standards adopted through this plan will be established in Title 21 of the municipal code. When that is done, any legally existing structures, disturbances, or uses that would be in violation of the new setback would be considered legally nonconforming (i.e., grandfathered) as of the date of the setback ordinance and would have rights to exist into the future in their existing condition.

An easement is a right of use of another's land for a particular purpose; for example, a drainageway easement would allow access for maintenance and improvements. An easement has a grantor, grantee, legal description, considerations, and words of conveyance. In addition, it will have a description of the purpose of the easement and limitations on the use. The deed of easement will be signed and acknowledged, and recorded among the land records.

A setback is relative to the position of the stream; when the stream moves, the setback moves with it. An easement is tied to a particular piece of land; if the stream moves, the easement does not.

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Chapter 4. Transportation

Overview

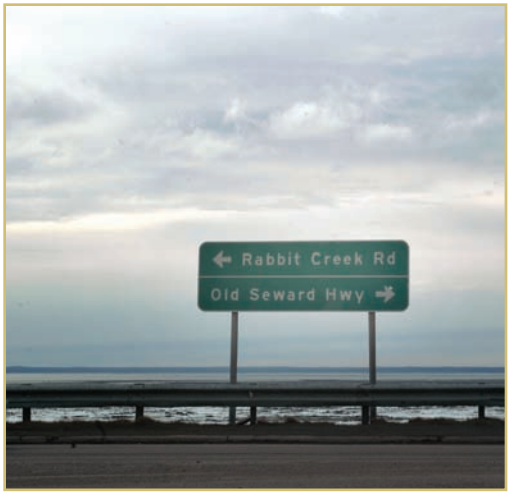
Transportation includes circulation by roads, trails, and transit. Most of the Hillside enjoys a decent road system that is not too crowded and is generally safe. Many Hillside residents and visitors to the area value recreational trails. Some of these trails are established, managed public trails; others cross private land.

The Hillside road system is generally able to handle current demands; however, in some areas problems are developing as the Hillside continues to grow. These issues (congested intersections, concerns with emergency access on substandard roads, and safety concerns) will intensify as the area expands from 8,500 residences today to 14,500 residences at build-out.

Demand for trails is likewise continuing to grow. Traditional routes across private land are being lost or relocated as development occurs. Existing trailheads are often overcrowded. In several locations where trail access is strong, trailheads are absent and few options exist to construct and maintain needed trails.

New approaches are necessary to address the transportation-related impacts of past development and to respond to future growth. Major Hillside District Plan strategies to address these issues are summarized below:

- Designate a system of primary and secondary roads to relieve congestion and improve emergency access.
- Improve connectivity and emergency access by providing more than one way to drive through the area, while protecting neighborhood quality and character.
- Designate a system of high-priority trails and access points to Chugach State Park.
- Reserve routes of future trails and roads as part of an integrated built/green infrastructure approach.
- Develop a district-wide mechanism to fund needed capital improvements and to maintain roads and trails.



Primary and Secondary Roads

Primary and secondary streets in this plan are identified to show the key roads that access the Hillside District, existing and future neighborhoods, schools, parks and other destinations. The terms "primary and secondary" do not determine the formal functional classification of these roads; most existing roads are already classified. While some of these streets will be built to collector standards, the large majority will be built to rural or urban residential subdivision street standards. The objective of mapping primary and secondary roads is to identify roads that today or in the future will serve more vehicles than roads serving individual local neighborhoods, and therefore are priorities for future maintenance and capital improvements. The reader should recognize the set of existing major roads on the lower Hillside (lower Rabbit Creek, DeArmoun, Huffman, O'Malley and Abbott Roads) are state owned and maintained and will continue to be the State's responsibility.

Context: Planning Issues Summary

Many Hillside residents commented on their love of the "country road atmosphere" that they enjoy. These images show the variety of country roads currently existing on the Hillside.

Road Congestion and Safety

A limited number of problem areas and intersections were identified where congestion and safety are concerns, at least at certain times of the day. Most of these problem areas are tied to daily school traffic and/or fast traffic on steep, icy roads. The Golden View Drive-Rabbit Creek Road intersection is a prime example. Traffic modeling was performed under full build-out scenarios on a variety of road network options to determine effective solutions to congestion resulting from gaps in the Hillside District's road network (see HDP Policy 9-A Background). These traffic models resulted in the HDP Roadway Connections (HDP Map 4.1). As the Hillside develops, these connections are vital to ensure that intersections like Golden View Drive and Rabbit Creek Road do not exceed capacity.

Connectivity and Emergency Access

Some areas require new or improved roads to serve existing and projected future growth, particularly to provide for emergency access and egress. This will also help relieve congestion in problem areas.

Often, as subdivisions develop adjacent to one another, roads that previously functioned or were designed as residential roads begin to function more like collectors. Increased traffic on previously quiet residential streets leads to maintenance, safety, and quality of life issues. This plan establishes a clearer hierarchy of primary and secondary roads that can help reduce these impacts.

Some areas on the Hillside lack adequate routes for emergency access. In the public survey, the only concern that the majority of Hillside residents consistently reported as at least "a problem" was the issue of wildfire safety. Substandard roads, multiple homes on private "driveways," and roads that are poorly maintained and poorly designed often create serious problems for emergency vehicles. Local fire crews report that fire engines and ambulances often have trouble finding and reaching homes to provide critical emergency services.

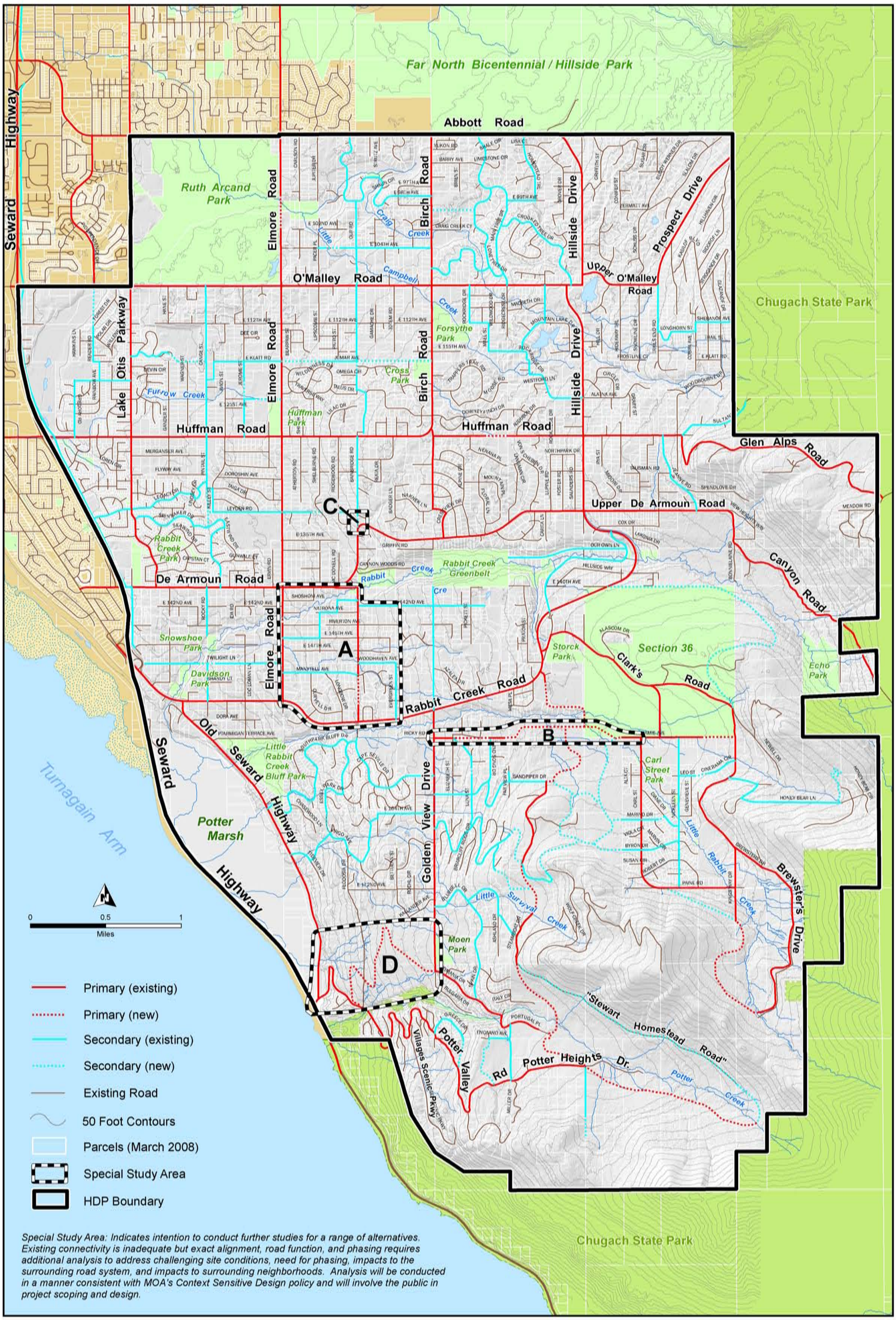
Road Development Standards

Road standards appropriate for the rest of Anchorage are not always considered suitable for roads on the Hillside. Some residents desire a rural road standard that would allow for less removal of vegetation and different surfacing options to fit with the area's character. At the same time, residents want to

Map 4.1

Roadway Connections

Hillside District Plan



Special Study Area: Indicates intention to conduct further studies for a range of alternatives. Existing connectivity is inadequate but exact alignment, road function, and phasing requires additional analysis to address challenging site conditions, need for phasing, impacts to the surrounding road system, and impacts to surrounding neighborhoods. Analysis will be conducted in a manner consistent with MOA's Context Sensitive Design policy and will involve the public in project scoping and design.

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hold down road maintenance costs. Over time, gravel roads are significantly (about ten times) more costly to maintain than paved roads.

All Municipality of Anchorage transportation projects are reviewed using "A Strategy for Developing Context Sensitive Transportation Projects" policy adopted by the Anchorage Assembly (AR 2008-237) in November 2008. This context sensitive solutions strategy is a collaborative, interdisciplinary approach to project development, involving stakeholders at the earliest phase to ensure the transportation project is in harmony with land use and the environment so as to make the improvement blend in with the surrounding community.

Trails

Hillside residents and visitors enjoy getting out to walk, bike, and ski. Roadside pedestrian pathways are lacking in most parts of the Hillside District. These routes have the potential to provide important transportation links, for example, connecting neighborhoods to schools. Many traditional trails located away from the road system cross vacant private land, and may be lost or realigned as development occurs. Mechanisms are not currently in place to provide the funding to build, maintain, and manage a trail network to serve the Hillside District.

Management and Maintenance of Roads and Trails

The Hillside District is currently a patchwork of split responsibilities for road maintenance. Some roads were built below current standards, necessitating increased maintenance. These deficiencies, which were only minor annoyances in the past, have become more noticeable as the area has continued to grow. The Limited Road Service Areas (LRSAs), Rural Road Service Areas (RRSAs), and independent entities generally provide very satisfactory road maintenance services in most areas they serve, but, by law, cannot provide for capital improvements or for drainage improvements.

The concept of coordinating municipal road improvements and land use goals with State of Alaska Department of Transportation and Public Facilities (ADOT&PF) improvements is important to safety, travel efficiency, and land use efficiency. The ADOT&PF owns and maintains the arterial roads on the Hillside. These roads have a strong impact on land use and transportation patterns. Some of the proposed changes to municipal roads will increase traffic along ADOT&PF roads and intersections,

Goal and Policy Summary

GOAL 9. Roads
Improve the system of Hillside roads to respond to current use and expected growth:

- Improve road safety through, for example, physical changes in roads and intersections, speed limits, improving sight distance, minimizing cresting over roads, and improving strategies for providing road access in steep areas;
- Improve road connectivity while maintaining neighborhood character, particularly in areas where new development is likely to occur;
- Identify and design collector and arterial roads to avoid excessive and high-speed traffic in residential neighborhoods. The collector street system should be designed to discourage through traffic and to discourage continuous links between arterials;
- Provide improved emergency access and egress; and
- Align and design roads with regard for natural setting and neighborhood character by minimizing cut-and-fill, preserving views and landmark natural features, controlling traffic speeds, and modifying lighting.

Primary Policy	Implementation
9-A. Identify proposed future road connections to improve the system of primary and secondary roads within the Hillside District.	Map approved with adoption of the Hillside District Plan; improvements follow as determined by the Hillside road management entity and available funding.
9-B. Apply recently adopted municipal road standards, and amend as appropriate, to accommodate challenging site conditions and rural character including bedrock, steep slopes, and sub-alpine and alpine elevations with the purpose of minimizing cut-and-fill, disruption to natural drainage, and visual impacts. In the new standards, include the use of gravel roads in limited circumstances.	See HDP Policies 14-M and 14-N.
9-C. Prioritize maintenance and upgrades of primary and secondary roads, placing emphasis on projects that address existing safety and efficiency concerns.	General intent established in the Hillside District Plan; implementation by the Hillside road management entity.
9-D. Upgrade Old Seward Highway to a multi-modal facility while retaining its rural and recreational character.	Responsible agencies pending funding: MOA Parks and Recreation Department, MOA Traffic Department, and MOA Non-motorized Transportation Coordinator to coordinate with the Alaska Department of Transportation and Public Facilities (ADOT&PF), Chugach State Park (CSP), and the Alaska Department of Fish and Game (ADF&G).
9-E. Prior to the establishment of the Hillside Road Management Entity, avoid new public projects that increase problems on substandard parts of the existing road system.	MOA Project Management and Engineering Department and MOA Planning and Zoning Comission as guidance to CIP.

GOAL 10. Trails
Develop a Hillside trails system to benefit Hillside residents and visitors to the area:
- Design the trail system so that it links neighborhoods and connects to schools, parks, area destinations, access points to Chugach State Park and the citywide trail system; and
- Develop trails that serve a variety of uses and users, including trails that serve as transportation and recreation.

Primary Policy	Implementation
10-A. Identify proposed trails and trailheads to improve the system of trails within the Hillside District and provide access to Chugach State Park.	HDP Map 4.6 approved with adoption of the Hillside District Plan and supersedes the existing Anchorage Trails Plan (for the Hillside study area). Means to obtain trails and trailheads include the subdivision process, purchases, land trades, and donations.
10-B. Provide a range of trailheads and parking areas to Chugach State Park, including neighborhood and auto-access trailheads.	Trails and trailhead policy approved with adoption of the Hillside District Plan. Specific location and implementation by MOA Parks and Recreation Department, Chugach State Park and Planning. Planning resources need to be identified.
10-C. Apply Anchorage Bowl trail standards for recreational, off-street rights-of-way, as well as roadside facilities.	Standards developed by the MOA Parks and Recreation Department; no action is required.

GOAL 11. Transit
Improve viability for transit within the Hillside District, including:
- Supporting the opportunity and potential for park-n-ride lots on the Hillside; and
- Promoting transit service for the lower Hillside (west of Elmore).

Primary Policy	Implementation
11-A. Future route structuring by People Mover should consider service to the University/Medical area from the lower Hillside.	MOA Public Transportation Department (as they carry out service evaluations).
11-B. Create park-n-ride lots in the Hillside District, as needed. Priority is on the lower Hillside in the area between Huffman Road and Rabbit Creek Road near the Seward Highway.	MOA Public Transportation Department (as they carry out service evaluations).

GOAL 12. Funding, Maintenance and Operations Create an enhanced and efficient maintenance, operations and capital program for roads and trails within the Hillside District.	
Primary Policy	**Implementation**
12-A. Establish a new Hillside District funding and management entity to manage and finance roads, drainage, built/green infrastructure watershed protection and aquifer recharge, and trails at a watershed and/or community-wide scale.	Anchorage Assembly, Hillside residents; initiative led by MOA Project Management and Engineering Department. See HDP Chapter 6.
12-B. Extend the Anchorage Parks and Recreation Service Area boundary to include the entire Hillside District as well as the initial mile of Chugach State Park.	Anchorage Assembly, Hillside residents; initiative led by the MOA Parks and Recreation Department. See HDP Policy 14-B.
12-C. Create a new funding and management program targeted on improved Chugach State Park access.	Anchorage Assembly, Hillside residents; initiative led by the MOA Parks and Recreation Department. See HDP Policy 14-C.
12-D. Develop maintenance, repair and schedule priorities for roads and trails.	Hillside Road, Trails and Drainage Service Area/funding and management entity (once formed).

including currently hazardous intersections on Rabbit Creek Road, and along the severely substandard Old Seward Highway south of Rabbit Creek Road.

The Old Seward Highway from Rabbit Creek south to Potter Creek forms a corridor largely within a natural setting, connecting several large tracts of parkland and natural open space land, as well as a limited number of residential lots. The community has identified this roadway and the lands along it as very important for their wildlife viewing and habitat values, nature appreciation, public recreation, and scenic qualities. This plan supports a context-sensitive design for the future upgrade of this stretch of the Old Seward Highway to retain the highway's rural and recreational character and to integrate natural landscape features, natural resource values, and recreational uses into the road design. The Hillside District Plan supports a byway character with moderated speeds and recreational access features, rather than a typical arterial design.

Policies and Policy Background

The remainder of this chapter presents strategies for roads and trails to improve pedestrian and vehicle transportation in the Hillside study area. Additional background information is included in the documents referenced in Appendix A. Hillside District Plan Supporting Documents.

Goal 9. Roads

Improve the system of Hillside roads to respond to current use and expected growth:

- **Improve road safety through, for example, physical changes in roads and intersections, speed limits, improving sight distance, minimizing cresting over roads, and improving strategies for providing road access in steep areas;**
- **Improve road connectivity while maintaining neighborhood character, particularly in areas where new development is likely to occur;**
- **Identify and design collector and arterial roads to avoid excessive and high-speed traffic in residential neighborhoods. The collector street system should be designed to discourage through traffic and to discourage continuous links between arterials;**
- **Provide improved emergency access and egress; and**
- **Align and design roads with regard for natural setting and neighborhood character by minimizing cut-and-fill, preserving views and landmark natural features, controlling traffic speeds, and modifying lighting.**

Policy 9-A

Identify proposed future road connections to improve the system of primary and secondary roads within the Hillside District.

Background

Road upgrades and connections were evaluated to meet the existing and future growth and safety needs in the study area. (See Map 4.1 Proposed Roadway Connections.) For purposes of the plan, key roads illustrated on the map are designated as primary

or secondary roads. These designations do not determine the formal functional classification of streets as collectors, arterials, and freeways.

- Primary streets: As illustrated in the plan, primary streets are streets that would attract and serve the most traffic and provide a primary connection from secondary and other streets into and away from the Hillside.
- Secondary streets: Secondary streets help bring the local traffic from housing areas and connections to schools, Chugach State Park, and local parks. In subdivisions, they also serve as the key roadway that most residents use to enter their homes.

The plan establishes a hierarchy of roads so that they function as a system, from small roads (which focus on land access) to highways (which move people longer distances at higher speeds). In the Hillside District Plan, primary and secondary roads are identified as priorities for future maintenance and capital improvements, as they serve a larger use and public benefit, in addition to individual local neighborhood needs.

The recommended road network is based on three assumptions:

First, the actual creation of many of these road and trail routes hinges upon the pace and location of future development. The road network on Map 4.1 is intended to provide a framework so that as development occurs, routes have been identified to serve this growth. Identifying the general location of these routes now can help illustrate the possibility and intention for a complete network of roads in advance of development, rather than trying to identify and cobble routes together parcel by parcel as land is developed. The future construction of these roads will help distribute traffic through a street network in order to avoid overloading any single street with all area traffic. This network of streets also is key to avoiding the congestion and safety issues that will arise if roads are developed in a more piecemeal and unplanned manner. This system of routes can be built as the area grows, ensuring connectivity, improved emergency access, and options for evacuations.

Second, not every road has been identified in this plan. For instance, not all possible subdivided areas depict secondary road networks. Moreover, the subdivision process may require additional secondary or local connections depending on the location, lot layout, and density of the proposed development.

Third, routes need not be constructed in the exact location as depicted on the map. The routes were drawn on a planning level; with the intent to avoid major impacts, consider constructability, and maintain acceptable grades. However, design and permitting requirements and input from the neighboring/affected communities and community council are likely to change some of the routes.

Furthermore, the following issues have been identified for the four special study areas noted on Map 4.1. Scoping may raise further issues.

A. North-south connections between DeArmoun and Rabbit Creek Road in the area from Elmore to Evergreen Street. Connections in this area will need to resolve the most practical creek crossings, traffic control through the neighborhoods, and intersections with Rabbit Creek Road in light of its predicted Level of Service (LOS) F traffic. Challenges along the Elmore alignment include grades and sightlines (particularly at the Rabbit Creek Road intersection), grades down to Elmore Creek, the valley at Rabbit Creek, the natural gas line, and the water utility line.

B. East-west connection of Jamie Road or Shangri La area to 152nd Avenue. This east-west connection must be phased after connections to Mountain Air Drive are in place and improvements have relieved congestion along Golden View Drive from 152nd to Rabbit Creek Road in order to avoid further impacts to the Rabbit Creek/Golden View intersection. Grades and soils are further concerns.

C. North-south road connection from Bainbridge Road to DeArmoun Road. The construction of a road intersection at the curve on lower DeArmoun Road is not desirable until the realignment of the road is complete or further safety improvements are made on it at the Bainbridge Road alignment.

D. East-west connection from south Golden View Drive to lower Potter Valley Road. The road will have to be designed to serve as a collector for new development in the existing Legacy Pointe area, as well as carry traffic from the upper Hillside, as an alternate route to Golden View Drive. The alignment and design must consider grades, wetlands, streams, traffic volumes, and the amount of cut-and-fill. The new collector

The lower part of Rabbit Creek Road is known for difficult winter driving conditions.

The proposed road network takes into account an increased traffic capacity in some areas, as well as emergency access and impact on the character of the area's neighborhoods.

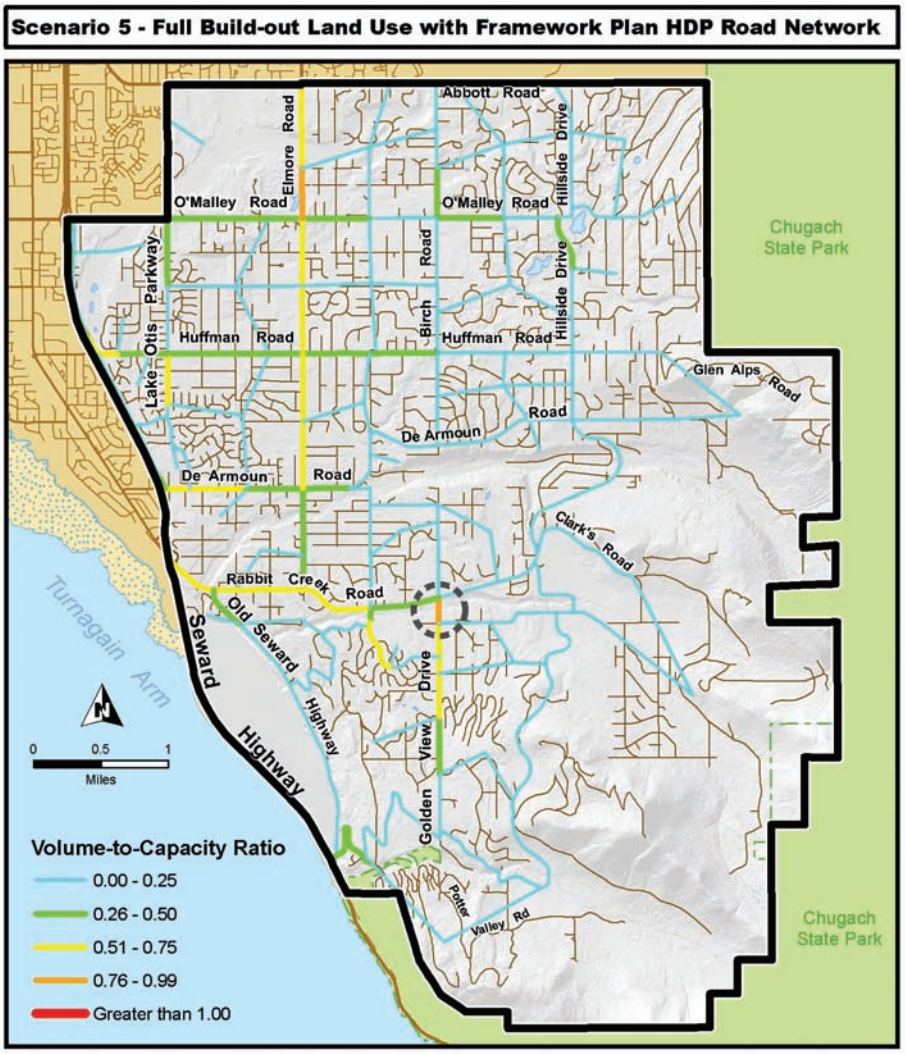
must be phased with improvements to the lowest curve on Potter Valley Road and the intersections of the Old and New Seward Highways as traffic volumes increase.

Evaluation of Proposed Road Network

- **Traffic Projected with the Base Case, Build-out Land Use Scenario:** As part of this planning process, a traffic model based on the build-out land use scenario was developed. This model evaluated the performance of the existing road system with and without the proposed Hillside District Plan road network of primary and secondary roads. Several scenarios were examined during the Hillside District Planning process and are described in the HDP Framework Plan Supplement, "Transportation Alternatives Report" of October 2008 (referenced in the list of Hillside District Plan Supporting Documents, Appendix A). Without the proposed roads, Golden View Drive was the only road that was projected to be significantly over capacity (Table 4.3, Scenario 2). With the road connections and full build-out, the model indicates that Golden View Drive and Rabbit Creek Road perform well under capacity (Table 4.3, Scenarios 3 and 4).

  Map 4.2 corresponds to Scenario 5, Full Build-out Land Use with Framework Plan HDP Road Network. Scenario 5 assumes full build-out of the Hillside and the full set of road connections proposed in the HDP Framework Plan, minus road segments such as Bridgeview Drive to Golden View Drive and Rabbit Creek Road to Hillside Drive, which were pulled out of the full HDP roads network due to neighborhood concerns and potential wetland impacts. Results from the model indicate an increase in traffic volumes on Elmore Road and Golden View Drive for Scenario 5, as compared to Scenarios 3 and 4, but the intersection remains under capacity. With the recommended connections (Map 4.1), all Hillside roadways are anticipated to function without unacceptable congestion (Map 4.2). The critical improvements needed to reduce the congestion along Golden View Drive are the additional connections to Rabbit Creek Road from Mountain Air Drive (running east of and generally parallel to Golden View) and the new road through the Legacy Pointe Subdivision (at the south end of Golden View Drive, extending down to Potter Valley Road). In addition, the plan proposes improving internal circulation in the area by extending 156th Avenue (which runs parallel to and just south of Rabbit Creek Road) east of Golden View Drive to Mountain Air Drive.

Map 4.2
Hillside Traffic Projections at Full Build-out



Map 4.2 shows Hillside traffic projections for Scenario 5 (Full Build-out Land Use with Framework Plan HDP Road Network).

Table 4.3, shows the Volume-to-Capacity Ratio for Golden View Drive between Rabbit Creek Road and Ricky Road (circled in the map with a dotted line) under each of the five traffic scenarios examined in the HDP Framework Plan (referenced in Appendix A). Color shading in the Average Daily Traffic Count column of Table 4.3 corresponds to the color coding in the map legend.

This traffic modeling analysis was performed as part of the Hillside planning process to evaluate the performance of the existing road system with and without the proposed Hillside District Plan road network of primary and secondary roads.

Table 4.3
Volume-to-Capacity Ratio

Scenario No.	Scenario	Average Daily Traffic Count: Golden View Drive between Rabbit Creek Road and Ricky Road
1	LRTP Traffic Forecast (2027)	11,235
2	Full Build-out Land Use, with LRTP Improvements	14,856
3	Full Build-out Land Use, with Full HDP Road Network	9,038
4	Full Build-out Land Use, with Full HDP Road Network and Increased Density on Lower Hillside	9,113
5	Full Build-out Land Use with Framework Plan HDP Road Network	11,574

One of many Hillside roads that does not meet Municipality of Anchorage standards.

- **Traffic Projected with the Lower Hillside Controlled Growth Land Use Scenario:** The team examined anticipated traffic levels based on a lower Hillside Controlled Growth Land Use scenario (in which the housing density in the lower Hillside would have increased), with proposed roadway improvements in place. The model results indicate that the added density would modestly increase traffic on the lower Hillside but that none of the roadways would be over capacity. The roadways that would be affected by additional trips are Elmore Road, lower O'Malley Road, and lower DeArmoun Road.
- **Emergency Access:** The recommended road network was designed to address fire risk and current limitations of emergency and evacuation routes for moving equipment and fire fighting personnel. Wildland fire risk for some areas of the Hillside is of great concern, and a number of areas lack road network connectivity. A map of transportation issues on page 19 of the April 2008 Transportation Alternatives Report (Transportation and Trails Supplement to the Hillside District Plan Framework Plan, referenced Appendix A. Hillside District Plan Supporting Documents) shows the highest risk areas for wildfires and how the proposed roadway network responds to these areas. This plan recommends key connections to the existing road network to provide better emergency accessibility.
- **Impact on Neighborhood Character:** Recommended roadway connections will affect the residential quality of some neighborhoods. This is, to some extent, already occurring in an unplanned manner. Cut-through traffic happens in multiple locations on roads not designed for this purpose. Key concerns of cut-through traffic and high-speed traffic in neighborhoods should be mitigated through road design. Some connections may have emergency-only gates (e.g., Luna Street at Prominence Pointe) to avoid funneling traffic off primary local roads onto neighborhood streets.

Policy 9-B

Apply recently adopted municipal road standards, and amend as appropriate, to accommodate challenging site conditions and rural character, including bedrock, steep slopes, and sub-alpine and alpine elevations with the purpose of minimizing cut-and-fill, disruption to natural drainage, and visual impacts. In the new standards, include the use of gravel roads in limited circumstances.

Background

Over the course of preparing this plan, a number of people suggested the need for new or modified road design standards for the Hillside. Prior to completion of the Hillside District Plan Public Hearing Draft, the Municipality adopted new road standards for the Municipality as a whole, including the Hillside. These new standards are included in the Design Criteria Manual (DCM). Because many people are not aware of these new standards, they are summarized in Table 4.5 (also addressed by HDP Policies 14-M and 14-N).

Road design standards are set considering the way roads function within the system and the physical character of the land. Standards ensure proper design and a safe operating environment. Special consideration must be given when designing roads in a hillside environment. Slopes, depth to bedrock, cut-and-fill, drainage, wetlands, and topography pose unique challenges and require innovative strategies on the Hillside. Hillside residents have made clear their preference for roads that fit the rural character that exists in much of the district (Figure 4.4).

Figure 4.4
Rural Roads – Typical Section

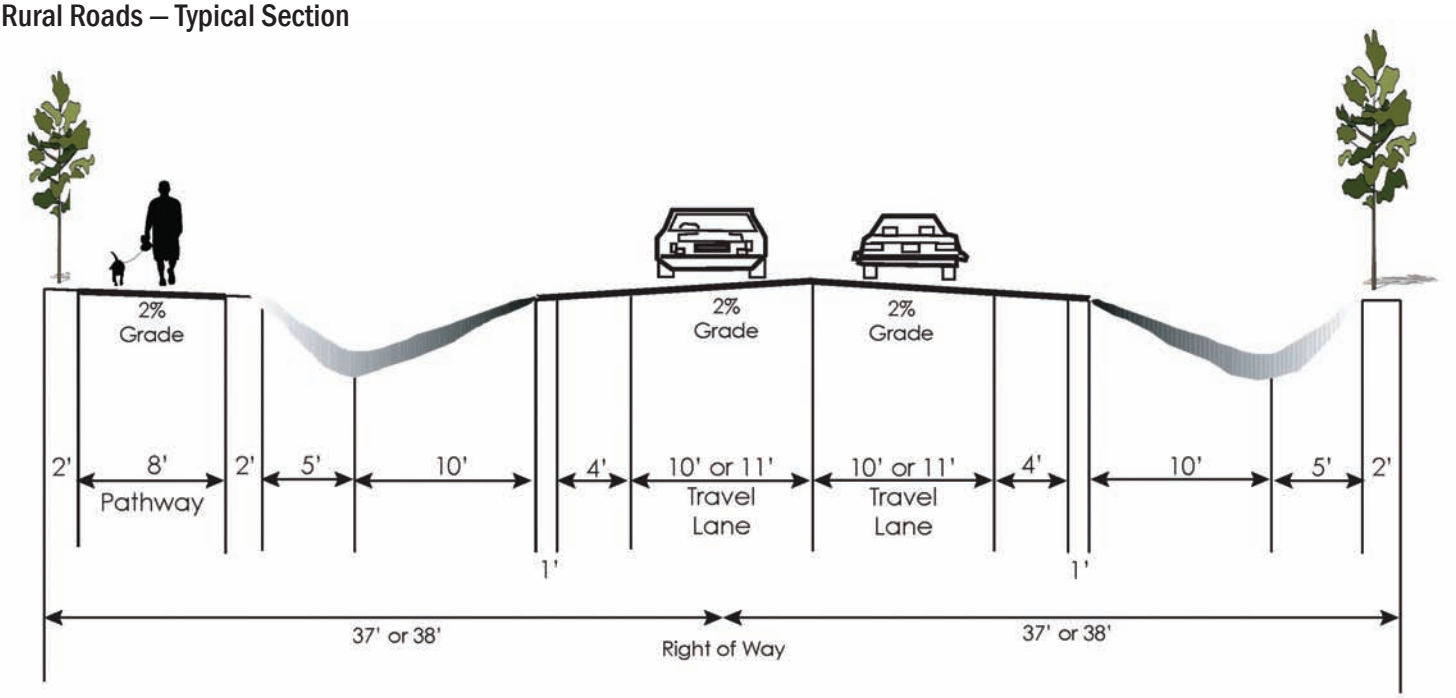


Figure 4.4 is the typical section for a rural collector. For local secondary roads, a typical section would have a 50-foot right-of-way and would include 20- to 24-foot surface widths (10- to 12-foot travel lanes), depending on average daily traffic (see Table 4.5). These local roads would include 2- to 4-foot shoulders, wide enough to accommodate pedestrians.

This recently adopted set of MOA road standards is briefly summarized below; a more complete discussion of these standards is presented in the Implementation Chapter.

- Develop a road system that reflects Hillside character. Paving is required on public roads, but strip-paving (no curbs and sidewalks) and narrower rights-of-way are allowed in specific situations. This approach is intended to recognize the need for adequate emergency access, the desire to retain rural character, and the tradeoff between construction costs and maintenance costs.
- Road standards will vary based on context. The Hillside District Plan defines three areas where different road standards are appropriate:
  - Urban: Portions of the Hillside District that are within the Anchorage Roads and Drainage Service Area (ARDSA).

Table 4.5
General Standards for New Roads

Setting (related to Land Use Map)	Average Daily Traffic (ADT) greater than 2,000	ADT 2,000 to 500	ADT 500 to 100	ADT less than 100
Areas three dwelling units per acre (DUA) or greater: • Residential • Commercial • Park and Natural Resources • Community Facility in areas generally	• Surface paved (with curbs and gutter) • Min Surface Width: 24' • Max Slope: 8%	• Surface paved (with curbs and gutter) • Min Surface Width: 24' • Max Slope: 8%	• Surface: strip-paved • Surface width: 20' • Max slope: 10% *(Option for 12% with variance*)*	• Surface: strip-paved • Surface width: 20' • Max slope: 10% *(Option for 12% with variance*)*
Areas less than three dwelling units per acre (DUA): • Residential • Park and Natural Resources • Community Facility	• Surface paved (with curbs and gutter) • Min Surface Width: 24' • Max Slope: 8%	• Surface: strip-paved • Surface width: 24' • Max slope: 10%	• Surface: strip-paved • Surface width: 20' • Max slope: 10% *(Option for 12% with variance*)*	• Surface: gravel or strip-paved • Surface width: 20' • Max slope: 10% *(Option for 12% with variance*)*

**The variance is a solution of last resort; it is not to be used as a standard practice or considered the minimum acceptable design to work from. See also HDP Policies 14-M and 14-N.*

- Central Hillside: Rural DCM standards, with the possible exception of major east-west streets.
- Southeastern: Rural DCM standards.

Table 4.5 shows the standards for new roads. The standards allow for narrower rights-of-way for low traffic volume roads in rural settings. Rural streets are strip-paved (paved streets without curb and gutter or sidewalks), with shoulders wide enough to accommodate pedestrians, drainage ditches, and low ambient light levels (detailed in Chapter 6. Implementation, Part 2: Development Standards and Procedures). Urban streets typically have curb and gutter, lights, storm drains, and sidewalks.

These are minimum standards; if an individual, developer, homeowners association, LRSA, RRSA, or independent entity prefers higher standards, this plan does not preclude such a decision. Detailed road design standards can be located in the municipal Design Criteria Manual and the Subdivision Standards of Title 21. The design standards for all the existing major east-west streets connecting the Hillside to the Seward Highway (Rabbit Creek Road, DeArmoun Road, Huffman Road, O'Malley Road, and Abbott Road) are state owned; and the design standard applied to these streets is determined by the State.

Existing primary or secondary streets that are currently not paved should be priorities for paving, with the final decision on timing to be determined working with local LRSAs, RRSAs, independent entities, and the proposed Hillside-wide management entity board. Other streets that are currently not paved may be gradually improved over time to reduce dust and maintenance costs. This will occur slowly, based on available funding and considering neighborhood character and preferences. Increased paving may result in higher-speed traffic unless adequate traffic-calming measures are taken. The survey conducted for the HDP showed that the majority of Hillside residents living on large lots consider unpaved roads an integral part of their rural lifestyle.

The neighborhood will have an opportunity through the context sensitive solutions strategy approach to participate at the earliest phase to ensure that the transportation project is in harmony with land use and the environment so as to make the improvement blend in with the surrounding community.

Policy 9-C

Prioritize maintenance and upgrades on primary and secondary roads, placing emphasis on projects that address existing safety and efficiency concerns, with optimum use of existing infrastructure and supporting efficient growth patterns.

Background

Map 4.3 identifies the general set of new and/or improved roads needed on the Hillside. Decisions on the specific priorities for making these improvements will be worked out in the future by the Hillside Roads, Trails and Drainage Service Area. In support of the infill, redevelopment, and transportation efficiency policies of Anchorage 2020, it is not a priority to publicly fund Hillside road or drainage extensions that primarily serve undeveloped residential land (i.e., fix existing problems before funding new projects). Road, drainage, and utility extensions that primarily serve undeveloped residential lands shall remain the responsibility of the proposed development.

Policy 9-D

Upgrade Old Seward Highway to a multi-modal facility while retaining its rural and recreational character.

Background

The Old Seward Highway should be upgraded through a context-sensitive design to retain the highway's rural and recreational character and to integrate natural landscape features, resource values, and recreational uses with the road corridor improvements. The design should ensure safe multi-modal connectivity between parks and open space areas along this route, including: municipal parkland at both Rabbit Creek and Little Rabbit Creek; the Bird Treatment and Learning Center; trails and other open space features shown in the Hillside District Plan and the HLB Potter Valley Land Use Analysis; Potter Marsh (Coastal Wildlife Refuge); and destinations of Chugach State Park (Potter Valley greenbelt, historic Potter Station, and Turnagain View trailhead).

Policy 9-E

Prior to the establishment of the Hillside Road Management Entity, avoid new public projects that increase problems on substandard parts of the existing road system.

Background

Because there are large undeveloped tracts and many substandard roads in the Hillside District, proposed road upgrades and

extensions have the potential to spur traffic increases on substandard roads well outside of the extension areas. The road management entity (locally controlled by Hillside residents) will have the responsibility to track and coordinate with plans by ADOT&PF and the MOA Traffic Department, including prioritizing future funding requests. Such coordination and funding will not occur until HDP Policy 12-A (to form the management entity) is implemented. Until the management entity is in place to coordinate the phasing of major road upgrades, there is a general intent to avoid new public projects that increase problems on substandard parts of the road system. This does not impede private funding of road extensions.

Roads double as pedestrian paths: Golden View Drive (above); out for a stroll on Potter Valley Road (below).

Goal 10. Trails

Develop a Hillside trails system to benefit Hillside residents and visitors to the area:

- **Design the trail system so that it links neighborhoods and connects to schools, parks, area destinations, access points to Chugach State Park and the citywide trail system; and**
- **Develop trails that serve a variety of uses and users, including trails that serve as transportation and recreation.**

Background

Trails are an important form of community infrastructure and serve a wide array of functions in the Hillside District. Multi-use trails and sidewalks (in and around neighborhoods, near schools, and along major streets) are an integral part of the total transportation system, providing mobility and accessibility. Within parks and open spaces, trails and footpaths provide healthy recreation opportunities, enhance community life, raise nearby property values, attract visitors, and provide access to some of Anchorage's notable outdoor attractions, including Chugach State Park.

Trails in the Hillside District are popular with local residents and visitors. At least 200,000 users a year come to the Chugach through the Hillside area each year (from all across Anchorage and beyond) usually seeking a parking spot first, and then some form of access to open land. Based on the level of use at existing trailheads (described in sidebar page 1-16), most of these visitors want to reach the scenic alpine country and ridges found in the

The Hillside area provides a wide range of trails including roadside pedestrian paths, popular bike routes, and walking trails on public (and private) land.

state park; some walk through land that might look like state park open space but is in fact private property.

In addition to this destination demand, many Hillside residents enjoy walking on the (mostly) quiet roads in their neighborhoods. Over time, the continuing growth of the area will tend to reduce opportunities for quiet walks through neighborhoods.

In many places on the Hillside, trails infrastructure and management of parking areas, trash services, signage, and general trails use has not kept pace with demand. Evidence of these problems includes overflowing parking areas, parking in places not intended as trailheads, and, on occasion, problems with trespass, trash, and vandalism.

A range of conflicts and user pressures have mounted over the years, reflecting this strong demand and historic limitations in services, access, and management. These issues are intensifying with new development and will likely escalate as remaining undeveloped private land is developed on the southeast Hillside. In response to these issues and opportunities, the Hillside District Plan provides policy on two major topics:

- Trails, trailheads, and infrastructure needed now and into the future to adequately serve demand.
- Improved means to fund, acquire, develop, and maintain this system, and an improved institutional arrangement to fairly and efficiently fund this work.

Policy 10-A

Identify proposed trails and trailheads to improve the system of trails within the Hillside District and access to Chugach State Park.

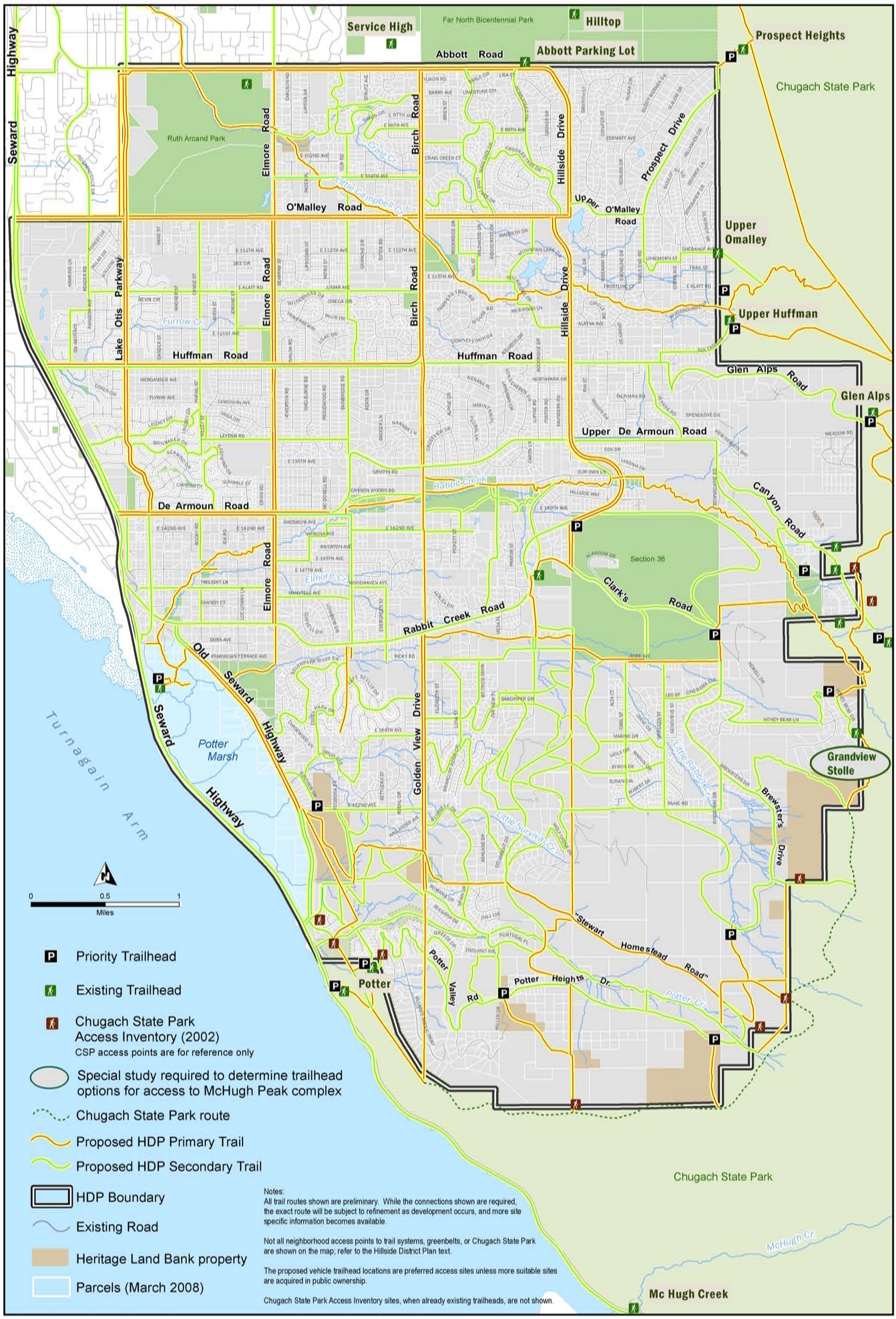
Background

The Hillside District Plan establishes a Hillside-wide network of trails, mostly running east-west or north-south. Trails are planned at regular intervals, linked with larger trailheads about every mile on public lands along the border with the Chugach State Park. This system will serve local and regional needs well into the future. The trail system recognizes the desire for both roadside and natural-setting trails and the need to link Hillside trails to trails in the remainder of Anchorage. Similar to the roadway plan, trails are categorized as primary (regional access) or secondary (district access), as illustrated in Map 4.6 Existing/Proposed Trail Routes. Similar to the three assumptions for roads, trail routes and trailhead locations shown on the map are not necessarily the final

Map 4.6

Existing / Proposed Trail Routes

Hillside District Plan



Notes:
All trail routes shown are preliminary. While the connections shown are required, the exact route will be subject to refinement as development occurs, and more site specific information becomes available.

Not all neighborhood access points to trail systems, greenbelts, or Chugach State Park are shown on the map; refer to the Hillside District Plan text.

The proposed vehicle trailhead locations are preferred access sites unless more suitable sites are acquired in public ownership.

Chugach State Park Access Inventory sites, when already existing trailheads, are not shown.

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alignments that will ultimately be constructed. The network was drawn at a planning level, with the intent to avoid major impacts, leverage existing public lands and access easements, and consider constructability. Also similar to the approach to roads, while Map 4.6 identifies all the priority regional and district trails in the Hillside District, it is clear that there are local trails that may be needed within or between adjoining neighborhoods; these are not shown on the trails map. Such trails, which serve a more localized function than either regional or district trails, may be identified at the time of development. The HDP acknowledges that there are also some important, long-established trails on private land not shown on the trails map. While these cannot be required to be protected in future developments, reservation of these trails for public use is nonetheless desirable, if means are available.

The possible trail and trailhead network was developed by analyzing previously adopted plans, natural land features, legal access issues, and by gaining input from the public, agencies, and landowners. The network is intended to balance the public desire for connectivity with private property concerns. Trail routes are focused, to the extent possible, on public lands, section lines, and (where necessary) along roadsides. Sometimes these trails follow straight lines and are therefore steep or are located where they provide a more constrained route than what may have existed prior to development.

The map does show some key trail links crossing private land. These trail routes, generally identified in the adopted Municipality of Anchorage Areawide Trails Plan, face challenges similar to new road connections in terms of location, design, and construction. The objective of the HDP is to identify these important connections and routes and express the public intent to make trail connections across or around private property for connectivity to the same extent as the roads indicated in this plan. The HDP recognizes that some traditional use trails will be lost, while alternative options for accommodating access will be explored until an acceptable private/public arrangement can be made.

Most access points to these trails are primarily intended to serve residents living in the area, and thus may include little or no public parking. During platting, special attention will need to be focused on locating trailheads to avoid unsafe or illegal parking situations and undesirable impacts to traffic and neighborhoods.

Points of access into Chugach State Park exist in several places on the Hillside. Many people desire more access points, but selecting sites and paying for access improvements are challenging issues requiring careful site selection, coordination with nearby residents, and improved trailhead management.

Much of the opposition by land owners and developers to trails reflected the current lack of management of trail activities, rather than intrinsic problems with trails.

Potter-Steamboat winter trail.

Policy 10-B

Provide a range of trailheads and parking areas to Chugach State Park, including neighborhood and auto-access trailheads

Background

Demand for better ways into Chugach State Park continues to grow, particularly demand for quick access into scenic alpine terrain. As noted previously, existing access points are overcrowded (such as the Glen Alps and the informal trailhead leading up Rabbit Creek and the backside of Flattop Mountain), with parking that overflows onto adjacent streets. Several small, newly established (and/or newly discovered) access points in the southeast Hillside are also experiencing rapid growth in use. Unwanted side effects of this increasing demand are also growing, including trash problems, disruption of neighborhood character, and wear and tear on roads.

While some people believe that the solution to these issues is to reduce demand, this is not an option. Past experience shows that demand for park access will continue to increase whether or not facilities are improved. The numbers of Anchorage residents and visitors will continue to grow, along with public enthusiasm for Chugach State Park. There is a clear and growing need for access to the McHugh Peak complex, including access from the Bear Valley area; and there are few easy, obvious ways to respond to this demand. Possible alternatives include: HLB land on ridge (site identified in the draft plan); lower elevation sites in the Section 36 parcel; acquisition of private land in the upper Bear Valley area; access at the Brewster Homestead, and expansion of the existing Honey Bear site.

The MOA will work with Chugach State Park, local landowners, and future service area to further explore options and determine what site best meets the interests of local residents and the trail users.

Consequently, a new, more proactive policy is needed – a "package approach" to improved Chugach access. Elements of this package are:

1. **Improved Access Points:** Identify, reserve, and improve multiple pedestrian and small trailhead parking access points to Chugach State Park to diffuse and spread use, and to reduce crowding at any one location.
2. **Alpine Access Priority Trailhead Improvements:** Provide one or more, larger-capacity trailheads at points that can handle

crowds and more traffic without adverse effects on adjoining neighborhoods; this may require new land acquisition and/or Heritage Land Bank land trades.

3. **Improved Funding and Management:** Develop significantly improved new ways to pay for capital improvements and operations and maintenance. This must include law enforcement, collection of park access fees, and trail (and road) maintenance.

Improved Access Points

Fifty percent of all Alaskans live within 30 minutes of the Chugach State Park, and the large majority of the demand from this population is directed to the four dedicated, improved public access sites along the park's border in the Hillside District Plan study area. This plan moves toward implementing existing public policy in support of improved Chugach Access[1] using a three-tiered access approach along the Chugach State Park border:

- Provide neighborhood access easements. Developing subdivisions should provide pedestrian access between lots or at the end of streets and cul-de-sacs within the subdivisions targeted at meeting the needs of the subdivision and immediate neighborhood. These easements would not have parking provided as these locations are not proposed to serve users other than residents within walking distance.
- Provide neighborhood access points. These locations would provide local trailheads and limited parking spaces approximately every quarter-mile or as recommended in the Chugach State Park Access Plan. These locations are intended to serve primarily as access points and recreational amenities for nearby residents; consequently, parking would be provided for less than 10 vehicles, similar to that provided for neighborhood parks such as Moen Park off of Golden View Drive. These parking spaces should be located on Chugach State Park land where physical site conditions allow. Thus roadway rights-of-way should be dedicated when physically possible so that they connect to the Chugach State Park boundary, allowing extension of the roadway by Chugach State Park. Where physical constraints within the park preclude this, parking should be provided in the right-of-way or allocated in the platting process working with developers to provide for limited parking. These parking spaces will need to be developed so that they do not encourage illegal or unsafe parking. Several small pullouts located in the Prospect Heights

Powerline trail to Glen Alps, the best known and frequently overcrowded entry point to Flattop Mountain and Chugach State Park.

1 - Note: Anchorage 2020 Plan (policy 55 and 65); Anchorage Bowl Park, Natural Resource, and Recreation Facility Plan strategy 4 (pages 44-45), strategy 6 (page 49); strategy 7 (page 51); park classification 4 (page 69); park classification 5 (pages 70-71); also pages 81, 83, 88-90, and 97; Alaska Statute 41.21.121 (construct necessary facilities); Chugach State Park Master Plan (Recreation Development Zone along border with Hillside "established to meet intensive recreation needs by providing easy and well defined points of access to parking with facilities as appropriate"); Chugach State Park Trail Plan "large trailheads serve very popular trails and access points . . . planned prior to residential development so that all parties are aware of the proposed trailheads"; Chugach State Park Access Inventory (pages 3-4; 17-18, 21, and Appendix C).

The Hillside District is home to this gully that holds snow late into the spring and serves as a popular destination for backcountry downhill skiers.

Signs at the Honey Bear access point give a sense of the challenges of meeting the large and growing demand for access to Chugach State Park

area (between Glen Alps and the larger Prospect Heights parking area) show how a series of informal access points can fit next to neighborhoods without disruption.

- Provide auto access trailheads approximately every mile along the Chugach State Park border on public lands or as recommended in the Chugach State Park Access Plan. These consist of regularly spaced, improved parking areas labeled "Priority Trailheads." These facilities are intended to accommodate the significant auto-based demand in a way compatible with existing and future Hillside neighborhoods. Trailhead criteria and design standards include:
  - **Access off a primary or secondary road:** Each trailhead with significant auto-based demand should be located so as to direct traffic toward the main road network and away from local and private roads. Secondary roads for access should be minimized. However, in some cases, the goal of providing priority trailheads may require the use of short portions of the secondary road system. In this case, depending upon neighborhood needs, the secondary road may be improved to a higher standard for the portion that serves the larger public.
  - **Located on sizable public parcels:** The Chugach State Park border is located high in the foothills adjacent to predominantly private land. Recognizing this, existing islands of public land are identified and used as public gateways for park access. These sites, labeled as Priority Trailheads, must be large enough to both accommodate significant auto demand and buffer private landowners. Given the typical slope, wetland, and other development constraints, some land trade and/or acquisition may be required to create workable sites large enough to accommodate at least 30 but potentially up to 150 cars. Parking areas adjoining residential areas should include a substantial natural perimeter buffer to screen parking from adjoining uses. Wherever possible, this should be a 100-foot vegetated buffer, but site constraints may not always allow a buffer of this size.
  - **Provide adequate facilities and ongoing management:** Each priority trailhead will need to include adequate visitor facilities and in some cases small on-site (potentially volunteer) ranger stations. These trailheads should be developed to provide a sustained management presence

to address issues associated with such a highly used park (trash, vandalism, theft, fire, public safety, and restrooms). The Eagle River Nature Center provides one example of how Chugach State Park access can become an asset within a neighborhood (even after being a source of stress and conflict for many years) once adequate facilities and management are provided. The Chugach State Park Access Inventory update evaluated the type of facilities that would best address the needs for a management presence while recognizing scarce Chugach State Park financial resources.

Alpine Access Priority Trailhead Improvements

It is important to meet the strong demand for larger-scale, auto-based alpine access, which can be best done by improving larger-capacity trailheads in the near future. Again, these must be located on public lands that can handle larger crowds and more traffic without imposing adverse effects on adjoining neighborhoods, even if this requires new land acquisition and/or land trades with the Heritage Land Bank. The provision of these parking locations is important for relieving the pressure on neighborhoods to meet demands for access to Chugach State Park. Two areas where there is strong user demand and where currently undeveloped land could accommodate such trailheads include:

1. **Bear Valley:** The Brewster Homestead at the top of Bear Valley is a key component to a successful access system. However, the Chugach State Park boundary is distant from Brewster Road, and topography and hydrology prevent the extension of a roadway to the park boundary line. Recognizing this, the Municipality should work with the Brewster Homestead landowners and through local nonprofit organizations to acquire a site for parking and trail access to the park boundary in this area. This would connect to access locations on the Potter Valley side of Baldy Ridge, providing a network extending to the south from the Brewster location.
2. **Potter Valley:** Similar to the Brewster Homestead, the Stewart Homestead should also be considered as a component of the network of public access points to Chugach State Park that provides public parking in order to relieve pressure from neighborhoods. This is another location where the plan recommends working with landowners and nonprofit organizations to provide or acquire parking.

These two proposed primary trailheads in Bear Valley and Potter Valley, in combination with the existing trailheads at Prospect Heights and Glen Alps, meet the goal of a large trailhead about every mile along the Chugach State Park border on the Hillside. Another reason to prioritize these locations is that there is currently limited or no housing development nearby.

Policy 10-C

Apply Anchorage Bowl trail standards for recreational, off-street rights-of-way, as well as roadside facilities.

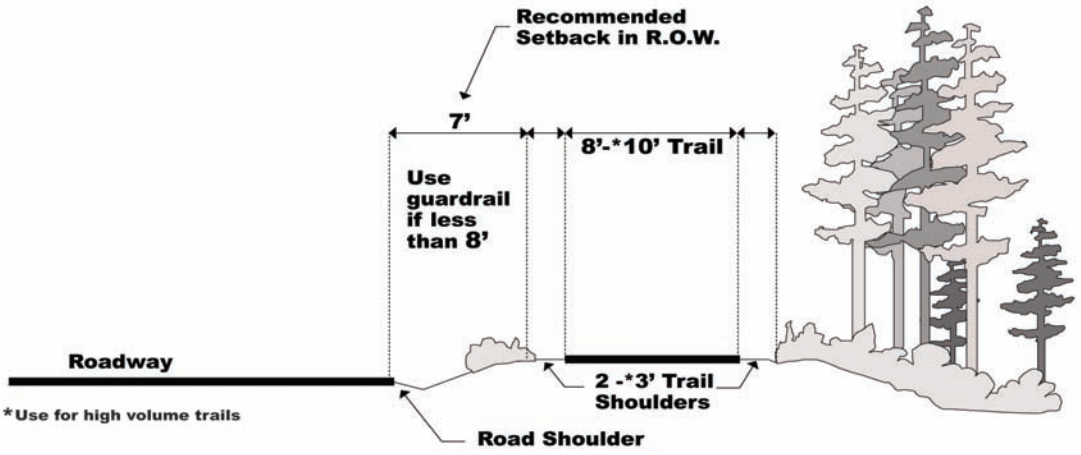
Background

The Hillside District Plan applies different trail standards in different areas, as outlined below.

Roadside Trails: The Hillside District Plan recommends applying adopted Anchorage-wide standards for roadside trails and walkways in the Hillside District. General parameters for planning-level trail location and design are provided in the Areawide Trails Plan, and specific standards and requirements are located in the Municipality's Design Criteria Manual and Title 21. Roadside trails also would benefit from consistency with Anchorage Pedestrian Plan policies to enhance safety and accessibility, particularly associated with school access and neighborhood connectivity.

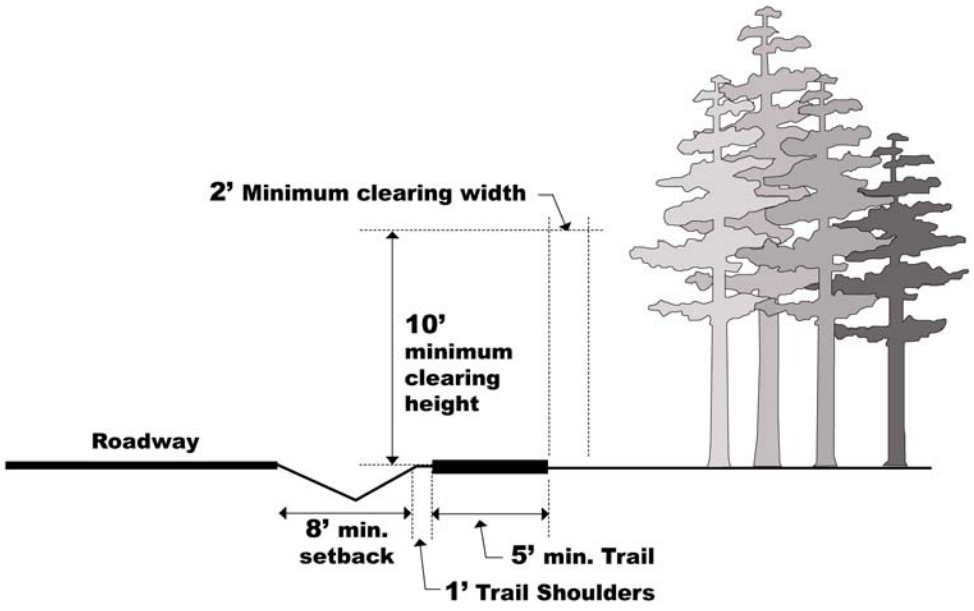
Figure 4.7
Trail Development

The following illustrations for trail development show current trail standards. The final design of any trail should best match the surroundings, serve user preferences and expectations, and be consistent with the current Municipality of Anchorage Design Criteria Manual for trail design standards.



Urban Typical Section: ADA-accessible separated path, sidewalk, or paved trail located on one or both sides of the roadway.

Figure 4.7
Trail Development
(continued)



Rural Typical Section: Trail/pathways associated with the road network are recommended to be on one side of the roadway and separated "where possible and appropriate from the roadway to increase pedestrian safety and comfort and provide space for snow storage."

Natural Setting Trails: Natural setting trails and walkways may be located within greenbelts and parks, located along section line or utility easements where no road construction is anticipated, or located in "open spaces between subdivisions to allow connectivity in a natural setting" (recommendation from the October 2006 Hillside Subarea Transportation Study, page 41). It is recommended that, to the extent possible, natural setting trails should be located and developed to take best advantage of views, scenery, and the natural setting, and to be complementary to nearby development.

Trails subject to new Title 21 Subdivision Standards in Section 21.08.040.D Chugach State Park, Community Use Areas, and Natural Resource Use Areas will follow easement provisions required by that municipal code language. Portions of the Hillside present particular challenges to developing trails that are safe, attractive, and have minimal environmental impact. Hillside trails will be designed to maintain and protect the Hillside's natural setting and rural character. General objectives for trail design are presented below, recognizing that these objectives do not apply in all situations and that flexibility is needed to respond to the unique conditions of individual settings. Because of Hillside-specific slope and erosion considerations, some natural setting

trail segments may require a wider than typical easement, or necessitate the use of retaining walls to ensure safe and reasonable trail development. Where trails are constructed, cut-or-fill slopes associated with development are recommended not to exceed a ratio of two feet horizontal to one vertical foot (2H:1V) to minimize sloughing and support slope re-vegetation. In lower traffic and alpine areas, the use of stabilized single track trails that follow slope contours is recommended. These minimize the disturbance footprint, protect scenic and natural setting values, and will allow greater opportunities for including trails on constrained sites. All natural setting trails are recommended to be developed to a grade of 20 percent or less.

Where possible, separate roadside trails from roads. This can provide a more enjoyable trail experience and reduce problems of winter snow being stored on pathways. Avoid the use of overly steep terrain, including section lines that may provide legal access but are too steep for sustainable use. Where possible, avoid the use of utility easements and avoid locating trails in creek setbacks. For trails in particularly complex steep terrain, consult a professional trail designer.

It is preferable to have public trails on public land. This is more important as the level of use increases. For regional and district trails, the strong preference is for land in public ownership or reserved through public easement; local trails should be on public land where possible but can also be on land held by homeowners associations.

Natural Setting trails may be paved in higher use areas in order to protect natural resources, or they may be soft surface trails developed to a minimal level to retain the natural experience. Multi-use paved trail design standards are provided in the Municipality's Design Criteria Manual. New citywide standards are being developed by the Anchorage Parks and Recreation Department for soft surface trail classification, development, and maintenance.

Improved Trails and Trailheads Funding and Management

Many of the adverse side effects of trail use and Chugach State Park access will only be resolved through a better funded, more aggressive management and development program. This must include law enforcement, collection of park access fees, and trail (and road) maintenance and trailhead improvements. Hillside residents have voiced strong support for trails and, based on the Hillside survey results, a willingness to pay more for trails. Clearly,

new ways are needed to pay for capital improvements and for operations and maintenance. Because Chugach State Park access is an Anchorage-wide and regional concern, funding should be obtained from more than just Hillside residents.

A number of parties currently share some role on trail issues; but historically no single entity is responsible, and there has never been a clear or easy way to coordinate efforts. Obvious public entities include: Chugach State Park, the State of Alaska, the Municipality of Anchorage, and the public at large who want legal road and trail access along with adequate services such as parking, rest rooms, trash service, and a management presence to improve safety and prevent illegal activities. Private entities include developers ready to plat and subdivide, homeowners associations, trail user groups, tourism businesses and tourism organizations who want better day trip options, nonprofits, foundations, and conservation organizations.

The challenge in implementing this three-part package is that all these elements need to be in place to fully address Chugach State Park access issues. Incremental development of individual access points, without the full package outlined above, has the effect of directing more demand to a few locations than these sites can easily absorb. This is already happening with the relatively recent opening of the Grandview six-car access point. While the incremental implementation of this package approach does create problems, ultimately it is still the best way to address Chugach State Park access needs, and therefore will be pursued. The right response to the problems at places like the Grandview trailhead is to push ahead and rapidly add additional access points in other parts of the Hillside and Anchorage. By giving Chugach State Park users multiple options, access is dispersed across more destinations and the impact on any one road or neighborhood is reduced. Concluding that no additional Chugach State Park access points are needed is not the right response.

Because of the terrain near the Chugach State Park boundary in the southern Hillside, the HDP proposes several access points to Chugach State Park by developing parking lots on public land near the park boundary, with a primary trail connecting to the park itself. These "walk-in" connections from parking lots are in lieu of road access and may receive heavy use; therefore, they must provide at least an eight-foot-wide gravel surface and a vegetative buffer in any section of the trail connection that may be routed through a subdivision. A 30-foot-wide public easement will be required for these trails to allow for the trail, adjustments

in alignment and construction due to topography and other site constraints, adequate step-aside room for trail users to avoid wildlife, and vegetative buffers to allow a continual natural setting for trail users and privacy for adjoining properties.

Improved funding and management mechanisms for roads and trails are described in greater detail at the end of Chapter 4. Transportation and in Chapter 6. Implementation.

Goal 11. Transit

Improve viability for transit within the Hillside District, including:

- **Supporting the opportunity and potential for park-n-ride lots on the Hillside;**
- **Promoting transit service for the lower Hillside (west of Elmore).**

Background

Transit service on the Hillside has varied during the past 25 years. In the early 1980s, transit service was available across the Hillside, including a complementary park-n-ride lot on the lower Hillside adjacent to the Seward Highway between DeArmoun Road and Huffman Road. More recently, a limited service was provided to the Hilltop Ski Area as support for the National Special Olympics event, but overall transit service has not been well used. Limited transit use on the Hillside is due to the lack of concentrated destinations and the lack of concentrated housing to originate and support transit ridership. In addition, breaks in the road network increase the challenges of supporting efficient and timely service.

An on-demand/on-call transit service called "DART" was initiated in the past to help address some transit needs in selected locations on the Hillside. This type of transit service is a hybrid between regular scheduled routes and no service. A resident would call ahead and a regular transit route close to the Hillside would deviate from its regular route and carry passengers as desired. This service was cancelled due to limited use and limited resources to continue it. Currently, the lower Hillside, west of Elmore Road, and the areas near Service High School and South Anchorage High School have the most potential for transit service. Recent efforts to provide and promote service to the high schools and accommodate student needs have not been successful and were removed as a result.

Policy 11-A

Future route structuring by People Mover should consider service to the University/Medical area from the lower Hillside.

Background

For planning purposes, the Municipality looks for a housing density of about eight to twelve dwelling units per acre as one important consideration of promoting transit service. Other factors that increase the viability of transit service are characteristics such as a major destination or attractions like shopping centers or employment concentrations. The continued low-density residential land use pattern on the Hillside would not make transit service practical in the foreseeable future. Neither the Base Case land use projection nor the slightly altered densities called for in the draft plan change land use densities to a degree that would warrant expanding current transit service area coverage over the vast majority of the Hillside.

Currently, Routes 1 and 2 run south on Lake Otis Boulevard to Abbott Road at the northwest corner of the lower Hillside area. Route 1 turns west and follows Dimond Boulevard and Route 2 turns west and then south through Independence Park to O'Malley Road. Both routes stop at the Dimond Transit Center where transfers can be made. Improvements to the road network may make direct transit service to the University/Medical area possible. Future route structuring by People Mover should consider such service.

Policy 11-B

Create park-n-ride lots in the Hillside District, as needed. Priority is on the lower Hillside in the area between Huffman Road and Rabbit Creek Road, near the Seward Highway.

Background

The Hillside District Plan supports the idea of revisiting and including future park-n-ride lots in the Hillside area. Locations for these lots are not identified in this plan; however, the recent effort of the Public Transportation Department have seen a preliminary interest, need, and benefit for some Hillside residents for a park-n-ride lot.

GOAL 12. Funding, Maintenance and Operations

Create an enhanced and efficient maintenance, operations and capital program for roads and trails within the Hillside District.

Improved funding and management mechanisms for roads and trails are summarized below and described in greater detail in Chapter 6. Implementation.

Policy 12-A

Establish a new Hillside District funding and management entity to manage and finance roads, drainage, built/green infrastructure watershed protection and aquifer recharge, and trails at a watershed and/or community-wide scale.

Background

The Hillside District Plan recommends establishing a new, integrated roads, trails, and drainage management entity responsible for district-wide projects, similar in character to the Chugiak-Birchwood-Eagle River Rural Road Service Area (CBERRRSA). A new service area would have to be approved through a vote on the Hillside.

The Hillside Roads, Drainage and Trail Service Area (HRDTSA) would have jurisdiction over larger roads (with the exception of state-owned roads, unless agreed upon by both parties), drainage, and trail capital improvements within the entire Hillside District. Regular local neighborhood road maintenance would remain the responsibility of existing LRSAs, RRSAs, and independent entities, although the HRDTSA could be made responsible for road maintenance on selected roads or for special situations that LRSAs and independents would be unable to address. All municipal-owned public roads, drainage, and trail facilities within the area would be subject to the authority granted to the new management entity. Service provision would be set to reflect the most equitable, locally supported funding and service strategy. Taxes raised would be outside the municipal tax cap, but may be subject to the service area's own tax cap.

Policy 12-B

Extend the Anchorage Parks and Recreation Service Area boundary to include the entire Hillside District as well as the initial mile of Chugach State Park.

Background

The HDP recommends extending the existing Anchorage Parks and Recreation Service Area boundary to encompass the entire Hillside District, and also extending this boundary approximately one mile into Chugach State Park (as shown on Map 6.4). Extending the service area boundary to include the entire Hillside District will allow the Municipality to generate and spend funds for projects and actively manage trails and other recreation uses in this increasingly popular recreation destination. Extending the boundary into the State Park will allow the Municipality to be able to partner with the State on projects of mutual interest.

Policy 12-C

Create a new funding and management program targeted on improved Chugach State Park access.

Background

The Hillside District Plan recommends that a new mechanism be created to raise funds from the Anchorage Bowl as a whole to improve and better manage access to Chugach State Park. Needed improvements include new trails, new trailheads, improvements to access roads, and improved trail management, as described earlier in this chapter.

Policy 12-D

Develop maintenance, repair, and schedule priorities for roads and trails.

Background

The Hillside Funding and Management Entity will need to set priorities and schedules for the maintenance and repair of roads and trails. In order to ensure the effectiveness of the management entity, an initial prioritization and schedule should be agreed upon with the oversight of and/or input from the Municipality and the State.

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Chapter 5. Water and Wastewater: Public and On-site Systems

Overview

Eighty percent of the Hillside District uses on-site water and wastewater (private wells and septic systems). Since public health is a primary responsibility of local government, the Municipality evaluated the viability of current and future reliance on on-site wastewater systems on the Hillside. The available information indicates that so long as there is proper siting, design, construction, operation, and maintenance of these systems, on-site systems work well today and offer a viable, practical, long-term water and wastewater solution for the Hillside. Because the Hillside is expected to grow from 8,500 to 14,000 dwelling units, it will be important to monitor water quality to ensure that on-site wastewater systems continue to operate effectively and continue to protect the quality of Hillside water resources.

This chapter presents five major strategies to address current and future challenges related to Hillside water and wastewater, with the broad goal of maintaining high water quality into the future:

1. **Neighborhood Wastewater Systems:** These systems offer an alternative to more costly public water and sewer systems where traditional on-site systems are not viable. New procedures and standards are needed to ensure that, where such systems are used, they are well designed, well managed, and work successfully over the long term.
2. **Strategies to Address Lots with On-site Problems:** Action may be needed in specific areas of the Hillside where some on-site systems have a history of challenges.
3. **Well Water Protection Program:** This research and monitoring program will provide more complete, current, and accurate information about Hillside water quality, and a proactive program to educate users on system operations.
4. **On-site Wastewater System Standards:** Improved standards are needed for the installation and operation of on-site septic systems.
5. **Recommended Changes in the Maximum Perimeter of Public Sewerage:** In response to changes outlined in the Land Use Chapter, the perimeter boundary in the upper Potter Valley area will be reduced.

Pictured above, pipes rising from a backyard on-site wastewater system; pictured below, water pipes that were installed near Abbott Loop Road in 2007 by the Anchorage Water and Wastewater Utility. As a whole, Hillsiders are happy with their on-site water and wastewater systems, and most view the prospect of public water and sewer with concern about costs and lifestyle changes.

Water Use on the Hillside

It is estimated that up to 6,800 Hillside residences draw approximately two million gallons of water per day. This represents less than five percent of the 41 MGD (million gallons per day) of surface and subsurface flow from Hillside aquifers estimated in a 1975 U.S. Geological Survey study (cited below). Figure 5.1 (reprinted from the 1975 USGS study) shows the water budget of the Hillside area underlain by sedimentary aquifers.

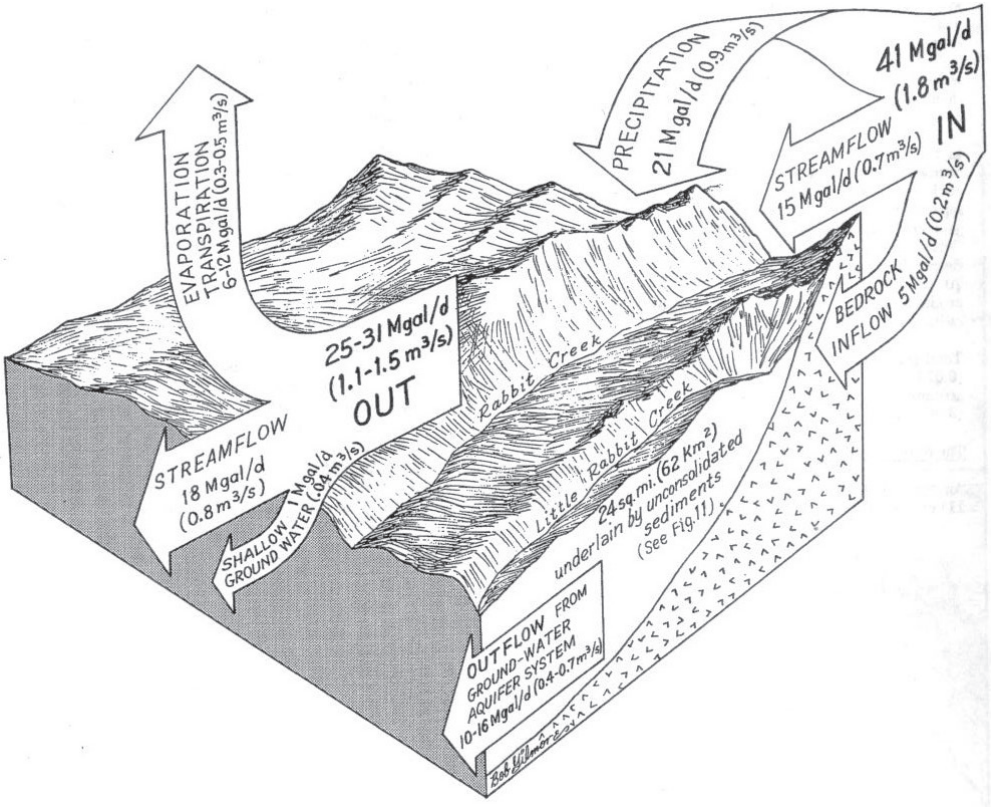
Dearborn and Barnwell (1975), Hydrology for Land Use Planning: The Hillside Area, Anchorage, Alaska: U.S. Geological Survey Open File Report 75-105.

Context: Planning Issues Summary

Public Comments

Public comments received during the planning process clearly indicate that the majority of Hillside residents strongly prefer to continue using on-site water and wastewater systems. The community survey conducted as part of this planning process produced similar findings, with the large majority (77 percent) of local residents stating that they are satisfied with their on-site systems. Local support for continued reliance upon on-site systems is driven by two considerations. First, extending public water and sewer into the area would be very costly (from tens to hundreds of thousands of dollars per home). Second, on-site systems require large lots to function properly. Public water and sewer do not have this limitation. The availability of public water and sewer would create pressures to develop or redevelop at the higher residential density, risking the loss of the rural residential environment that is highly valued by most Hillside residents.

Figure 5.1
Water Budget of the Area Underlain by Sedimentary Aquifers



Science
Evidence regarding the current state of Hillside on-site wastewater systems and groundwater quality show that water quality is good, most on-site wastewater systems are well managed, and continued reliance upon them is safe and effective.

Water
There are many aquifers on the Hillside tapped by residential wells. These aquifers are recharged primarily from rain and snowfall in the mountains, but there is also recharge from shallow groundwater, especially in the middle and upper part of the Hillside. Studies show that current use amounts to approximately five percent of groundwater flow through the Hillside (for a more detailed explanation, see the Hillside Issues, Goals and Choices Report, referenced in the list of Hillside District Plan Supporting Documents, Appendix A).

Although growth from 8,500 to 14,000 dwelling units (most with on-site systems) will significantly increase the amount of withdrawal from these aquifers, it will also increase the recharge from on-site systems. Water shortage has not been raised as a real issue for the expected build-out of the Hillside.

Wastewater
Wastewater treatment by on-site systems is a two-step process. The first step is primary treatment (the removal of sinking and floating solids), which is done in the tank of a septic system; the second step, which is done in the drainfield of a septic system, is aerobic treatment in four feet of unsaturated acceptable soil (converting the effluent through aeration and microbial action into treated wastewater suitable for discharge back into the groundwater). Properly designed, installed, and maintained, septic systems do this efficiently and effectively and can last indefinitely. In contrast, disposal of wastewater through Anchorage municipal sewerage eliminates the potential for local groundwater contamination from substandard on-site systems or poor maintenance practices. Municipal wastewater receives primary treatment, and the effluent is disinfected with chlorine and discharged into Cook Inlet, in accordance with Environmental Protection Agency permit requirements as prescribed by the Federal Clean Water Act.

History of Problems
In the past, although they met code requirements in effect at the time of platting, some lots in subdivisions were approved that were undersized or unsuitable for wet soils, making the

The front range of the Chugach including the Hillside is a major contributor to the Anchorage's groundwater system. Water percolating through Hillside aquifers moves down gradient, feeding wells, wetlands, and streams within and beyond the study area (Figure 5.2).

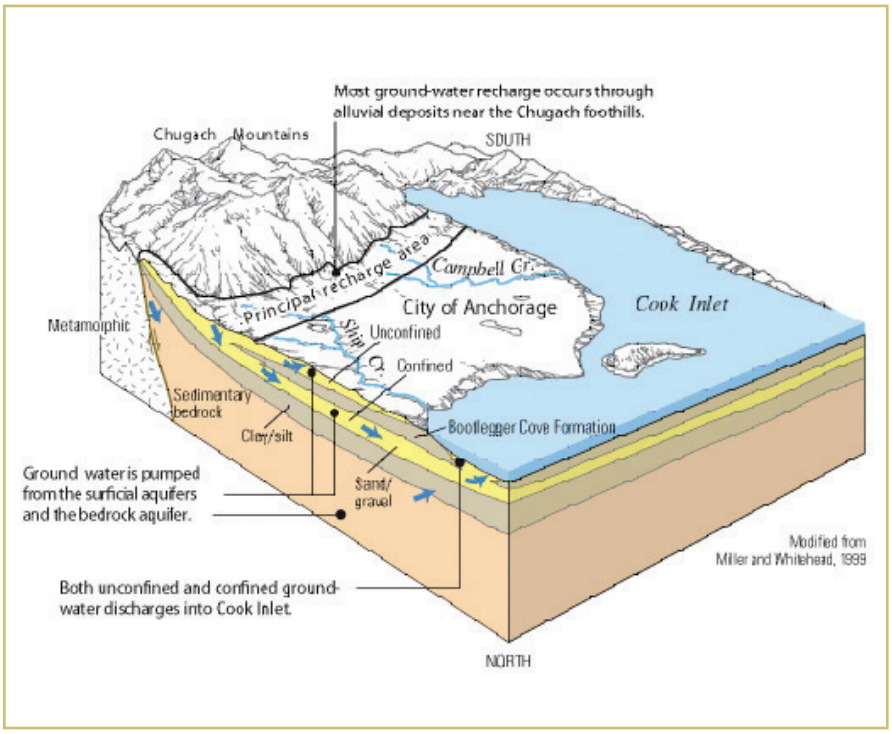
construction and functioning of an on-site wastewater system problematic. Current regulations, procedures, and enforcement preclude this situation from happening again. Most of these substandard lots presently have functioning systems, due to technological advances, diligence in monitoring and regulation, and increased understanding by the homeowners. A few of these lots may not be developable, or if already developed, may eventually have to convert to a holding tank absent alternative solutions, such as neighborhood systems. (Holding tanks are not favored; they are very expensive to maintain, and responsible maintenance can be a problem.) Future development of the Hillside should not see approval of more substandard lots, but ongoing attention must be paid to existing difficult lots.

Well water quality problems can be gauged using indicators such as nitrates and coliform bacteria. The presence of nitrates often correlates to the presence of other organic pollutants. Nitrates may be caused by natural sources and/or human sources, including manure, use of nitrate-based fertilizers, or wastewater effluent leaching into the groundwater.

A few of the public well water systems on the Hillside show upward nitrate trends. Experience shows that improper well seals are often the source of this problem. Improper well seals can be repaired by grouting the wells, which separates the aquifer from surface water and shallow groundwater. Monitoring and maintaining both wells and septic systems is the proper way to maintain high water quality. An improved, more current and comprehensive well water database is needed, drawing from several sources of testing information and using a more structured testing protocol. (See the Well Water Protection Program for details.)

More detail on these issues is contained in supplemental on-site water and wastewater reports to the Framework Plan referenced in the list of Hillside District Plan Supporting Documents, Appendix A.

Figure 5.2
Hillside District and
Anchorage Bowl Aquifers



Background

Water Quality and On-site and Public Water and Wastewater Treatment on the Hillside Today

On-site Water and Wastewater Systems

More than 80 percent of the Hillside homes rely on on-site wells and wastewater systems. In general, these systems are adequately designed and installed, but maintenance of the systems can be hampered by a small-diameter opening to the septic tank. Current wastewater treatment standards in Anchorage are basic compared to the complexity of standards in many other states in the nation. For example, larger-diameter access pipes (manhole-sized), which will improve monitoring and maintenance of on-site systems, are commonly required in other parts of the United States.

On balance, Hillside on-site wells and wastewater systems are working well, although in some areas there has been evidence of poor function due to small lots and/or physical site constraints such as poor soils, shallow bedrock, shallow groundwater, and steep slopes.

Statistics from water quality data collected at 39 public well water systems on the Hillside indicate that nitrate concentrations are well below federal drinking water standards. However, well sampling data within some localized areas show nitrate concentrations above what is typically attributed to natural sources. Between one-third and one-half of these well water systems exhibit a gradual upward trend in nitrate concentrations over time. Increased nitrate levels may be caused by natural sources, and/or human sources, including manure, use of nitrate-based fertilizers, surface contamination from improper well seals, and wastewater effluent leaching into the groundwater. Nitrate levels are important because they are potential indicators of effluent reaching well water. The water quality protection program, presented in HDP Policies 13 G-K of this chapter, addresses this and related topics of interest to ensure the protection of Hillside drinking water.

AWWU is a rate-based (user-funded) utility, meaning that AWWU's primary source of revenue comes from customers not property taxes. To minimize impacts to existing customer rates, AWWU operates under the business principal that the "cost causer is the cost payer." Property owners that wish to receive AWWU service are expected to pay a fair share of the original costs of water and sanitary sewer main construction.

Public Water and Sewer Systems in the Hillside District

The Hillside is served by several types of public water and sewer systems. Public systems serve large numbers of people with water from a single source or collect and convey sewage to a central treatment location.

Public Water Systems

Public water systems can be classified into either community or non-community systems. The Anchorage Water and Wastewater Utility (AWWU) and Potter Creek Water Company, which serve the western edge of the Hillside study area, are examples of community systems. Institutional and large nonresidential users like Huffman Elementary School, Amazing Grace Church, the Alaska Zoo, and the Anchorage Golf Course are examples of two categories of non-community systems.

There are 39 public well water systems in the Hillside District: 19 community systems and 20 non-community systems.

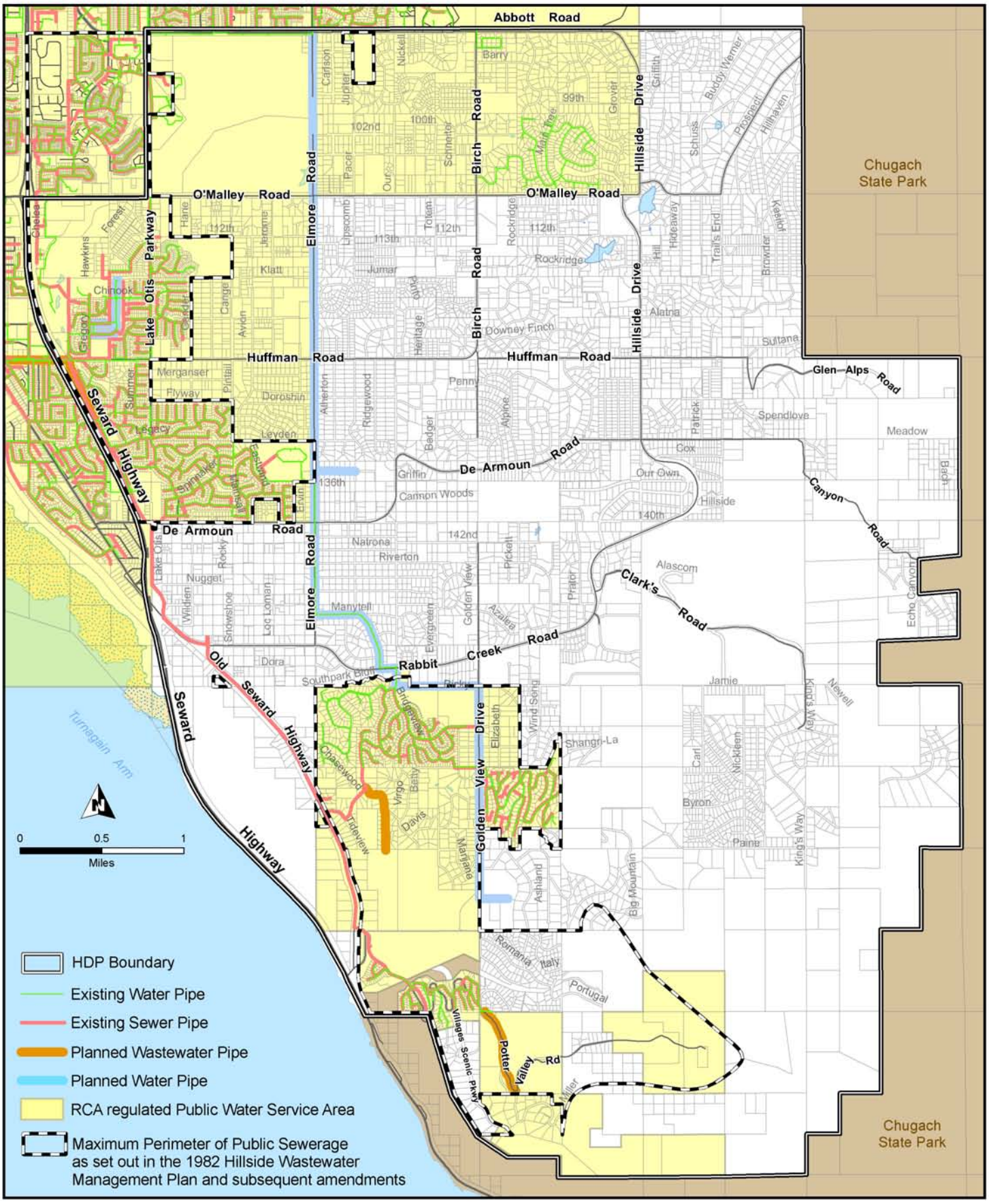
The Anchorage Water and Wastewater Utility is working on several projects identified in its water master plan for the lower Hillside. Known collectively as South Anchorage Water Improvements, they include water transmission piping and water reservoirs designed to provide enhanced water volume and pressure for fire fighting and domestic use within the existing AWWU service area. The master plan projects are shown in Map 5.3.

Public Sewer Systems

Sewer systems serving the public include utilities (such as AWWU) and non-utility systems that provide service to public gathering places. In general, the AWWU public sewer system serves the northwestern portion of the study area and several subdivisions in the vicinity of Golden View Drive and in the lower Potter Valley. The 20 non-utility public sewer systems serve churches, schools, or other public venues located north of Rabbit Creek Road and west of Hillside Drive. Non-utility public systems are not piped and use either holding tanks or on-site wastewater systems to dispose of wastewater.

Anchorage Water and Wastewater Utility Service Area

AWWU and other public utilities are regulated by the Regulatory Commission of Alaska (often referred to as the RCA). This state commission has authorized the utility to provide water service to the area generally west of Elmore Road, north of DeArmoun Road and at the south end of Golden View Drive.


Abbott Road
O'Malley Road
Huffman Road
De Armoun Road
Rabbit Creek Road
Clark's Road
Canyon Road
Glen Alps Road
Seward Highway
Old Seward Highway
Elmore Road
Birch Road
Hillside Drive
Golden View Drive
Lake Otis Parkway
Chugach State Park
Turnagain Arm
0 0.5 1 Miles
HDP Boundary
Existing Water Pipe
Existing Sewer Pipe
Planned Wastewater Pipe
Planned Water Pipe
RCA regulated Public Water Service Area
Maximum Perimeter of Public Sewerage as set out in the 1982 Hillside Wastewater Management Plan and subsequent amendments

AWWU is authorized by the commission to provide wastewater service to the entire Hillside District. However, the Municipality of Anchorage, through the 1982 Hillside Wastewater Management Plan, restricts AWWU-piped sewer service to the area generally near and west of Lake Otis Parkway and north of DeArmoun Road and to several subdivisions along Golden View Drive and in the Potter Valley area. This area, labeled the Maximum Perimeter of Public Sewerage, and the AWWU sewer collection system are shown on Map 5.3.

Costs and Obligations to Connect to Municipal Water and Sewer

AWWU is a rate-based (user-funded) utility, meaning that its primary source of revenue comes from customers, not from property taxes. To minimize impacts to existing customer rates, the utility operates under the business principal that the "cost causer is the cost payer." Property owners who are within the AWWU service area and who wish to acquire AWWU services are expected to pay a fair share of the original costs of water and sanitary sewer main construction.

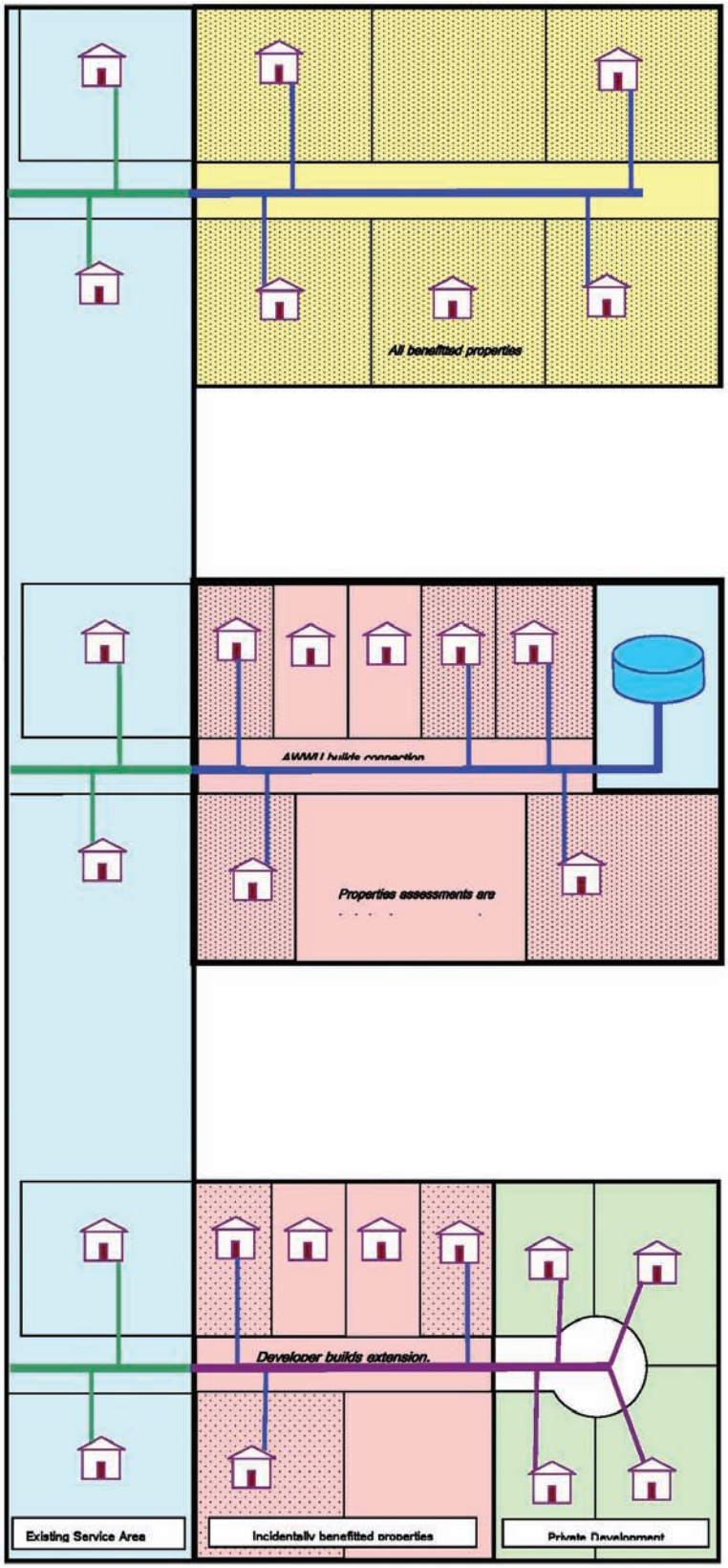
Water and sanitary sewer mains can become available to a property within the AWWU service area by any one of the three following extension programs:

- Special Assessment Improvement District
- Mainline Extension Agreement (Private Development)
- Utility Capital Improvements

Figure 5.4 gives a general picture of options for extending water and sewer and the costs allocated for this action.

More detailed information on the three extension programs may be found in the document Hillside District Plan Alternatives: A Framework for Public Discussion, referenced in the list of Hillside District Plan Supporting Documents, Appendix A.

Figure 5.4
Three Programs for Extending Municipal Water and Sewer Service



Special Assessment Improvement District. Property owners petition AWWU to provide service and vote to assume the costs of construction. AWWU administers balloting, design, and construction. The cost is recovered by special assessment assigned to each parcel in the district (shaded lots). Connection is not required, but all properties are assessed if the ballot passes, regardless of whether an individual connection is made.

Utility Capital Improvements AWWU extends a pipe to address a service requirement for existing customers (for example, a reservoir site). Homes along the route are incidentally benefitted by the construction, and are notified of the availability and estimated cost of hookup. Properties are assessed a Levy-Upon-Connection (LUC) only when the property owner chooses to connect (shaded lots).

Mainline Extension Agreement (Private Development) A land developer establishes an agreement with AWWU to extend underground utilities. Homes along the route of the extension are incidentally benefitted and are notified of the availability and estimated cost. Property owners choosing to connect within three years of the completion of construction pay an assessment to reimburse a portion of the developer's project cost. After three years, the property owners can connect to the system without the special assessment charge.

Goal and Policy Summary

General Recommendation for Use of On-site, Public Wastewater Treatment and Neighborhood Wastewater Systems

GOAL 13. On-site, Public Wastewater Treatment, and Neighborhood Systems Provide a combination of on-site, neighborhood and public water and wastewater services in a manner that protects public health, ensures environmental quality, provides cost-effective installation and operation, and meets resident and landowner needs. Preserve the viability of on-site water and wastewater systems and the quality of domestic water supplies.	
Primary Policy	Implementation
13-A. The existing boundary of the AWWU public water and sewer service area on the Hillside, as defined by existing Maximum Perimeter of Public Sewerage, will generally stay the same as it is today, with the exception of one small area: upper Potter Valley (boundary contracts).	HDP Policies 13-B — 13-E.
Neighborhood Systems	
13-B. Permit the use of neighborhood wastewater treatment systems as a viable treatment technology for the Hillside District only outside of the Recommended Maximum Perimeter of Public Sewerage after HDP Policies 13-C, 13-D, 13-E, 13-F, 13-G, 13-H, and 13-K are implemented.	Implemented through HDP Policies 13-C – 13-H, 13 -K.
13-C. Transfer regulatory and enforcement responsibilities for oversight of neighborhood wastewater treatment systems from the Alaska Department of Environmental Conservation (ADEC) to the MOA Development Services Department, On-site Water and Wastewater Program, provided that the Municipality dedicates the resources necessary to successfully undertake its responsibilities assumed with this new authority.	MOA On-site Services Section.
13-D. Adopt (through municipal code) appropriate policies for the ownership and operation of neighborhood systems.	Contingent on HDP Policy 13-C; MOA On-site Services Section.

13-E. Contract the boundary of the AWWU Certificated Service Area in the Hillside District to match the Maximum Perimeter of Public Sewerage.	AWWU.
On-site Wastewater Problem lots	
13-F. Develop solutions to wastewater problem lots on a case-by-case basis.	MOA On-site Services Section, working with other landowners, MOA Departments, and/or AWWU.
Well Water Protection Program	
13-G. Develop and implement a Hillside Well Water Protection Program.	See HDP Chapter 6.
13-H. Develop and implement a comprehensive program to improve understanding of aquifer system conditions.	MOA On-site Services Section.
13-I. Develop and implement a program to protect water wells through actions of individual property owners.	MOA On-site Services Section.
13-J. Develop and implement a program to protect water wells through community actions.	MOA On-site Services Section, after plan adoption.
13-K. Develop a system for funding the Well Water Protection Program.	Anchorage Assembly and MOA On-site Services Section.
On-site Standards	
13-L. Revise the existing Wastewater Disposal section of the Anchorage Municipal Code to improve the construction and operation of on-site wastewater systems.	Anchorage Assembly and MOA On-site Services Section.
Maximum Perimeter of Public Sewerage	
13-M. Modify the Maximum Perimeter of Public Sewerage as shown on HDP Map 5.8.	Change made with the adoption of the Hillside District Plan.

Policies and Policy Background

GOAL 13. On-site, Public Wastewater Treatment, and Neighborhood Systems

Provide a combination of on-site, neighborhood, and public water and wastewater services in a manner that protects public health, ensures environmental quality, provides cost-effective installation and operation, and meets resident and landowner needs. Preserve the viability of on-site water and wastewater systems and the quality of domestic water supplies.

Policy 13-A

Public Sewer Boundary

The existing boundary of the AWWU public water and sewer service area on the Hillside, as defined by existing Maximum Perimeter of Public Sewerage, will generally stay the same as it is today, with the exception of one small area: upper Potter Valley (boundary contracts).

Background

As the Hillside grows, the overall water and wastewater objective is to attain an effective combination of on-site and public water and wastewater service to protect public health, the environment, and the public interest, and to do this at a cost that individuals and the community can afford. Consistent with this broad objective, it is recommended that Anchorage Water and Wastewater Utility (AWWU) continue to provide water and sewer service generally as defined by its existing Maximum Perimeter of Public Sewerage. (See Map 5.3 AWWU Water and Wastewater Master Plan.) In one location, however, changes in allowed land densities are recommended, accompanied by changes in the Maximum Perimeter of Public Sewerage. (See HDP Policy 13-M for details.)

Neighborhood Wastewater Systems

Program Overview

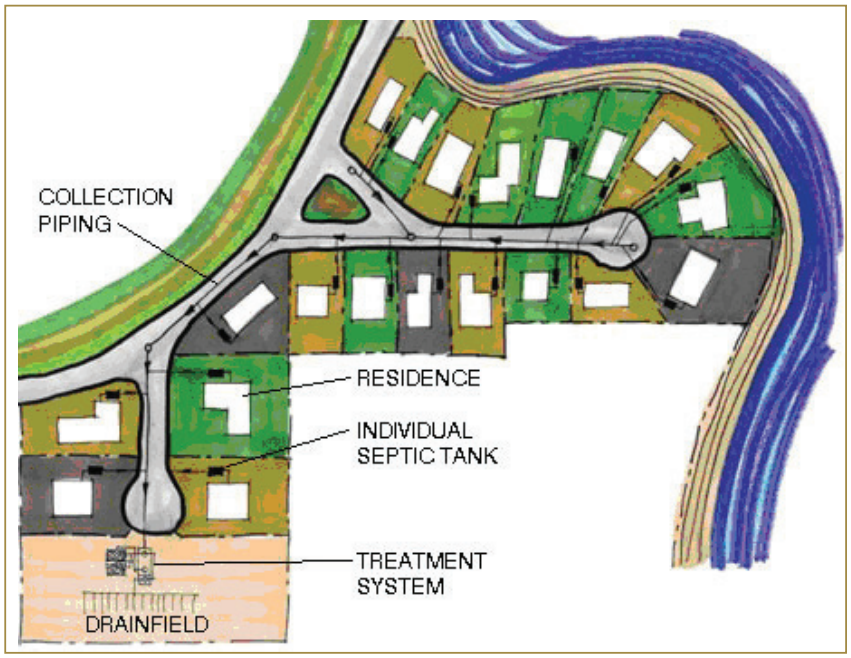
Policy 13-B

Permit the use of neighborhood wastewater treatment systems as a viable treatment technology for the Hillside District only outside of the Recommended Maximum Perimeter of Public Sewerage after HDP Policies 13-C, 13-D, 13-E, 13-F, 13-G, 13-H, and 13-K are implemented.

Background

The concept of a neighborhood wastewater system is simply the collection of multiple on-site wastewater system discharges, to be treated and discharged through a shared subsurface drainfield in one or more locations, away from the source of the wastewater. Pressurized, gravity, or vacuum-assisted sewerage can be used to gather wastewater contributions from within a neighborhood for conveyance to the treatment and disposal site. This site can be located remotely from the wastewater source.

Figure 5.5
Illustrative Neighborhood Wastewater Treatment System



Wastewater flows to septic tanks at individual homes, effluent is then piped to a centralized secondary treatment point, and treated effluent then goes into a neighborhood drainfield.

Neighborhood systems are an important option for the Hillside for several reasons. They offer the possibility of a relatively affordable wastewater alternative to public sewer in areas where existing on-site systems face challenges. These systems provide the option to convey effluent from where it was generated to a different location with appropriate soil conditions. They also offer a means to cluster housing units in order to preserve undeveloped open space. At the same time, a number of issues need to be resolved before these systems can come into widespread use on the Hillside, including standards and responsibilities for regulatory oversight, ownership, siting, design, construction, operation, and system maintenance.

Throughout the United States, and in other parts of the world, neighborhood systems have been in operation since the mid 1970s and have proven to function well. The combination of selecting the most suitable land for the drainfield, incorporating improved design standards, and requiring professional management has made local neighborhood wastewater systems a viable and economical alternative to regional wastewater systems.

There are neighborhood wastewater systems planned or already in use in Alaska, including the Werre Subdivision in Chugiak (9 units at full development), a system on the Hillside within the Grecian Hills Subdivision that could serve up to 12 units, and a 23-unit system in Big Lake in the Call of the Wild Subdivision.

One early attempt to operate neighborhood systems in Alaska

Where Are Neighborhood Systems Allowed?

The plan recommends that neighborhood systems be allowed only outside of the AWWU Service area, and that the AWWU certificated service area be reduced on the Hillside to match a new Maximum Perimeter of Public Sewerage, as updated in this Hillside District Plan. Beyond the Maximum Perimeter of Public Sewerage, AWWU would be absolved from responsibility for the operation and maintenance of wastewater systems.

Any extension of municipal sewerage beyond the Maximum Perimeter of Public Sewerage would be allowed only by specific approval of the Anchorage Assembly and the Regulatory Commission of Alaska (RCA), with formal amendment to the Maximum Perimeter and AWWU certificated service area. Costs for such extensions would not be borne by AWWU or its existing ratepayers.

was less than successful. A 1985 development in southwest Anchorage, at Country Lane Estates, was developed with a relatively rudimentary design and not constructed in accordance with the design documents. It also was not properly maintained by the homeowners association. The system failed in a short time and its owners subsequently opted to rebuild the wastewater collection system and petitioned AWWU to provide wastewater service.

These systems have the potential to be used in any Hillside development where the property owner wishes to use this technology given specific requirements:

- The site must have the physical characteristics that will support the subsurface disposal of treated effluent.
- There must be adequate land available to locate shared drainfields.
- The site must meet the conditions to be established by a future neighborhood wastewater systems regulatory authority.

The Municipality of Anchorage On-site Systems Technical Review Board has considered the application of neighborhood wastewater systems in the Hillside District. The board recommended neighborhood systems as a potentially effective solution for wastewater disposal for small groups of residences for which neither on-site soil absorption nor connection to existing municipal sewer infrastructure is technically practical or economically feasible.

The AWWU Authority Board also considered the application of neighborhood wastewater systems in the Hillside District. The AWWU Board cautions that while neighborhood systems have been implemented successfully in regions of the Lower 48 with well-drained and uniform soil conditions, their broad application on the Anchorage Hillside is questionable because of the district's complex site conditions, including steep topography, variable soils, and often shallow groundwater and bedrock.

The AWWU Authority Board approved a Board Resolution that discourages neighborhood wastewater systems within the Municipality of Anchorage except where an extreme need has been demonstrated and adequate safeguards are in place to protect public health and safety.

The Hillside District Plan recommends two such safeguards. One is to establish regulatory and enforcement functions within the MOA Development Services Department, On-site Water and Wastewater Program. The second is to establish an appropriate set of construction, ownership, and operation standards for the installation and ongoing use of these systems. More on these strategies follow.

Oversight

Policy 13-C

Transfer regulatory and enforcement responsibilities for oversight of neighborhood wastewater treatment systems from the Alaska Department of Environmental Conservation (ADEC) to the MOA Development Services Department, On-site Water and Wastewater Program, provided that the Municipality dedicates the resources necessary to successfully undertake its responsibilities assumed with this new authority.

Background

Active management of neighborhood systems is essential to their long-term success. Currently, the Alaska Department of Environmental Conservation has oversight responsibilities for neighborhood systems on the Hillside. This plan recommends switching this authority to the MOA Development Services Department, On-site Water and Wastewater Program (On-site Services Section), which would have full authority, responsibility, and resources for the oversight of neighborhood cluster systems.

A range of perspectives exists regarding the application of neighborhood systems in the Hillside District, ranging from encouraging to discouraging their use. Through this planning process, the Municipality has considered their potential application on the Hillside and concluded that such systems are appropriate if they are correctly regulated, owned, operated, and maintained. Specific options are described in more detail in the document Hillside District Plan Alternatives: A Framework for Public Discussion, referenced in the list of Hillside District Plan Supporting Documents, Appendix A. The following section explains the terminology used in describing the recommended approach to neighborhood systems management.

Regulation is the governmental control of the ownership, operation, and maintenance of the system through laws and regulations. An authorized governmental agency normally performs the function of regulating and permitting the system. (If we use a car as an example, John can own a car but it is licensed and regulated as a taxi; for example, by the Municipality of Anchorage.)

Ownership is the legal possession and responsibility for the system. A responsible management entity (public or private, including a homeowners association) could own the system. (John owns the taxi but does not necessarily operate the taxi.)

Operation is the daily running of the system, both the administrative and technical practices involved in the proper functioning of the system, including meter reading, billing, enforcement, and equipment inspection. A certified operations and maintenance company could provide the owner with the expertise to operate the system. (The Municipality regulates, John owns, but Phil drives the taxi, gasses it up, picks up and drops off fares, etc.)

Maintenance is the daily monitoring, protection, and preservation of the system's physical plant including pumping, equipment repair and replacement, etc. A certified operations and maintenance company could provide the owner with the expertise to maintain the system. (For example, John uses Ace Automotive to maintain his taxi, but Ace does not own or operate the car.)

A single Responsible Management Entity could own, operate, and maintain the neighborhood system. (It is possible that the "right John" could own, operate, and maintain the car himself, consolidating all the functions into a single entity and possibly saving money in the long run.) This could be the most efficient method of handling ownership, operation, and maintenance.

At present, only the Alaska Department of Environmental Conservation is organized to regulate the design, installation, and governmental oversight of neighborhood wastewater systems. Governmental permitting and regulatory oversight should not be confused with ownership, operation, and maintenance by a responsible party. The permitting agency will consider conceptual plans, review and permit engineered designs, and provide oversight of the party responsible for the ownership, operation, and maintenance of the neighborhood system.

The Alaska Department of Environmental Conservation is resource-limited. They have indicated a desire to delegate the regulatory oversight of neighborhood systems to a municipal agency should these systems proliferate in Anchorage. This plan recommends that regulatory oversight for neighborhood systems serving groups of residences be delegated from the Alaska Department of Environmental Conservation to the Municipality of Anchorage On-site Services, provided that the Municipality dedicates the resources necessary to successfully undertake its responsibilities assumed with this new authority. The plan also recommends ordinances to allow the overseeing agency to develop and enforce regulations.

Ownership and Operation

Policy 13-D

Adopt (through municipal code) appropriate policies for the ownership and operation of neighborhood systems.

Background

New standards and procedures are needed to ensure the safe ongoing operation of neighborhood systems. Consequently, the plan calls for the adoption (through municipal code) of technical and financial criteria for implementation such as those indicated in the "Conditions for Implementation of Neighborhood Wastewater Systems," included in the appendix of the On-site Wastewater Supplementary Report to the Framework Plan, referenced in the list of Hillside District Plan Supporting Documents, Appendix A.

Neighborhood wastewater systems must be owned by a responsible party. This entity would be accountable to the regulatory authority for operating the wastewater system to comply with environmental and other requirements, including compliance with the operating permit. This plan recommends that neighborhood wastewater systems be owned by private, for-profit or private, not-for-profit organizations with appropriate resources and expertise. Experience in other communities has shown that homeowners associations typically lack the required expertise, interest, and continuity, leading to frequent problems. Therefore, this plan recommends against vesting a local homeowners association with the responsibility and authority to own and operate the neighborhood wastewater system.

The system owner must maintain appropriate resources to service the entire system (through internal resources or external contracting). Elements that require attention include management of individual septic tanks, maintaining transmission piping to the treatment and dispersal element, and servicing the equipment at the treatment and dispersal units. Other operational elements include billing, record keeping, user compliance, and enforcement.

A private, for-profit owner is a private company that owns, operates, and manages the neighborhood system under the regulatory guidance and enforcement of the regulating agency. This type of owner makes a profit in the management of the system and encourages cost-effective decision making. An example is Tennessee Wastewater Systems, Inc. (formerly On-site Systems, Inc.), owned by the Pickney Brothers. The third largest utility

in the state, it currently manages 40 cluster systems across Tennessee.

There are currently more than 300 individual on-site secondary treatment systems in use on the Hillside, managed by private, for-profit companies. All companies have established a good record of providing guidance for the design and installation of the system, and have managed the existing active secondary treatment systems well.

Owners of neighborhood systems have the option of contracting aspects of their activities, including design, construction, operation and maintenance, collection of fees, customer service, financial management, and legal services.

AWWU Certificated Sewer Boundary

Policy 13-E

Contract the boundary of the AWWU Certificated Service Area in the Hillside District to match the Maximum Perimeter of Public Sewerage.

Background

If a neighborhood system serves more than 10-15 dwelling units, then the ownership entity would be considered a public utility. This could require certification by the Regulatory Commission of Alaska (RCA) in accordance with state law. Currently, the Anchorage Water and Wastewater Utility (AWWU) holds this certification for the entire Hillside District. The AWWU Authority Board has resolved to seek Regulatory Commission approval to withdraw from its current certificated service area where neighborhood wastewater systems are allowed to be put into service. AWWU notes that these systems do not conform to existing AWWU standards, that operation of these systems lies outside their expertise, that assuming operation of such systems would not be economic, and that extra costs associated with these systems would be unfairly borne by other ratepayers.

This plan recognizes that the owner of a neighborhood system should retain the authority and responsibility for effective operation in compliance with regulatory oversight. The plan recommends that service areas of neighborhood systems and AWWU not overlap. Where there exists a mixture of neighborhood and municipal wastewater systems, there is the potential for confusion regarding responsibilities for operations, maintenance, and emergency response to sewer backups or spills.

The plan consequently recommends that the AWWU certificated service area be reduced in the Hillside District to match a new Maximum Perimeter of Public Sewerage as described in this Hillside District Plan after its adoption by the Anchorage Assembly. Beyond the Maximum Perimeter of Public Sewerage, AWWU would be absolved from responsibility for the operation and maintenance of neighborhood wastewater systems. Any extension of municipal sewerage beyond the Maximum Perimeter of Public Sewerage would be allowed only by specific approval of the Anchorage Assembly and the Regulatory Commission of Alaska, with formal amendment to the Maximum Perimeter of Public Sewerage and AWWU certificated service area. Costs for such extensions would not be borne by AWWU or its existing ratepayers.

On-site Wastewater Problem Lots

Policy 13-F

Develop solutions to wastewater problem lots on a case-by-case basis.

Background

Some property owners in the Hillside District have been challenged to build and operate an on-site wastewater system in an effective manner due to one or more of a variety of causes – poor soils, shallow groundwater, shallow bedrock, and older septic tanks not meeting current standards (Map 5.6). The lots are located in a variety of subdivisions, and not all lots in these subdivisions have problems with on-site wastewater systems. Several options are available for these lots:

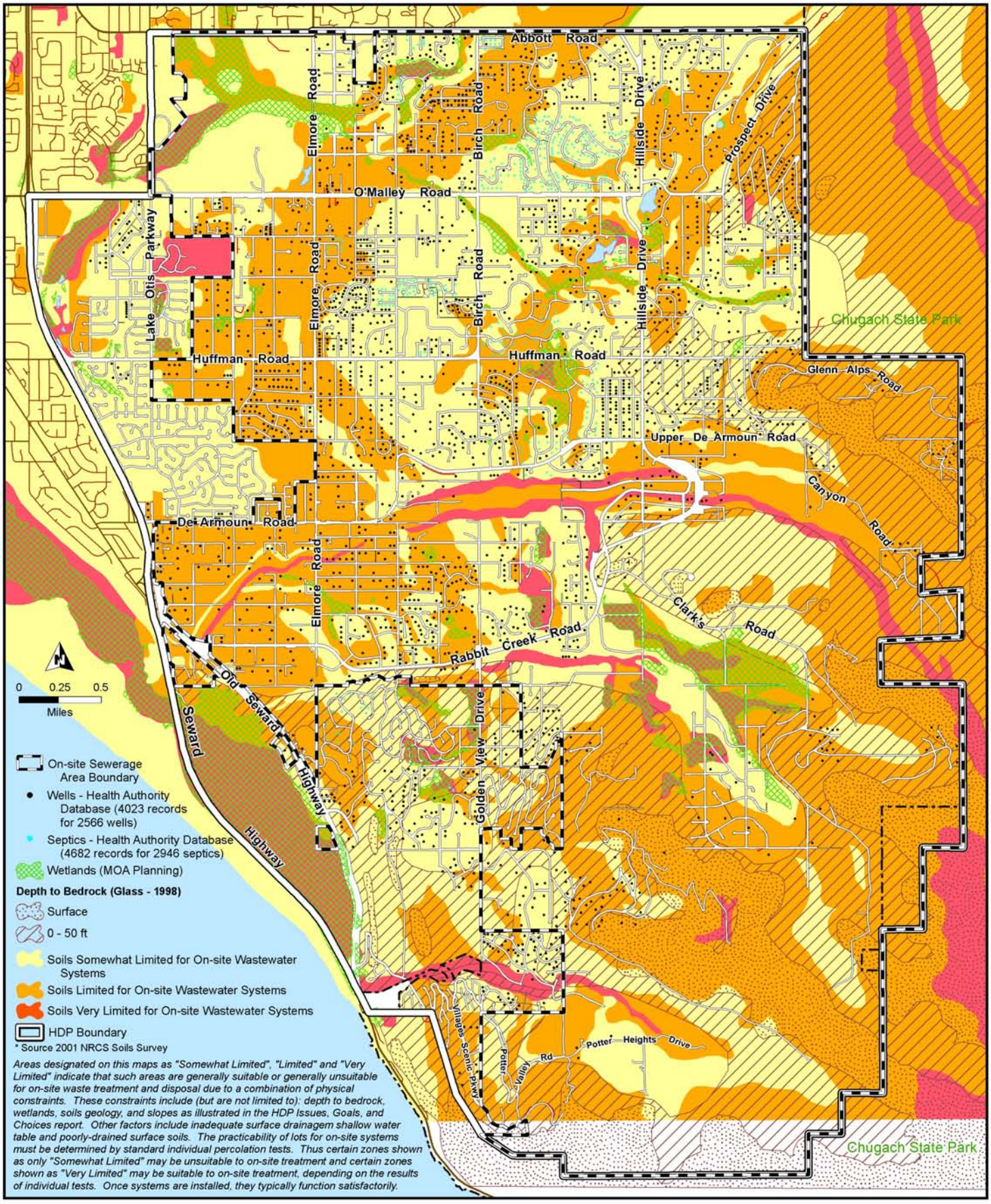
- Take no new actions.
- Improve the operation of existing, individual on-site systems.
- Install advanced, individual-lot, on-site systems.
- Develop neighborhood wastewater systems.
- In specified areas, where consistent with the boundaries of the approved AWWU service area, link to AWWU public sewer systems.

A cost evaluation was developed to provide a reference point for comparing the costs of neighborhood wastewater systems versus public sewerage systems (Table 5.7). Costs for conventional municipal water and sewer systems vary in accordance with the size of the lots in the development served and distance from

Map 5.6

Soil Types in Relation to Location of On-Site Area Boundary

Hillside District Plan



existing facilities. A subdivision of 80 one-acre lots adjacent to existing municipal sewerage service could be served with sewer service for $30,000 to $100,000 per lot, depending on the nature of the construction.

Larger-lot subdivisions would entail a greater length pipe in the ground, at a higher cost per lot. Similarly, long extensions of piped service would increase costs as well. Remote large lots of the upper Hillside, located well away from the existing sewer collection system, may find it impractical to develop municipal utility service, as costs are likely to be in excess of $200,000 per lot.

Well Water Protection Program

Program Overview

Policy 13-G

Develop and implement a Hillside Well Water Protection Program.

Background

Most water samples collected from Hillside wells, except for a few naturally occurring contaminants, comply with state and federal standards for drinking water quality. There is no evidence of an areawide threat to public health. However, well sampling results do reveal nitrate concentrations in localized areas higher than what would be expected from natural sources. Additionally, nitrate levels in a portion of public wells are trending upward. On-site wastewater system effluent, fertilizer, and manure are known human-related sources of groundwater nitrates. One possible implication of nitrate increases in a growing residential community is the possibility that development is affecting groundwater quality and that other on-site wastewater system contaminants may also be on the increase in local groundwater systems.

Incumbent with the right to draw from, and discharge into, groundwater reserves is the responsibility to protect the quality of the groundwater. This plan recommends that the Municipality develop and implement a Well Water Protection Program for the Hillside. This is intended as a proactive approach to reduce high-risk activities and to provide the Municipality with early detection capabilities in order to prevent a groundwater emergency. Prevention is much more cost-effective than cleaning up or replacing a contaminated aquifer. Specific components for the Well Water Protection Program are presented in HDP Policy 13-H.

Table 5.7
Wastewater System Cost Table

Constructed Cost Rough Estimates: Neighborhood Wastewater Systems and Public Sewerage Connection to AWWU's System								
		CLUSTER SYSTEM				PUBLIC SEWERAGE[4]		
						SEWER COLLECTION SYSTEM[5,6]		DEVELOP-ABLE LOTS[9]
SUBDIVISION	NUMBER OF LOTS	DEVELOP-ABLE LOTS	PIPE COST[1]	TREATMENT[2]	COST/LOT[3]	COST/LOT[7]	PIPE COST/ LF[8]	
Audobon Hills	31	28	$111,840	$1,147,666	$44,982	$415,888	$1,069	31
Birch Tree Estates	50	46	$69,499	$1,370,009	$31,294	$152,358	$1,014	50
Denali View	21	21	$117,440	$765,568	$42,048	$601,746	$1,078	21
Drake[10]	45	43	$43,294	$1,630,497	$38,925	-	-	-
Elmore	69	67	$72,081	$1,715,224	$26,676	$152,358	$1,014	69
Fronius Forest	2					$230,991	$1,029	2
Grecian Hills	38	38	$26,024	$1,062,853	$28,655	$230,991	$1,029	38
Kimberly Manor	12	9	$21,808	$648,716	$74,503	$230,991	$1,029	12
Loma Estates[11]	26	24	$111,132	$943,211	$43,931	$169,724	$1,139	26
Mindyer Manors[11]	15	15	$56,790	$459,537	$34,422	$169,724	$1,139	15
Paradise Valley	212	195	$886,324	$5,865,953	$34,627	$139,356	$1,144	212
Rabbit Creek Heights	262	261	$1,156,563	$6,249,064	$28,374	$124,513	$1,033	262
Rabbit Creek View	72	71	$315,693	$2,518,358	$39,916	$124,513	$1,033	72
Shenandoah Hills	9	9	$6,640	$293,056	$33,300	$148,608	$1,081	9
Siefker[10]	32	32	$119,027	$1,222,332	$41,917	-	-	-
Sky Harbor Estates[10]	22	22	$34,307	$498,832	$24,234	-	-	-
South Hills	71	66	$363,350	$2,315,909	$40,595	$230,991	$1,029	71
Susitna View[11]	24	19	$106,838	$835,072	$49,574	$169,724	$1,139	24
Talus West	102	102	$476,400	$2,671,586	$30,863	$148,608	$1,081	102
Terrace Heights	19	19	$34,626	$532,306	$29,839	$230,991	$1,029	19
Trails End	82					$372,034	$999	82
Valhalla	36	36	$76,685	$948,430	$28,475	$148,608	$1,081	36
Woodridge[11]	26	26	$113,358	$743,276	$32,947	$169,724	$1,139	26

Costs shown in this table for public sewerage are very high because the costs reflect the impact of extending sewer mains to individual, isolated subdivisions. At the costs shown in this table, public sewerage is clearly beyond the level that individual homeowners could ever afford. Actual costs would likely be significantly lower for two reasons. One is that public money would likely supplement the costs charged to individual owners. For example, if, for public health reasons, it was necessary to extend public sewerage to one or more subdivisions and the cost could not be borne by individuals, public funding would be required. This was the case when sewerage was established in Girdwood and Talkeetna. The second reason actual costs would likely be lower is because, as is noted above, these costs were calculated for individual, isolated subdivisions. This means that a large capital cost (the sewer mains) was allocated among a small number of ratepayers. In practice it is more likely that if sewerage was extended, the costs for the sewer mains would be shared over a wider base, significantly lowering costs.

For comparison, rough estimates indicate that installations costs (2007) for traditional and advanced on-site wastewater treatment systems (depending on design-, site-, and system-specific factors) can range from $8,000 to $24,000 or higher. For a more detailed explanation, see the On-site chapter of the Hillside District Plan Issues, Goals and Choices Report, referenced in Appendix A. Hillside District Plan Supporting Documents.

1. Pipe cost includes all costs including septic tanks, pumps, controls, and piping, as well as transmission pipe to the off-lot treatment area.
2. Treatment costs include all tankage, buildings, treatment units, and drainfields, as well as the cost of the land on which the treatment system is located.
3. Cost per lot is the total cost for the on-site and off-site components of the neighborhood system divided by the number of developable lots.
4. Unit costs are based on AWWU's 2006 Anchorage Wastewater Master Plan. Total costs are based in improvement district formation, with costs levied by equal assessment methodology.
5. In some cases, multiple subdivisions are grouped together into one sewer collection system.
6. Sewer trunks are used to connect the sewer collection systems to AWWU's current infrastructure.
7. Cost per lot is the total cost of the sewer collection system and connecting sewer trunk divided by the number of developable lots.
8. Pipe cost/LF is the total cost of the sewer collection system and connecting sewer trunk divided by the total length of pipe.
9. Developable lots served by AWWU's sewer system is assumed to be the total number of lots within the subdivision.
10. Different assumptions are used for the two types of service; therefore, no public sewerage costs are provided.
11. A sewer trunk is not necessary to connect the sewer collection system to AWWU's current infrastructure.

Aquifer System Conditions

Policy 13-H

Develop and implement a comprehensive program to improve understanding of aquifer system conditions.

Background

There is no existing comprehensive program for directly monitoring water quality within Hillside aquifers. Nearly all of the water quality data assembled originates from sporadic well samples, under several different programs, without any systematic planning. Although the current system of well sampling has provided a sizeable amount of data, it has limitations described in more detail in the On-site Water and Wastewater Supplementary Report referenced in Appendix A. Hillside District Plan Supporting Documents. The HDP recommends these actions:

- **Develop a current and comprehensive database:** Coordinate with state and federal agencies, the University, private consultants, local groups, and other interested parties in developing a common, internet-accessible, Hillside groundwater database. The database would include (but not be limited to) well drilling logs and pump test results for individual and public water system wells, historical and ongoing well water quality data, hydrologic and water quality studies, historical and ongoing surface flow, and water quality data.
- **Establish protocols:** Decide on collection, processing, organization, and access protocols to facilitate efficient data use and analysis. Determine the water quality parameters to be used.
- **Supplement the existing well sampling program:** The existing program is required by the Certificate of On-site Systems Approval (COSA). Increase this program to yearly testing of a select group of individual wells. The well group should be selected to represent the Hillside aquifer system, with particular attention to identified challenge areas. Sampling should be accomplished by trained personnel with no vested interest in a specific outcome.
- **Comprehensive evaluation of specific wells:** Where a sample from an individual well exceeds 5.0 mg/L nitrate, conduct a contamination analysis of the well that may include some or all of these steps: 1) grouting evaluation including well log analysis, down-hole video, and possibly dye testing; 2) follow-

up testing for other contaminants commonly associated with human wastewater systems; 3) evaluation of nitrate levels in neighboring wells; 4) follow-up water testing in six-month intervals to determine if there is a trend or test anomaly. Evidence of well contamination, including any remedial work, should be noted in the database for the well in question.

- **Reduce seasonal variability in data:** Coordinate sampling schedules with community water suppliers on the Hillside to reduce seasonal variables in analysis results.
- **Annual Findings:** Prepare an annual Hillside Well Water Protection Program report of relevant findings, trends, and study results.
- **Areas of Special Concern:** Designate as "Areas of Special Concern" sites that have been identified as particularly sensitive to on-site water and wastewater system nutrients and contaminants. Develop contingency work plans to address detection of elevated or increasing groundwater contaminant levels, for example, through requiring advanced treatment, well grouting and rehabilitation, or other appropriate measures to protect such areas.

Individual Property Owners

Policy 13-I

Develop and implement a program to protect water wells through actions of individual property owners.

Background

Hillside property owners have a high degree of self-interest in maintaining local well water quality. At the same time, the cumulative activities of individual property owners create the potential for adverse impacts on a larger scale. Recommended actions are summarized below. Details of these actions are described in the On-site Water and Wastewater Supplementary Report to the Framework Plan, referenced in the list of Hillside District Plan Supporting Documents, Appendix A.

- **Increase Household Activities Education:** Some household activities and individual habits can adversely affect the performance of on-site wells and wastewater systems and/or the quality of effluent reaching the water well supply. Examples include certain patterns of water usage and the discharge of high-strength wastes or other deleterious substances. Although advisory information on this subject is

presently available through the Municipality's On-site Water and Wastewater Program, it is recommended that more resources be devoted to education.

- **Improve Property Owner Decisions:** On-site wastewater system siting and design are the responsibility of certified design professionals. Property owners, however, typically make significant decisions affecting their on-site wastewater system including: selection of the designer and the level of treatment desired, choice of building size, site features and overall site layout and grading. The plan recommends public education on best property management practices related to fertilizer, management of animal wastes, and the use of herbicides/ pesticides.

Community Actions

Policy 13-J

Develop and implement a program to protect water wells through community actions.

Background

The Hillside District Plan recommends that the Municipality of Anchorage take the lead in organizing and implementing the community actions summarized below.

- **Initiate Program:** Carry out the steps outlined under HDP Policies 13 G-K, including identifying and committing necessary resources to the Municipality of Anchorage On-site Services Section, which has responsibility for implementing and managing the Well Water Protection Program.
- **Involve Stakeholders:** Engage other key stakeholders for participation, including the State of Alaska, the Anchorage Water and Wastewater Utility (AWWU), community councils, the Alaska Horse Council, the Hillside Area Landowners Organization, Inc. (HALO), the Anchorage Waterways Council, and homeowners associations.
- **Educate the Public:** Prepare press releases, seek interviews with local media, develop an internet website link (in concert with the Municipality's On-site Services webpage), encourage public addresses by municipal officials, use billing stuffers and flyers, and conduct outreach programs in schools and community councils. Encourage community groups such as HALO to develop and distribute a brochure with guidelines for operating on-site well and wastewater systems.

- **Change Municipal Code:** Amend the Municipality of Anchorage Wastewater Disposal Regulations (Chapter 15.65) as described in HDP Policy 13-L.

Funding

Policy 13-K
Develop a system for funding the Well Water Protection Program.

Background
A rough order-of-magnitude estimate places the ongoing cost to the Municipality for an effective Well Water Protection Program at $300,000 annually. This works out to less than $35 per year for each of the area's residences. The benefits of Hillside well water protection, however, extend beyond the local area. In consideration of the potential contamination risks posed by the limitations of available data and the tangible long-term benefits of a protected groundwater supply, it is recommended that Hillside residents and property owners, the greater Anchorage community, municipal departments, and state agencies share the Hillside Well Water Protection Program costs. It is recognized that numerous subgroups are contained within these broad categories and that each subgroup represents its own set of groundwater risks and protection benefits. Therefore, the plan recommends that the On-site Services Section work with the Hillside community, its own constituents, and participating agencies to establish a fair, risk/benefit-based allocation of financial responsibility. Chapter 6. Implementation contains additional details.

On-site Wastewater Code

Policy 13-L
Revise the existing Wastewater Disposal section of the Anchorage Municipal Code to improve the construction and operation of on-site wastewater systems.

Background
Chapter 15.65 of the Anchorage Municipal Code, Wastewater Disposal, was reviewed in detail and compared to existing on-site water and wastewater system regulations in other states and countries. This plan recommends the following be considered when reviewing code changes to Title 15:

- 15.65.010 Definitions
  - Modify Earth Privy to read, "Earth Privy means a device for the disposal of human excreta in an unlined pit in the earth."
  - Modify insulation to read, "Insulation means two inches or more of high-density, direct-burial, closed-cell foam insulation or direct-bury approved equivalent non-degradable material of comparable insulation value, approved by the On-site Water and Wastewater Program."
  - Add a definition to read, "Treated Effluent (Wastewater) means effluent discharged from a watertight covered receptacle that separates raw wastewater solids (floatables and settlables) and allows clarified effluent to exit."
- 15.65.050 Septic Tanks
  - 15.65.050.C – Revise the requirement for a four-inch standpipe from each compartment of a septic tank to require a minimum 24-inch diameter watertight riser to the finished grade above the tank for the first compartment. Risers shall be insulated with a minimum of four (4) inches of spray urethane to at least two (2) feet below ground level and have insulated locking (securable) lids. This facilitates ease of pumping and inspection for tank integrity during a COSA or drainfield upgrade (or any) inspection.
  - Add a new subsection that disallows Cold Tar Pitch (TNEMEC) coating on steel septic tanks. A method to accomplish this may be to revise the requirements for septic tanks from two compartments to a single compartment, and add a S.T.I.P. coating that has a much greater resistance to corrosion and installation damage. An outlet filter would be required for any single-compartment septic tank.
- 15.65.060 Subsurface disposal fields
  - 15.65.060.A.1.d and f – Change ten (10) feet to six (6) feet for wide drainfields and beds.
  - 15.65.060.E.9 – Specify the width of insulation over the crown of pipe to be a minimum of 24 inches, centered over the pipe crown.
  - 15.65.060.E.11 – Add the following wording to the end of the subsection, "… and graded at minimum two percent

(2%) slope to promote the run-off of precipitation and/or snow melt. All areas disturbed during the installation of the on-site wastewater system shall be reseeded with a seed mix approved by the department."

- 15.65.060.H.5 – Change the maximum separation distance between perforated distribution laterals in a bed to three (3) feet.
- 15.65.060.J – add a new subsection titled "Drainfield Design Criteria" with the following subsections:
- 15.65.060.J.1 – All drainfields shall be designed to be dosed by either a siphon, pump or no more than 20 lineal feet of drainfield without an inlet from the septic tank.

- 15.65.080 Lift Stations
  - 15.65.080.B – Change the wording in the last sentence to read, "The alarm must be activated when the effluent level in the tank reaches a point where 150 gallons of capacity remains."
- 15.65.170 Limited wastewater assessment-service districts
  - Consider revising this section (in cooperation with planning and zoning changes and Title 21) to allow neighborhood wastewater systems where AWWU sewer service is not permitted by the Maximum Perimeter of Public Sewerage.
- 15.65.350 General Design Requirements
  - 15.65.350.B.4 – Add the following wording to the end of the sentence, "… and in a direct line of sight to the pump chamber manhole riser."
- 15.65.360 Maintenance and repair
  - 15.65.360.F – Correct the spelling of "manufacturer's."

These changes could add approximately $2,000 to the cost of installing a typical system, but the benefits should far outweigh the added costs. The trade-off for extending drainfield life lies in higher initial system capital costs and lower annual monitoring costs. While these improvements seem less glamorous than initial costs would suppose, they can more than pay for the higher installation costs over the life of the system.

Maximum Perimeter of Public Sewerage

Policy 13-M

Modify the Maximum Perimeter of Public Sewerage as shown on HDP Map 5.8.

Background

In 1982, the Anchorage Assembly approved and adopted the Hillside Wastewater Management Program as an element of the Municipality of Anchorage Comprehensive Plan (Anchorage Ordinance No. 82-52). This and other elements of the Comprehensive Plan can be found under Title 21 of the Anchorage Municipal Code. The 1982 plan established areas where public wastewater services may be extended and where they may not be extended.

The boundary of these service areas is identified as the "recommended Maximum Perimeter of Public Sewerage." Since its adoption, the recommended Maximum Perimeter of Public Sewerage has been amended by ordinance thirteen times as a result of property owner petition and approval by the Anchorage Assembly. In general, these amendments resulted in slight changes to the boundary, encompassing or removing areas abutting the perimeter.

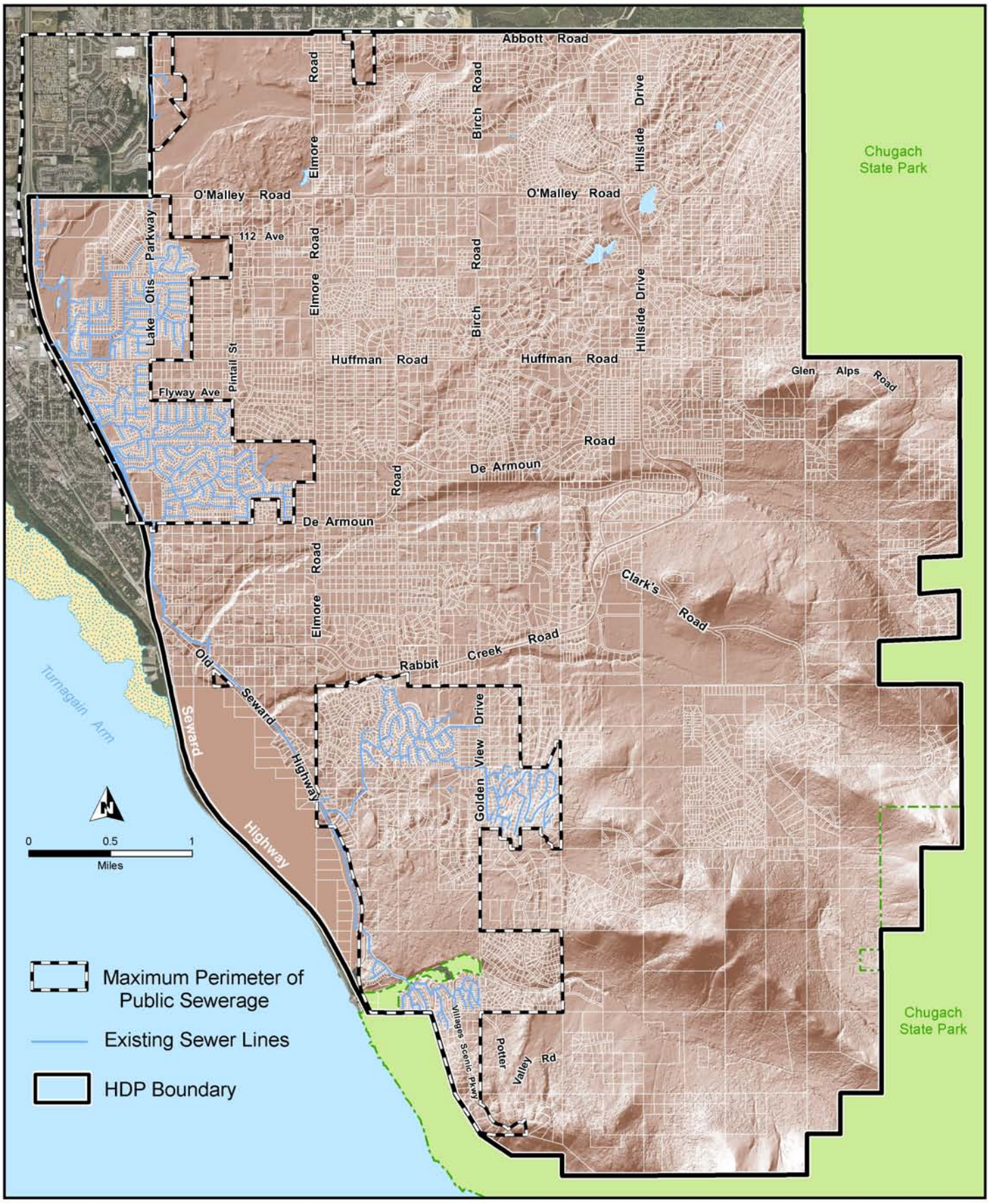
The Hillside District Plan will replace the 1982 Hillside Wastewater Management Plan and its associated amendments. As part of this process, the recommended Maximum Perimeter of Public Sewerage was re-evaluated. Once the Hillside District Plan is adopted by municipal code, the Anchorage Water and Wastewater Utility will be required to abide by the new recommended Maximum Perimeter of Public Sewerage.

Currently, if a Hillside property owner residing in an area outside the recommended Maximum Perimeter of Public Sewerage desires to acquire public sanitary sewer, the owner must request an amendment to the recommended Maximum Perimeter of Public Sewerage. Amendments are considered by the Municipality of Anchorage Planning Department through a formal amendment process that involves the property owner, the MOA Development Services Department On-Site Water and Wastewater Program, Anchorage Water and Wastewater Utility, and the Planning and Zoning Commission. The process includes public hearings and concludes with the Anchorage Assembly voting on the proposed amendment. This lengthy and time-consuming process is defined in more detail in the "Extending Facilities" Whitepaper,

Map 5.8

Maximum Perimeter of Public Sewerage as Established by the Hillside District Plan

Hillside District Plan



referenced in Appendix A. Hillside District Plan Supporting Documents.

After considering land use alternatives and objectives, the Hillside District Plan identifies one area where residential densities will be allowed to change from what is possible under current zoning, translating into the need for one change to the recommended Maximum Perimeter of Public Sewerage: a contraction of the perimeter in the Potter Valley area. HDP Chapter 2. Land Use contains more information on the specific land use objectives driving this change.

Furrow Creek Area

Currently the Maximum Perimeter of Public Sewerage as defined in the Hillside Wastewater Management Plan includes approximately the western half of the area between O'Malley Road and DeArmoun Road and Lake Otis Parkway and Elmore Road. This is where the headwaters of Furrow Creek are located. In this plan, the area under discussion is referred to as the Furrow Creek area.

The area west of the perimeter is served by both public sewer and water through the Anchorage Water and Wastewater Utility. Churches and schools are connected to these public systems.

The area east of the perimeter uses on-site water and wastewater systems. Schools and churches use on-site wells and wastewater systems. However, because of poor soil conditions, some of these institutions employ holding tanks that are periodically pumped and taken to the public sewerage system.

For the Furrow Creek area, the Hillside District Plan recommends conducting a planning study to determine future need and location of a sewer trunk as backbone infrastructure required based on land use patterns and development potential, evaluation of the data resulting from Hillside District Plan recommendations and programs, soils, topographical conditions, lot sizes, failed septic systems and nitrate levels to determine the appropriate sewer service area boundary and cost feasibility (HDP Policy 1-D).

Potter Valley Area

The Maximum Perimeter of Public Sewerage currently includes an area along Potter Creek, above the existing Potter Valley subdivision. Property owners currently use on-site water and wastewater systems. Although within the Maximum Perimeter of Public Sewerage, the area is not currently served by public sewerage.

This plan recommends contracting the Maximum Perimeter of Public Sewerage west to Greece Drive, south of England Avenue, and allowing sewer service by on-site or neighborhood wastewater systems, but not allowing public water and sewer service east of that boundary.

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Chapter 6. Implementation

Funding and Managing Infrastructure; Development Standards

Overview

This chapter presents two categories of material, each building from a combination of the land use, drainage, transportation, and water and wastewater chapters: strategies for funding and managing Hillside infrastructure and policies for improved Hillside development standards.

This chapter sets out two major elements that will guide the implementation of the plan: strategies for infrastructure funding and management, and for improved development standards.

Part 1: Funding and Managing Infrastructure

Residential growth on the Hillside and throughout Anchorage is straining the Hillside's traditional, neighborhood-by-neighborhood approach to constructing and maintaining drainage, roads and trails, and managing water quality. Hillside residents like the low costs and local accountability of the existing approach. At the same time, it is recognized that the area faces growing infrastructure problems, including ice-covered roads in winter, flooded basements and roads in the summer, congested intersections, overcrowded trailheads, and limited emergency access. These concerns will increase as the Hillside adds an additional 5,000 dwelling units.

The Hillside District Plan requires the creation of a new funding and management entity which, for the first time, will establish a district-wide means to address drainage, road, and trail issues. Doing nothing (that is, continuing to rely on the existing system of Local and/or Rural Road Service Areas), will not solve drainage issues and is not acceptable. The Plan currently recommends a hybrid approach: a new Hillside district-wide service area, similar to the Chugiak-Birchwood-Eagle River Rural Road Service Area (CBERRRSA), along with the retention of existing LRSAs. Other alternatives include a new drainage authority or a combination of a road service area and a separate drainage authority. A drainage authority has more flexibility in determining how fees are collected.

In addition to the district-wide roads, trails, and drainage service area, the HDP calls for the following:

- To improve access to Chugach State Park and reduce the impacts of the growing use of trails and trailheads in neighborhoods near the park, the plan proposes a new Bowl-wide approach to funding needed Chugach State Park access improvements.

Bear Valley with Chugach State Park and Ptarmigan Peak beyond.

- To ensure ongoing protection of Hillside water quality, the plan proposes a Hillside Well Water Protection Program.
- The HDP also recommends extending the requirement for building permits to the entire Hillside District. Currently, the southeastern portion of the Hillside is excluded from building permit requirements. Building permits are needed in this area for the same reason they are required in the rest of the Anchorage Bowl: to protect housing values, as well as life and property.

Part 2: Development Standards

Building conditions on the Hillside are different than the rest of the Anchorage Bowl, particularly at higher elevations and in areas with steeper slopes. As a result, the plan calls for new development standards and procedures, summarized below:

- Change requirements for subdivision submittal material, to provide better up-front understanding of drainage, vegetation, and other environmental site characteristics.
- At the scale of subdivisions, establish new standards to improve drainage management and retain important natural features that cross multiple development tracts; for example, corridors for drainage, roads, and trails.
- At the scale of individual lots, establish new standards to reduce development impacts (e.g., to reduce runoff by retaining natural contours and natural vegetation).

Part 1:

Infrastructure Funding and Management

Context: Planning Issues Summary

A Hillside Citizen Advisory Committee Meeting.

Road Maintenance – The "Good Old Days"

The Hillside developed slowly as homesteads and large lots were subdivided and sold. Services and traffic were limited, and the area had a rural or low-density suburban character. Road standards were not institutionalized or met, which was perfectly acceptable to residents who were satisfied with slower speeds and non-paved roads to access their homes from the state-maintained arterials and collectors. In most cases, maintenance on these local, residential roads has been limited to sanding, plowing, and only irregular grading. These responsibilities have been carried out by municipally-sanctioned Local Road Service Areas (LRSA) and Rural Road Service Areas (RRSA) or taken up by neighborhood groups or homeowners associations without government involvement. As the Hillside has continued to grow, the limitations to this existing system have become more apparent, with congested intersections, unsafe streets, cut-through traffic, and inadequate emergency access. In general, Hillside road-related expenditures repeatedly address symptoms of substandard design, without solving underlying causes.

Drainage

The approach to managing drainage on the Hillside has been even less structured than the approach to managing roads. Unlike the rest of Anchorage, which raises money for drainage improvements through the Anchorage Roads and Drainage Service Area (ARDSA), the Hillside has no coordinated means to manage storm water runoff over the entire area. Where Limited Road Service Areas exist, they have worked on localized drainage-related issues as an unofficial add-on to their road maintenance responsibilities. Large portions of their limited budgets, particularly in the southeast Hillside, are spent ripping ice off roads and maintaining roadside drainage ditches, rather than dealing with root causes of drainage problems. Storm water runoff continues to increase, and icing problems are worsening, particularly as development moves into upper elevations of the southeast Hillside with its steeper slopes and shallower soils. Solving these issues requires a new approach, working at the scale of entire watersheds, rather than subdivision by subdivision.

Spring runoff crosses a dirt road in the BLM lots area.

Existing Road Service Areas

Of the road miles within the HDP, 27 percent of the miles are served by homeowners associations or other neighborhood groups. 54 percent of the Hillside area is within the Anchorage Roads and Drainage Service Area (ARDSA) or a limited or rural road service area, with most of this category made up by LRSAs or RRSAs (Map 6.1).

Trails

Construction and management of trails has been similarly informal and uncoordinated. Local residents walk along quiet residential roads. Residents and visitors ramble on traditional routes that cross undeveloped private property. Roadside trails have been built along a few major roads. Three state-managed trailheads provide access to Chugach State Park, along with a handful of informal roadside pullouts. Casual trails worked when levels of use were low, but this approach is breaking down with steadily increasing trail use. Several trails and trailheads that were only used by locals are becoming destinations for people from all over Anchorage, resulting, in some areas, in conflicts between trail users and adjoining landowners. While the State and Municipality each have some responsibilities for trail issues, no system is in place to systematically address trail construction, maintenance, and management.

Water and Wastewater

The State and Municipality currently regulate the installation and operation of water and wastewater systems of the Hillside. With the expectation that the large majority of the Hillside will continue to rely on on-site wastewater systems and that the Hillside will continue to grow, improved programs are needed to monitor well water quality and improve standards for the installation and use of on-site and neighborhood wastewater systems.

Problems Are not Uniform

The challenges outlined above are most evident in and near the southeastern section of the Hillside. Road, trail, drainage and water quality issues are less severe in other parts of the Hillside; and the pressure for new solutions is greatest in areas where there has been more recent development. As the survey showed, most residents are satisfied with existing levels of service.[1]

Summary: Need for District-wide Infrastructure

Hillside subdivisions that once had just a few homes now have many. New, higher-density subdivisions have been developed, along with new schools to support this growth. These changes will continue into the future.

The set of problems outlined above (through-traffic, congestion, flooded basements, glaciating roads, overused trailheads) is symptomatic of a larger underlying problem. The current

1. Note:

HDP survey results:

"Is ice build-up on roads in your neighborhood a problem?"

- Problem: 20.8 percent
- Not a Problem: 58 percent

"Are drainage and runoff in your neighborhood a problem?"

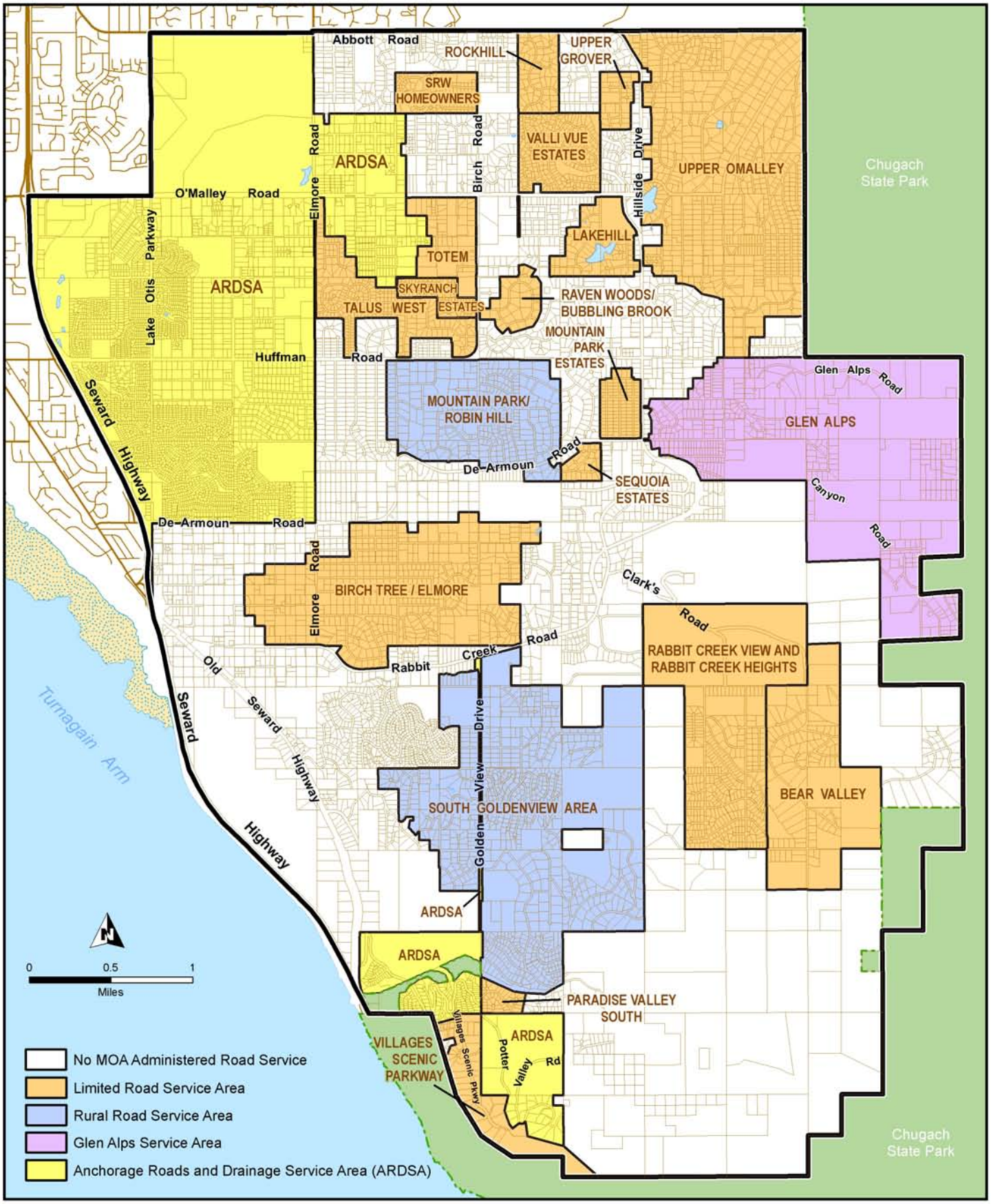
- Problem: 18.8 percent
- Not a Problem: 76.6 percent

These opinions may change as the Hillside adds another 5,000 dwelling units.

Map 6.1

Existing Road Service Areas

Hillside District Plan



The Glen Alps trailhead provides access to Powerline Pass Valley, Chugach State Park.

approach to infrastructure on the Hillside is disjointed and lacks mechanisms for coordinated planning, maintaining, and upgrading road, drainage and trail infrastructure at a community-wide scale. Existing mechanisms to plan, pay for, and maintain shared infrastructure focus on small sub-districts of the Hillside, and consequently are limited in their ability to respond to current and future needs. The result is that subdivisions either are approved without solving these issues (as many have argued was the case for Prominence Pointe) or subdivisions which could be approved are halted without a way to finance needed community-scale infrastructure. These issues will only intensify as the Hillside adds another 5,000 homes and 10,000 to 15,000 residents.

The remainder of this section outlines improved approaches to fund and manage growing demands on Hillside infrastructure.

Objectives for Infrastructure Funding and Management

The following objectives were developed to improve and/or create more effective and uniform levels of service on the Hillside. These objectives, which double as criteria for evaluating the various proposed options, were formulated working with the Citizen Advisory Committee for this planning process.

- Maintain Hillside resident control over improvements and costs.
- Provide greater capability to fund and authority to implement needed capital improvements at a watershed or community-wide scale.
- Provide for public health and safety; improve emergency access.
- Be realistic about the level of improvements; aim for modest and affordable infrastructure.
- Recognize that infrastructure needs vary across the Hillside.
- Create an equitable system so that local costs are charged to those who create them. In some instances, state or federal funds are available to supplement local funding.
- Phase improvements; wherever practical, delay or avoid major capital projects by repairing or upgrading existing infrastructure.
- Provide for efficient service delivery and administration.

- Protect the natural environment of the Hillside.
- Leverage funding; supplement Hillside dollars with state, municipal, and other funding sources from outside the Hillside.
- Start slow; accept that many residents are satisfied with the existing service structure and that establishing a new funding and management entity will take time, likely at least a year.

BLM lots, located between DeArmoun Road and Rabbit Creek Road.

Goal and Policy Summary: Part 1

GOAL - 14	
Primary Policy	**Implementation**
14-A. Establish a new Hillside District funding and management entity to manage and help to finance roads, drainage, built/green infrastructure, watershed protection and aquifer recharge, and trails at a watershed- and/or community-wide scale.	Anchorage Assembly, MOA Project Management and Engineering Department (PM&E). *A change in service area requires a vote of the service area.*
14-B. Extend the Anchorage Parks and Recreation Service Area boundary to include the entire Hillside District as well as the initial mile of Chugach State Park.	Anchorage Assembly, MOA Parks and Recreation Department, MOA Legal Department, MOA Planning Department. *A change in service area requires a vote of the service area.*
14-C. Create a new funding and management program targeted at improved Chugach State Park access with trailhead and parking facilities.	Anchorage Assembly, MOA Parks and Recreation Department, MOA Legal Department, MOA Planning Department.
14-D. Establish a Hillside Well Water Protection Program and new programs and standards for managing neighborhood wastewater systems.	Anchorage Assembly, Hillside residents, MOA On-site Services Section.
14-E. Contract the boundary of the AWWU Certificated Service Area in the Hillside District to match the Maximum Perimeter of Public Sewerage.	Anchorage Assembly, Anchorage Water and Wastewater Utility (AWWU), and the Department of Health and Human Services (DHHS).
14-F. Extend the Anchorage Building Safety Service Area, and with this, the requirement for building permits, to the entire Hillside District.	Anchorage Assembly, MOA. *A change in service area requires a vote of the service area.*

Funding and Management Entity

Policy 14-A

Establish a new Hillside District funding and management entity to manage and help to finance roads, drainage, built/green infrastructure, watershed protection and aquifer recharge, and trails at a watershed- and/or community-wide scale.

Background

The Hillside District Plan requires that a new management and financing mechanism be established to pay for capital improvements and maintenance at a higher level of service than exists on the Hillside today. The current recommendation is to establish the full Hillside District (excluding areas already in ARDSA) as a unified Hillside Road, Drainage and Trails Service Area (HRDTSA). LRSAs, RRSAs, and independent areas will be retained; and a coordinated, district-wide management system will be established to manage the road, trail and drainage systems on the Hillside. State-owned streets and rights-of-way would continue to be maintained by the State of Alaska, unless a separate maintenance agreement with the new Hillside management entity was in place.

The specific details of the best approach to creating a funding and management entity for Hillside roads, trails, and drainage will be worked out after the Hillside District Plan is adopted, working with Hillside residents and landowners. Doing nothing (that is, continuing to rely on the existing system of Local and/or Rural Road Service Areas) will not solve drainage issues and is not acceptable. The Plan recommends a hybrid approach: a new Hillside district-wide service area, similar to the Chugiak-Birchwood-Eagle River Rural Road Service Area (CBERRRSA), along with the retention of existing LRSAs. Establishing a new service area would require that a majority of voters within the proposed service area pass the enabling ordinance on a municipal ballot. Other alternatives include a new drainage authority, or a combination of a road service area and a separate drainage authority. A drainage authority allows fees to vary as a function of the varying drainage impacts of specific parcels. (This option is described in the sidebar on page 6-9.)

The currently proposed HRDTSA would be modeled in part on the successful Chugiak-Birchwood-Eagle River Rural Road Service Area (CBERRRSA). The "HRDTSA" would have jurisdiction over larger roads (with the exception of state-owned

roads, unless agreed upon by both parties), drainage, and trail capital improvements within the entire Hillside District. Local neighborhood road maintenance would remain the responsibility of existing LRSAs and independent service groups, although the HRDTSA could be made responsible for road maintenance on selected roads or for special situations that LRSAs and independents would be unable to address. All municipally owned public roads, drainage, and trail facilities within the area would be subject to the authority granted to the new management entity. Service provision would be set to reflect the most equitable, resident-supported funding and service strategy. Taxes raised would be outside the MOA tax cap, but may be subject to the service area's own tax cap.

The Citizen Advisory Committee has emphasized the need for Hillside resident control. This would be achieved, as is done in CBERRRSA, by having the service area guided by a local board. Like in Eagle River, the HRDTSA board would prepare and submit an annual budget to the municipal administration and the Assembly for approval; establish policy guidelines and priorities for capital projects and maintenance; review and comment to the Anchorage Assembly on all proposed capital projects for the improvement of road, drainage and trail facilities under the jurisdiction of the service area; and have limited authority to authorize work in emergency situations.

Capital and maintenance funds for services would be collected from all service area property owners as a dedicated levy on their property tax bill. The mill levy amount would be set by ballot in the ordinance establishing the HRDTSA. The initial ordinance establishing the service area could set a maximum mill rate, as was done for CBERRRSA.

Roads

Under the recommended approach, the HRDTSA Board would have authority over primary roads, providing maintenance and capital improvements to those roads. Existing LRSAs and RRSAs within the service area would continue to operate as they do today, providing operations and maintenance services to neighborhood and secondary roads. Areas outside LRSAs would remain independent. LRSAs and independent road service groups would be represented on the unified HRDTSA Board.

Many of the primary roads on the Hillside are part of the state road network. State roads within the Hillside service area would remain under state jurisdiction; the State would continue to be

Alternative to a Hillside Service Area: A Hillside Drainage Authority

As noted in the text, the plan is clear that some form of funding and management entity will be developed for the Hillside. The plan's current recommendation is to use the service area approach. After the plan is adopted, the Municipality, working with Hillside residents, will do more detailed work needed to flesh out the service area concept, or another alternative, to develop an approach that best meets the needs of the Hillside and the Municipality as a whole.

One alternative to the HRDTSA for drainage funding and management is an enterprise or special assessment district operating as a stand-alone Hillside Drainage Authority (i.e., without responsibility for roads or trails). This Authority could provide drainage management planning, maintenance, operations, and construction, if the proposed combined service area is not established by Hillside residents. This alternative would provide watershed-based drainage management using a "fee for service" approach where the cost causer is the cost payer; that is, landowners only pay for the demand they place on the drainage system. The fee structure for the Drainage Authority would be established through a rate study based on the amount of impervious surface of individual parcels, and on public infrastructure. It may also incorporate an impact fee formulated to accommodate new development and equitably distribute infrastructure costs. These revenues would be leveraged with grants, loans, state appropriations, and other project funds to meet community-requested service levels.

(continued on following page)

Alternative to a Hillside Service Area

(continued from previous)

The Drainage Authority would receive guidance typical of enterprise operations from a local board of community, technical, and professional representatives. This Drainage Authority could work cooperatively with a service area focused on roads and trails.

A drainage authority is a powerful and proven mechanism for managing drainage, and provides the benefits of fairness, equitability, problem-specific focus, and opportunities for incentives. Key program managers in Anchorage prefer this enterprise method of funding and management to the service area approach. It may be possible to integrate the benefits of the drainage authority approach with the benefits of the road and trail service area approach. As the Municipality and Hillside residents work to develop the best Hillside management entity and funding approach, this option should be looked at closely, as it may provide the best way to manage Hillside drainage issues.

What Will It Cost Me?

The tables (6.2 and 6.3) on the following pages show the amount of money that might be raised on the Hillside at different mill rates. The second table shows what the annual property tax would be on homes of different values at these different rates.
For example, with a mill rate of 1.78, a possible new Hillside-wide capital and maintenance service area would raise $3,082,244. At this rate, a home assessed at $350,000 would pay $623 a year in property taxes. This rate combines an increment of funding for capital projects and for maintenance (the latter increment is comparable to what is charged in existing LRSAs; for a $350,000 house, this is $350 a year at 1 mill).

responsible for capital improvements and maintenance on these roads. One of the major benefits of creating a Hillside service area is the ability to raise local funds to leverage state capital funding. The system for setting priorities for expenditures of state dollars greatly favors areas that make a local contribution to state capital projects. Rural road standards for areas like the Hillside would have to be clarified prior to the creation of the HRDTSA so that expectations regarding road standards are clear, and the different road standards desired by local residents are understood and respected. (A map and discussion of Primary and Secondary Roads is included in Chapter 4. Transportation.)

Trails
Under the unified service area approach, the service area is responsible for construction and maintenance of all major trails, including road-side trails and those away from roads. This is generally similar to the Chugiak-Birchwood-Eagle River Rural Road Service Area, which includes trails as part of their roads and drainage service area. In the Eagle River area, however, off-road trails are managed through a separate service area specifically for parks and recreation. Under the CBERRRSA approach, roadside trails are managed through the roads and drainage service area; other trails and parks are addressed through the separate park and recreation service area.

Drainage
The new HRDTSA would be tasked to develop, implement, and provide ongoing maintenance and operations of watershed drainage plans and the drainage component of the Hillside built/green infrastructure program outlined in previous chapters. The HRDTSA would work with the Municipality to perform watershed drainage planning, resolve drainage-associated regulatory problems, and prioritize community needs for capital projects and maintenance. Drainage projects to be performed encompass many functions, including reserving natural drainage corridors, obtaining drainage easements to assure connectivity of the drainage system, providing or upgrading roadside drainage facilities (including ditches and piped infrastructure), developing regional detention areas, ensuring adherence to platted drainageways and greenbelts, identifying and providing notification regarding improperly functioning site controls, addressing downstream impacts, and acquiring development rights on key wetlands for storage and infiltration.

Table 6.2
Potential Annual Revenue of Hillside Road, Drainage, Trails Service Area

Potential Annual Revenue of HRDTSA Under Various Mill Rate Options **								
	EXISTING MILL RATE	NUMBER OF PARCELS	TAXABLE VALUE*	LOWEST LRSA	MEAN HDP	CBERRRSA	AVERAGE OF HIGHEST THREE	MILL RATE REQUIRED TO GENERATE ~$1,000,000 HILLSIDE-WIDE
				MILL RATE OPTION (1.00)	MILL RATE OPTION (1.78)	MILL RATE OPTION (1.85)	LRSA MILL RATE OPTIONS (2.5)	
Bear Valley LRSA	1.5	122	$25,024,790	$25,025	$44,431	$46,296	$62,562	0.46
Birch Tree Elmore LRSA	1.5	497	$146,560,420	$146,560	$260,214	$271,137	$366,401	0.46
Glen Alps SA	2.75	397	$84,939,290	$84,939	$150,808	$157,138	$212,348	0.46
Lakehill LRSA	1	74	$27,976,200	$27,976	$49,671	$51,756	$69,941	0.46
Mountain Park Estates LRSA	1	105	$27,380,700	$27,381	$48,614	$50,654	$68,452	0.46
Mountain Park Robin Hill LRSA	1.3	270	$81,108,520	$81,109	$144,006	$150,051	$202,771	0.46
Paradise Valley South LRSA	1	42	$10,138,100	$10,138	$18,000	$18,755	$25,345	0.46
Rabbit Creek LRSA	2.5	347	$27,263,640	$27,264	$48,406	$50,438	$68,159	0.46
Raven Woods LRSA	1.5	33	$10,515,200	$10,515	$18,669	$19,453	$26,288	0.46
Rockhill LRSA	1.5	62	$25,710,600	$25,711	$45,649	$47,565	$64,277	0.46
Sequoia Estates LRSA	1.02	25	$13,109,700	$13,110	$23,276	$24,253	$32,774	0.46
Skyranch Estates LRSA	1.3	93	$20,898,100	$20,898	$37,104	$38,661	$52,245	0.46
South Goldenview RRSA	1.8	746	$238,604,558	$238,605	$423,636	$441,418	$596,511	0.46
SRW Homeowners LRSA	1.5	129	$27,914,050	$27,914	$49,561	$51,641	$69,785	0.46
Talus West LRSA	1.3	192	$50,973,468	$50,973	$90,502	$94,301	$127,434	0.46
Totem LRSA	1.5	67	$18,340,090	$18,340	$32,562	$33,929	$45,850	0.46
Upper Grover LRSA	1	37	$11,156,300	$11,156	$19,808	$20,639	$27,891	0.46
Upper O'Malley LRSA	2	699	$263,499,090	$263,499	$467,836	$487,473	$658,748	0.46
Valli Vue Estates LRSA	1.4	233	$72,099,550	$72,100	$128,011	$133,384	$180,249	0.46
View Point	2.59	24	$4,658,600	$4,659	$8,271	$8,618	$11,647	0.46
Villages Scenic Parkway LRSA	1	50	$10,838,800	$10,839	$19,244	$20,052	$27,097	0.46
Areas not in service areas (ad hoc)	0	3,321	$940,910,838	$940,911	$1,674,821	$1,740,685	$2,352,277	0.46
Total			$3,082,244,269	$3,082,244	$5,472,446	$6,780,937	$8,476,172	$~1,000,000

Note: This table is for comparison purposes only and may not reflect actual budget amounts. Taxable value is based on 2006 and 2008 data from the City Tax Assessor, Municipality Parcels GIS layer and LRSA GIS layer.

** Based on applying the mill rate to the taxable value. The CBERRRSA mill rate includes the mill rate for road and drainage maintenance (0.85 mills) plus the capital program (1.0 mills).

Table 6.3
Annual Taxes on Homes of Different Values

Cost Example				
TAXABLE VALUE	LOWEST LRSA	MEAN HDP	CBERRRSA	AVERAGE OF HIGHEST THREE
	MILL RATE OPTION (1.00)	MILL RATE OPTION (1.78)	MILL RATE OPTION (1.85)	LRSA MILL RATE OPTIONS (2.5)
$100,000	$100	$178	$185	$250
$150,000	$150	$267	$278	$375
$200,000	$200	$356	$370	$500
$250,000	$250	$445	$463	$625
$300,000	$300	$534	$555	$750
$350,000	$350	$623	$648	$875
$400,000	$400	$712	$740	$1,000
$450,000	$450	$801	$833	$1,125
$500,000	$500	$890	$925	$1,250
$550,000	$550	$979	$1,018	$1,375
$600,000	$600	$1,068	$1,110	$1,500
$650,000	$650	$1,157	$1,203	$1,625
$700,000	$700	$1,246	$1,295	$1,750
$750,000	$750	$1,335	$1,388	$1,875
$800,000	$800	$1,424	$1,480	$2,000
$850,000	$850	$1,513	$1,573	$2,125
$900,000	$900	$1,602	$1,665	$2,250
$1,000,000	$1,000	$1,780	$1,850	$2,500

The CBERRRSA mill rate includes the mill rate for road and drainage maintenance (0.85 mills) plus the capital program (1.0 mills).

Funding

The HRDTSA would be funded through a dedicated mill levy on the property tax bills of Hillside residents and would include separate components for operations and capital. The operations mill rate would be determined by a vote of Hillside residents to provide required maintenance services not handled by the LRSAs. The capital mill rate would be set to address the infrastructure needs identified in the transportation and watershed plans based on HRDTSA prioritization and timelines for completion. Capital improvements may additionally be addressed with funds acquired through development impact fees and through special assessment districts formed by majority vote to fulfill infrastructure needs in discrete areas, such as subdivisions. Combined revenues would be leveraged with grants, loans, and state appropriations to meet service levels.

Management

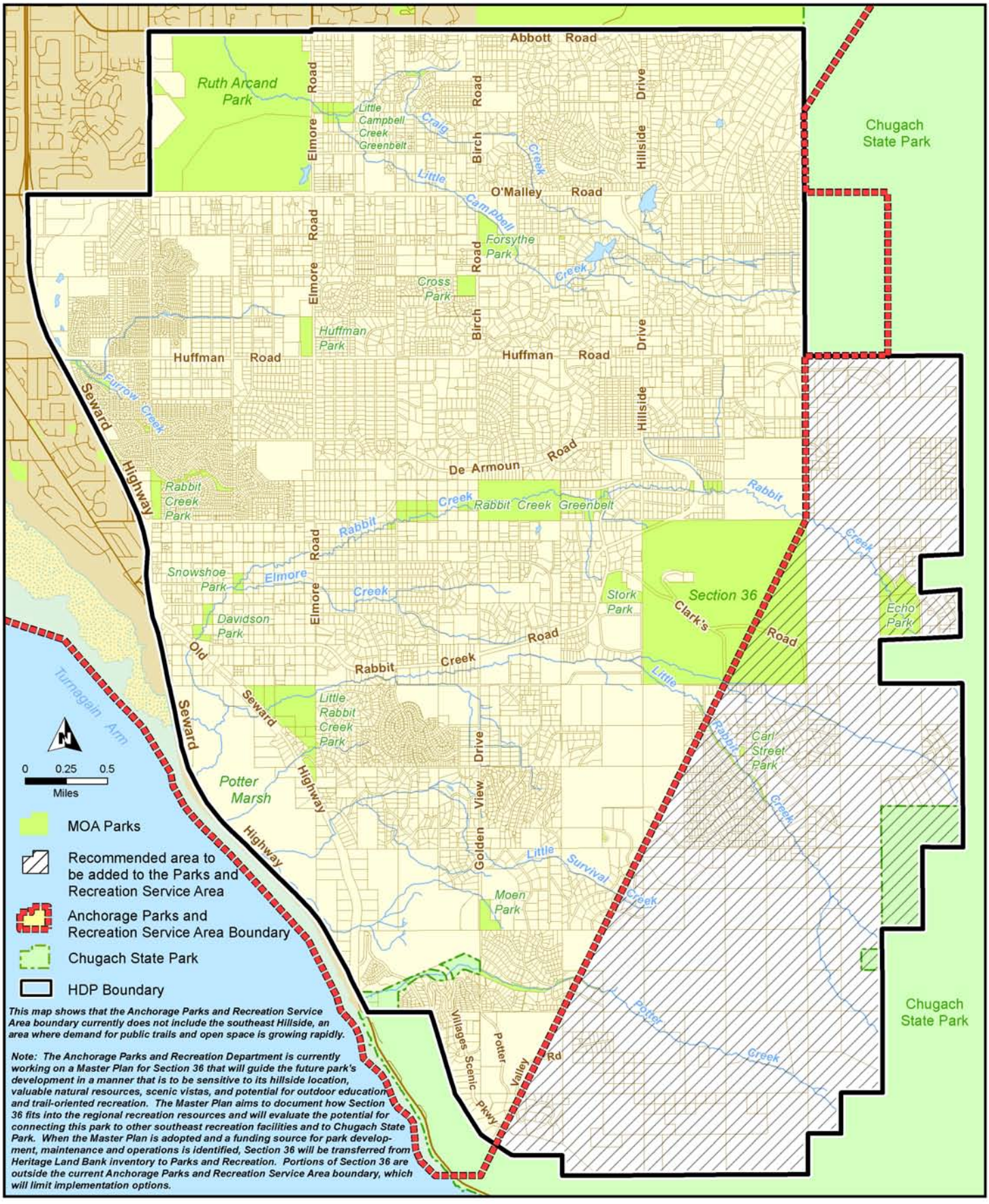
The HRDTSA would be overseen by a local service area board. The board would need to be structured to represent the interests of community councils, RRSAs and LRSAs, and independent road service groups. The specific structure would be determined working with the community and is subject to approval by the Anchorage Assembly. Work would be contracted out, much as is done through the LRSA/RRSA process today. Contracts would be overseen by the HRDTSA board, with dedicated administrative support by municipal staff, including assessment, contracting of services, and work oversight. Capital and maintenance funds for primary roads would be collected from all service area property owners as a dedicated levy on their property tax bill.

The specific steps to establish the proposed HRDTSA (or the drainage authority alternative) will require that additional work be completed after the approval of this plan. This would involve local residents and existing service area boards working through all the specifics of the new management entity, including estimated capital and operations costs, an acceptable mill rate, and the specifics of the management and funding structure. (Maps and a discussion of currently identified priority transportation and drainage projects can be found in Chapter 3. Drainage and Chapter 4. Transportation.) As stated previously, the level of funding for a local service area would be set by the HRDTSA Board, and the service area would only come into existence if approved in a local vote.

Map 6.4

Anchorage Parks and Recreation Service Area

Hillside District Plan



Parks and Recreation Service Area Boundary

Policy 14-B

Extend the Anchorage Parks and Recreation Service Area boundary to include the entire Hillside District, as well as the initial mile of Chugach State Park.

Background

The HDP recommends extending the existing Anchorage Parks and Recreation Service Area boundary to encompass the entire Hillside, and also extending this boundary approximately one mile into Chugach State Park. The current boundary arbitrarily excludes a large, important area (the southeastern portion of the Hillside) where recreation use is growing and trail-related improvement needs are greatest. (See Map 6.4 Parks and Recreation Service Area.) For example, about one-third of "Section 36," a 640-acre municipal parcel designated for recreation use, is out of the current recreation service area. Extending the service area boundary to include the entire Hillside will allow the Municipality to generate and spend funds for projects and actively manage trails and other recreation uses in this increasingly popular recreation destination. Extending the boundary into the State Park will allow the Municipality to be able to partner with the State on projects of mutual interest.

Two specific actions are needed to carry out this objective. One is that residents and landowners within the proposed expanded service area boundary will have to vote in favor of the change. While a supportive vote will add a small increment of property taxes to landowners in this area, it will create the much-needed capacity to manage recreation issues in this area (for example, to empty trash cans and manage trailhead use). The second required action is a Bowl-wide vote, asking Anchorage voters to approve this change. The vote would offer two choices: leave the boundary as it exists today, or expand the boundary as outlined above. This provides an opportunity for Anchorage Bowl voters to provide for access projects and better management in an area that offers existing trails and parks and the potential for significant improvements.

Southeast Hillside is an area with rapidly growing recreation demands. The area is currently outside the Anchorage Parks and Recreation Service Area boundary.

In the Little Rabbit Creek drainage, the Hillside District Plan establishes an integrated system of drainage and open space corridors – a "built/ green infrastructure system" – to guide development on the large tracts of vacant private land in the upper valley.

Potter Valley Subdivision. This 1980s subdivision is served by public water and sewer and has an average lot size of less than a half an acre. Retention of areas of open space and careful grading has helped this project minimize runoff and visual impacts.

Chugach State Park Access

Policy 14-C

Create a new funding and management program targeted at improved Chugach State Park access with trailhead and parking facilities.

Background

The Hillside District Plan recommends that a new mechanism be created to raise funds from the Anchorage Bowl as a whole to improve and better manage access to Chugach State Park. Needed improvements include new trails, new trailheads, improvements to access roads, and improved trail management. Chapter 4. Transportation outlines specific priorities for trail-related improvements.

This recommendation is based on the fact that use of the State Park is generated from the entire Anchorage Bowl. No mechanism currently exists to improve access to the park. For at least the last two decades, the legislature has consistently provided very limited resources for needed improvements to state parks. It is not fair to ask for these improvements solely from new developments adjoining the park. It is also not reasonable to ask Hillside residents to solely fund road maintenance when, on some roads, a significant portion of the road use is for recreational access by people outside their neighborhoods. Given that solutions to access issues will require a combination of municipal and state action to the benefit of Anchorage residents, it is not reasonable to presume this responsibility should lie wholly with the State.

More work is needed to determine the most appropriate specific funding and management mechanism to improve Chugach State Park access. Options include:

- Revenue bond funding tied to a non-property tax revenue stream, such as bed tax. Under the revenue bond approach (in contrast to general obligation bond), improvements constructed with the funds do not have to be municipally owned, nor is a vote required.
- Assessing a property tax on an areawide basis (requires investigation to determine what categories of service are allowed areawide under the Anchorage Municipal Charter).
- A new Bowl-wide access district requiring a vote and using general obligation bonds.

The goal of any of these options would be the same: to generate funds for capital projects, as well as money to contribute annual revenue help with operations and maintenance. Funds raised through this bond would be administered by the Municipality working closely with the State of Alaska and affected private land owners and residents. No specific fund raising target has been set at this time. For reference, the recent $5,000,000 Anchorage Parks and Recreation Bond required an estimated annual tax increase of $3.40 for every $100,000 of property value.

Well Water Protection Program

Policy 14-D

Establish a Hillside Well Water Protection Program and new programs and standards for managing neighborhood wastewater systems.

Background

As outlined in Chapter 5. Water and Wastewater, the Hillside District Plan recommends the development of two new programs on the Hillside: one to help protect well water and the other to oversee neighborhood wastewater treatment systems. The estimated cost to the Municipality for the Development Services Department On-site Water and Wastewater Program to manage the Well Water Protection Program and oversight of the design, construction, and operation of neighborhood sewer systems is around $300,000 annually. Currently the On-site Water and Wastewater Program collects fees for the certification of on-site wastewater systems and permits for on-site water and wastewater systems. This plan recommends that these fees be augmented by additional fees of about $25 charged annually to owners of on-site systems and dischargers to neighborhood systems to recover the estimated $300,000 increase in annual cost to the On-site Water and Wastewater Program.

Examples of different approaches to site development. Lots that retain more natural vegetation and natural contours create fewer runoff problems and result in less change in the appearance of the Hillside; retaining natural vegetation immediately next to homes can increase risks of damage from wildfire. New standards in the plan aim to find a reasonable balance point on these issues.

View overlooking the Furrow Creek watershed area.

AWWU Certificated Sewer Boundary

Policy 14-E

Contract the boundary of the AWWU Certificated Service Area in the Hillside District to match the Maximum Perimeter of Public Sewerage.

Background

As outlined in Chapter 5. Water and Wastewater, as a result of the Hillside District Plan, AWWU will seek to withdraw areas of the Hillside from its State of Alaska-sanctioned service area as provided in its "Certificate of Public Convenience and Necessity (CPCN)." These areas would generally lie east of Elmore Road and north of Rabbit Creek Road, and generally east of Prominence Pointe and Paradise Valley subdivisions south of Rabbit Creek Road. The amended CPCN boundary would coincide with a new maximum perimeter of municipal sewerage that replaces the maximum recommended perimeter of public sewerage identified in the 1982 Hillside Wastewater Management Plan. This new sewer boundary would closely match the boundary of the service areas for water service provided by CPCNs issued to AWWU and the Potter Creek Water Company.

Past history suggests that, in the future, there may be requests to amend the updated state-sanctioned sewer CPCN boundary to provide municipal sewer service to nearby parcels for which on-site wastewater disposal is unavailable. Since 1982, there have been over a dozen amendments to the Maximum Perimeter of Public Sewerage as identified in the 1982 Hillside Wastewater Management Plan. These boundary changes have traditionally been approved by the Assembly based on a petition through the Anchorage Planning and Zoning Commission by property owners seeking the service. A similar petition process will continue to be available with respect to the new Maximum Perimeter of Public Sewerage but will need to be augmented by subsequent action amending the state-sanctioned CPCN. Following Assembly action, at the request of the property owner(s), AWWU would file an application to amend the boundary with the Regulatory Commission of Alaska. AWWU must present arguments in its application that it is "fit, willing, and able" to re-assume this portion of the service area, and the Assembly action recommending the boundary change will be a mandatory element of the petition as well. Costs of implementing the CPCN boundary revision will be borne by the property owners seeking service.

Building Safety Service Area

Policy 14-F

Extend the Anchorage Building Safety Service Area and, with this, the requirement for building permits to the entire Hillside District.

Background

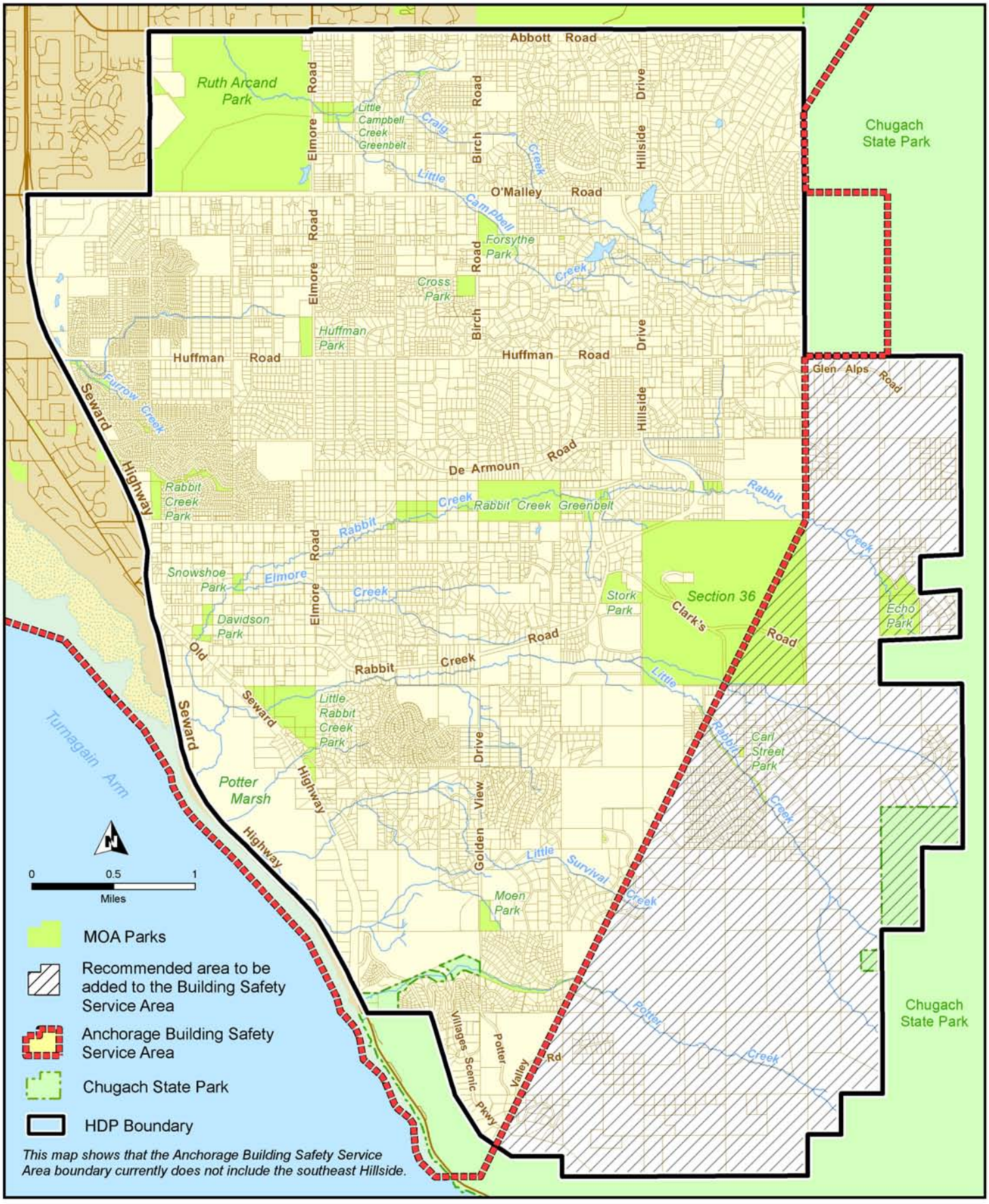
Currently, the southeastern third of the Hillside is outside the Municipality's Building Safety Service Area (BSSA), as shown in Map 6.5. The plan recommends that in the future, construction in this area follow the same building permit process required in the remainder of the Anchorage Bowl. Moving the Building Safety Service Area boundary would require supportive votes by a majority of people in the area proposed to be included in the BSSA, as well as a majority of people in the Anchorage Bowl currently in the BSSA. Costs associated with permitting and inspections are covered by fees directly associated with these activities; thus, the BSSA expansion would not impact property taxes.

Building permits are sensible in this area for the same reason they are required in the rest of the Anchorage Bowl: to protect housing values as well as life and property. Significant growth is expected in the upper Hillside, and requiring building permits can help ensure quality development that benefits both current and new homeowners. As is shown by places that have not met normal site development and building standards, ultimately it is less costly to prevent problems than to try to fix them after the fact. Building permits are particularly appropriate on the upper Hillside, where building conditions are more challenging than in lowland areas of the city, and where drainage and other issues are more significant and more challenging to solve.

Map 6.5

Anchorage Building Safety Service Area

Hillside District Plan



Part 2:

Development Standards and Procedures

Overview

This section presents standards and procedures for drainage, land use, and transportation, to better guide future development to respond to the unique features of the Hillside environment. Standards address development at the scale of individual parcels, subdivisions, and watersheds. Examples include specific rules on the retention of vegetation, the protection of stream corridors, or subdivision submittal requirements.

Like other MOA plans, once adopted, the goals, policies, and objectives of the Hillside District Plan will be implemented by amendments to Title 21.

This plan, by itself, does not formally establish standards with the legal status of the Anchorage Municipal Code (such as Title 21). The word "standards" is used in this plan as a convenient umbrella term for a spectrum of land use intentions, ranging from items that may be added to Title 21, to others that will have a lesser level of legal authority. Additional work will be required to refine the precise language of these standards and to formally bring this material into the Municipality of Anchorage system of laws, regulations, and administrative policies. Options for formalizing these standards include:

- Specific additions to the standards in Title 21, either through the revision process now in progress or once the current revision process is complete.
- Creation of separate overlay district(s) for specific geographic areas of Hillside, to supplement Title 21.
- Additions to the Design Criteria Manual (DCM) or other municipal administrative policy documents, either specifically for the Hillside or more broadly.

Context: Planning Issues Summary
Finding the Right Level of Regulation and the Right Approval Process

Balance Point

The Hillside, particularly the upper elevations, presents a different environment than the rest of the Anchorage Bowl. As a result, a different approach to development is needed than what works in lowland areas. Done right, Hillside development can provide great places to live and also minimize environmental impacts, avoid natural hazards, protect access to recreation, and help

maintain the Hillside's much loved natural and rural character. The primary challenge in providing the right rules is finding the balance point between too little and too much regulation. With too much regulation, projects are not economically viable and creativity is stifled; too little, and project impacts can be unacceptably high.

Understanding Existing Policies

Finding the desired regulatory balance point requires starting from a clear understanding of existing policies. This is not simple because Title 21 and other municipal policies are in transition, and changes are not yet complete. In addition, many people are not aware of recent changes in policy, and the impact of changes already made is not yet visible in new development. Understanding current standards is also difficult because the existing approval process is complex, with authority split among many different local, as well as state and federal agencies.

Flexibility and Rigidity

Standards must balance the benefits of flexibility with the need for rules that are fixed and clear. Flexibility allows development to respond to the character of specific sites; fixed standards promote fairness and consistency between projects and simplify implementation and enforcement. The Hillside District Plan establishes clear objectives as a starting point, then recommends a set of fixed standards to achieve these objectives. In the interest of allowing a reasonable degree of flexibility, when standards are codified, the plan recommends the provision of an administrative process that allows for departure from these standards if (and only if) an alternative approach better meets plan objectives.

Subdivision Submittal Requirements

Quality development in locations like the Hillside requires different site information. Existing submittal requirements only partially fulfill the need for accurate information about site characteristics.

Implementation

Not only are the right standards needed, but a system must be in place to ensure that these development standards are actually enforced in the field.

Goal and Policy Summary: Part 2

GOAL - 14	
Primary Policy	Implementation
14-G. Modify submittal and review requirements for subdivisions on the Hillside. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; codification by MOA Planning and MOA Project Management and Engineering (PM&E).
14-H. Clearing, grading, and other site modifications will not be permitted prior to the approval of a preliminary plat, building permit, or land use permit. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; codification by MOA Development Services Department, MOA Project Management and Engineering Department-Watershed Management Services.
14-I. Establish a new set of development standards for subdivisions in upper elevation or steeper slope areas of the Hillside. *(Applies to upper elevation or steeper slope areas of the Hillside District)*	Objective established by the Hillside District Plan; codification by MOA Planning Department and MOA Project Management and Engineering.
14-J. Establish a new set of development standards for individual lots or parcels in upper elevation or steeper slope areas of the Hillside. *(Applies to upper elevation or steeper slope areas of the Hillside District)*	Objective established by the Hillside District Plan; codification by MOA Planning Department and MOA Project Management and Engineering.
14-K. Acquire, where existing drainage systems are discontinuous, necessary drainage easements required to solve drainage problems, preferably through voluntary sales, or as a last resort, through eminent domain. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; implementation by MOA Development Services, MOA Project Management and Engineering-Watershed Management Services.
14-L. Establish development standards for a Hillside Conservation Subdivision. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; codification by the MOA Planning Department.
14-M. Develop Hillside road standards for challenging site conditions and rural character including bedrock, steep slopes, and sub-alpine and alpine elevations with the purpose of minimizing cut-and-fill, disruption to natural drainage, and visual impacts. *(Applies to the entire Hillside District)*	MOA Traffic Department, MOA Project Management and Engineering.
14-N. Develop standards for the use of gravel roads in limited circumstances: for new or existing roads that are unlikely to have further connections, have design speeds of 25 miles per hour or less, and will have no more than 100 ADT at full build-out. *(Applies to the entire Hillside District)*	MOA Traffic Department, MOA Project Management and Engineering (PM&E)
14-O. Establish standards for lighting. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; codification by the MOA Planning Department.
14-P. Establish standards for ridgetop development. *(Applies to the areas specified on HDP Map 6.9)*	Objective are established by the Hillside District Plan; codification by the MOA Planning Department.

A Look at How They Do It "Outside"

Most U.S. cities that include extensive areas where hillsides are developed have established a set of specific standards to guide this growth. A 1996 report by the American Planning Association (APA), "Planning for Hillside Development" reviews hillside development ordinances from 190 local governments in 22 states. Below is a highly-compressed summary of the history of hillside development ordinances, based on the findings of the APA report:

- Early 1950s - Grading standards, to protect public safety.
- Later 1950s - Hillside-specific street and subdivision standards.
- 1960 - Slope-density ordinances, reducing density with increasing slopes.
- 1970s - Environmental policies; e.g., watershed protection, erosion, and sedimentation.
- 1980s to today - Integrated standards for hillside development, addressing visual quality, fire safety, and environmental protection.

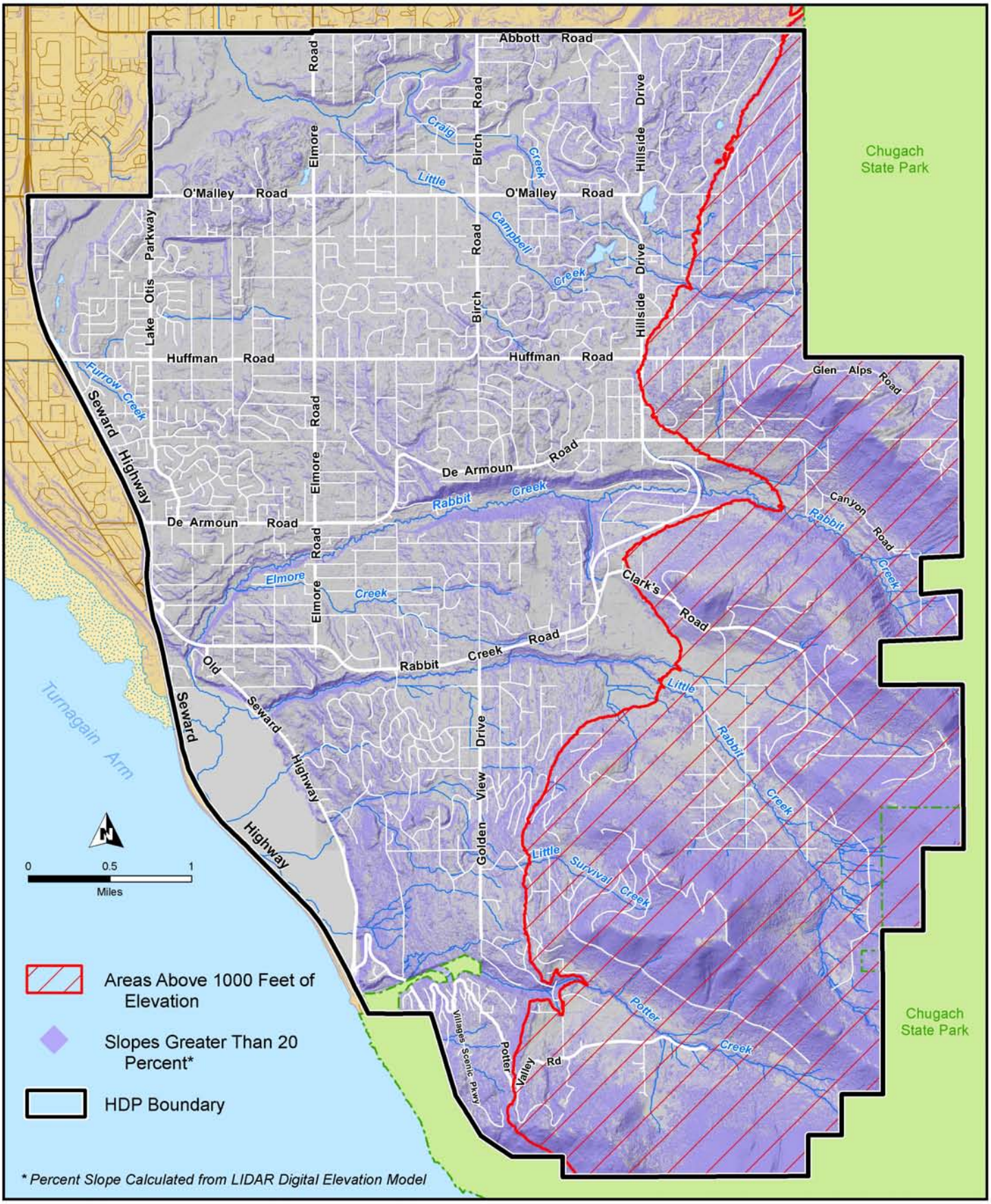
As is demonstrated by this report, Anchorage lags behind most U.S. cities in establishing specific standards to guide hillside development.

Application of Development Standards and Procedures

As is summarized in the table on page 6-23, some of the standards and procedures established in this plan apply to the entire Hillside District, while others are limited to specific portions of the district. The standards associated with HDP Policies 14-I and 14-J apply only in those areas of the Hillside with steeper slopes and at higher elevations.

The challenges for development on the Hillside increase with slope and elevation. Steeper average slopes are correlated with an expanding range of development issues, including increased runoff, increased erosion, and more challenging construction conditions. As elevations increase, precipitation rises, soils are thinner, snow stays longer and falls earlier, growing seasons are shorter, and vegetation decreases, all which increase the impacts (and visibility) of development. Consequently, the plan establishes a set of new standards (HDP Policies 14-I and 14-J) that apply in areas where either average slopes on lots exceed 20 percent or in higher elevations areas, defined as areas above the "vegetative transition line."

Map 6.6 identifies the general location of the areas where these standards apply. The "vegetative transition line" on the Hillside separates lower elevation areas where birch and spruce forests dominate, from upper elevation sub-alpine and alpine areas. This boundary generally corresponds with the 1,000-foot contour, and also matches the transition from slope and valley tills, moraines and bedrock in alpine areas, to washed and ridged tills in lowlands (shown on Map 1.4). The precise location of this line will be determined in the field, after the plan is approved, as part of the formalization of HDP Policies 14-I and 14-J. Above this line, vegetation is characterized initially by increasing numbers of alders and declining numbers and sizes of spruce and birch trees, and increasing numbers of hemlock. At higher elevations this transitional vegetation gives way to alpine tundra. In areas below the vegetative transition line and below average slopes of 20 percent (that is, in the rest of the Hillside), the regular Title 21 development standards apply.


Abbott Road
Elmore Road
Birch Road
Hillside Drive
Craig Creek
Little Campbell Creek
O'Malley Road
Parkway
Otis
Lake
Huffman Road
Furrow Creek
Seward Highway
De Armoun Road
Rabbit Creek
Elmore Creek
Old Seward Highway
Turnagain Arm
Golden View Drive
Glen Alps Road
Canyon Rd
Clark's Road
Little Rabbit Creek
Little Survival Creek
Potter Creek
Potter Valley Rd
Villages Scenic Pkwy
Chugach State Park
Chugach State Park
N
0
0.5
1
Miles
Areas Above 1000 Feet of Elevation
Slopes Greater Than 20 Percent*
HDP Boundary
* Percent Slope Calculated from LIDAR Digital Elevation Model

Objectives for Development Standards

The objectives for Hillside development standards are:

- Minimize disruption of the Hillside natural setting and natural systems, to avoid drainage problems, protect water quality, protect habitat, and maintain rural character.
- Prevent soil erosion and landslides; minimize risks from natural hazards, including wildfire, flooding, earthquakes and avalanche.
- Design and site buildings, driveways, and other site improvements to minimize site disturbance; retain natural contours to the greatest extent possible.
- Retain natural, indigenous vegetation, and (where necessary) revegetate disturbed areas to reduce drainage and erosion problems, provide wildlife habitat, and maintain the area's visual character.
- Incorporate drainage design so development does not adversely impact neighboring or nearby properties, downstream properties, and public infrastructure:
    - Maintain and use, as appropriate, natural drainage systems, including streams, wetlands, recharge areas and other natural water systems.
    - Design subdivisions and other developments to accept upslope natural drainage; convey this runoff through the site via natural waterways and to natural waterways on adjoining down-slope properties.
    - Minimize impervious areas.
    - Protect (and/or establish) and sustain infiltration areas to detain or retain runoff from impervious surfaces.
    - Provide for the conveyance of surface discharges of groundwater and reduce unwanted glaciation.
- Maintain the natural, rural appearance of the Hillside, to provide a high-quality residential and recreational setting.
- Support innovative architectural, landscaping, circulation, and site design to help achieve these objectives.
- Establish development standards that can help reduce development costs, while serving other objectives listed above.
- Establish clear, enforceable penalties for the violation of adopted standards to ensure compliance.

Submittal Requirements

Policy 14-G

Modify submittal and review requirements for subdivisions on the Hillside.

Background

Current subdivision submittal requirements provide only a generalized picture of the natural environment of a site proposed for subdivision. Better information regarding site features at the outset of a project will benefit the developer, the project, reviewing agencies, and the surrounding neighborhoods. While this policy applies throughout the Hillside, it will largely be applicable in the southeastern portion of the district where the large majority of vacant property is located.

The Hillside District Plan expands the submittal and review process to include the following steps:

1. The developer, prior to any site modification, submits an initial environmental conditions map and associated information. This material is detailed for the project site and also shows how these features relate to similar features on surrounding parcels. Required submittal materials are outlined below; the first group is already required; the second group outlines additional requirements.

   Material currently required:

   - Topography (including slope calculations for R-10 development).
   - Trail and road corridors identified in adopted municipal plans.
   - Hazard areas.
   - Streams and other waterways and waterbodies.
   - Aerial photo map, including existing vegetation and major stands of trees, with a description.
   - "As built" survey indicating the location of any existing private improvements.
   - Public improvements, including the location of existing rights-of-way, trails, walkways, sidewalks, and other public infrastructure on the subject property and on adjacent properties.

- Soil conditions for meeting requirements for on-site wastewater treatment and road subgrades.
- Environmental features, including wetlands and landslides.

New submittal requirements:

- Depth to bedrock.
- Groundwater recharge zones.
- Groundwater discharge zones.
- Vegetation/land cover (i.e., interpretation of aerial photograph to distinguish areas with different vegetation).
- Built/green infrastructure features as identified on the Hillside Built/Green Infrastructure Map (e.g., trails and associated trailheads, roads, drainage features) on the subject property and connecting to surrounding properties.
- All dedicated easements (e.g., for trails and utilities on adjacent properties).
- Slopes (by grade category: 20-30 percent, 30-50 percent, more than 50 percent).
- Representative land survey field verification of topography.

2. The environmental conditions map is reviewed and determined complete by the Municipality within a reasonable period of time.
3. The developer submits a preliminary plat in conformance with code requirements, showing parcel boundaries and planned improvements, including roadways, trails, and drainage easements. The preliminary plat package includes information that clarifies how the proposed subdivision responds to environmental conditions and development standards.
   - Drainage plan.
   - Connectivity plan indicating how the project provides for the connectivity of roads, trails, and stream corridors between surrounding parcels.
   - General locations of individual residences, showing how these comply with applicable standards (such as drainage and driveway slope standards).
   - Location of water and wastewater facilities.

Clearing and Grading

Policy 14-H

Clearing, grading, and other site modifications will not be permitted prior to the approval of a preliminary plat, building permit, or land use permit.

Background

The overriding objective for the Hillside is to shape future development to adapt to and retain natural drainage, natural contours, and natural vegetation. Current regulations allow landowners to extensively modify these properties prior to any environmental reviews or project approvals. Under this new standard, no significant grading or clearing can occur on undeveloped tracts until the process outlined in HDP Policy 14-G has been followed; that is, until the required environmental information has been submitted and approved, and a preliminary plat approved. This includes both clearing with hand tools and mechanized means. Likewise, no significant grading or clearing can occur on individual undeveloped parcels until a building permit or land use permit has been issued, and the requirements for protection of natural vegetation and contours are assured. This policy is not intended to prevent minor clearing of vegetation on existing developed parcels. Likewise, vegetation retention requirements must be consistent with wildfire protection standards.

Development Standards

Subdivisions

Policy 14-I

Establish a new set of development standards for subdivisions in upper elevation or steeper slope areas of the Hillside.

Background

Development standards at the scale of subdivisions are outlined below. HDP Policy 14-J outlines standards for individual parcels. These standards build from the goals in Chapter 2. Land Use, Chapter 3. Drainage, and Chapter 4. Transportation, as well as the objectives presented in this chapter. The Municipality will write ordinances or policy updates as necessary following plan adoption to formalize these standards.

Setting Policy in the Hillside District Plan versus Title 21

The policy regarding setbacks is a good example of the challenges that have arisen during the preparation of this document. Both the HDP and the Title 21 process have included extensive, parallel discussions of the appropriate size of watercourse setbacks, and discussions of the appropriate categories of streams meriting different setback sizes. While not all members of the CAC agreed, the consensus among the advisory committee and municipal staff was that the two levels of policies outlined in the draft were appropriate.

- Vegetation: Minimize disruption of natural vegetation; where vegetation must be altered (for example, in road cuts), replant disturbed areas with native vegetation meeting "Firewise" guidelines.
- Grading: No mass grading is permitted other than for roads and utilities.
- Utilities: Place utilities near the front lot line to minimize the additional grading needed to install them in the rear of lots.
- Connectivity: Reserve routes for identified Hillside built/green infrastructure elements (watercourses, roads, and trails) to ensure connectivity across multiple parcels. The alignment of these features can be modified from what is shown on the Hillside Built/Green Infrastructure Map (Map 2.11) as long as a reasonably direct, continuous route is provided.
- Watercourse protection: Natural watercourses are the backbone of the Hillside drainage system. Actions are needed to maximize the protection of this important function, for drainage as well as other environmental goals. Wherever possible and practicable, stream corridors shall be further protected to ensure their natural function and contribution to the Hillside drainage and recharge system. Methods of protection are outlined below, in order of most protected to least.
    - Permanent retention in public ownership: Wherever possible, stream corridors will be protected through the retention of tracts of land held in public ownership in conservation status to improve monitoring and enforcement of setbacks, improve long-term, consistent maintenance of natural conditions, and allow an approval process for site-sensitive access and use of stream corridors.
    - Placement in homeowners association: Stream corridors can also be protected in a separate tract of land held by a subdivision's homeowners association. In addition to the separate tract, the dedication of a protection and maintenance easement (per AMC 21.80.040) should be required.
    - Setbacks: Minimum setbacks for watercourses identified on contemporary Municipality of Anchorage mapping shall be fifty feet horizontally from the ordinary high-water mark on each side of streams, and ten feet horizontally

from the edge of each side of drainageways. Protection and maintenance easements can also be applied in this situation.

- Per the Wetlands Management Plan, the requirement for a 65-foot creek setback comes from the wetlands designation and is still required if the stream runs through a wetland. If it does not run through wetlands, then the 50-foot setback would be applicable.

- Road Crossings
  - Minimize road crossings of waterways by roads, utilities, trails, trails and paths, and other linear facilities.
  - Where such crossings are unavoidable, waterways should cross roads and linear features along their natural courses and as near perpendicular (75 degrees or greater) as possible (illustrated in Figure 6.7).

Figure 6.7
Waterway Crossings

Appropriate Crossing Unacceptable Crossing

- Regional/Watershed Drainage Control Structures: Where regional/watershed drainage control structures have been constructed or are programmed for construction and a management system is in place to ensure that these features will be sustained, development may adhere to runoff allowances specified in adopted watershed drainage plans (as opposed to the generally stricter runoff controls that would otherwise apply). For runoff flows in excess of those provided by drainage plans, or where the regional control facilities identified in watershed drainage plans are not programmed or constructed, provide controls to meet the drainage plan allowances.

- Subdivision Drainage Plan: Develop a project drainage plan that shows that strategies to reduce runoff and mitigation of any drainage issues have been adequately provided in the design of the subdivision. Elements of the subdivision drainage plan should include:
  - Preserve and use natural water and drainage features. Surface drainage shall be conveyed in natural drainage-ways protected by setbacks and easements, and be disconnected from roadside ditches as much as possible.
  - Minimize the area tributary to roadside ditches and provide structures other than roadside ditches to convey stormwater runoff.
  - Reserve wetlands and other areas that help store and infiltrate runoff.
  - Where other options are not adequate, use insulated road crossings and dedicated piped drainage systems.
- Shallow Groundwater:
  - Demonstrate adequate planning to avoid areas of shallow groundwater or potential groundwater discharge zones, including municipal mapping of these areas and consideration of these areas in the platting review processes.
  - Minimize disturbance of and construction in groundwater discharge areas and areas with perched, shallow, or high seasonal groundwater elevations.
  - Establish and require compliance with construction standards for roads, trails, utilities, or other infrastructure that keeps subsurface water underground in areas where shallow groundwater cannot be avoided. Provide for the conveyance of surface discharges of groundwater and prevent unwanted glaciation due to road cuts through and other disturbances of groundwater discharge areas.
  - Establish and require compliance with construction standards for roadway crossings by ditches that convey year-round groundwater discharges (for example, smooth-bore culverts graded to the bed of the up- and downstream channel, appropriate insulation, and culverts constructed to as short a length as possible).
- Plan for access for equipment to construct and maintain on-site wastewater systems.

Individual Parcels

Policy 14-J

Establish a new set of development standards for individual lots or parcels in upper elevation and steeper slope areas of the Hillside.

Background

Standards to apply at the scale of individual parcels are listed below. Like the companion standards for subdivisions, these standards build from the goals in Chapter 2. Land Use, Chapter 3. Drainage, and Chapter 4. Transportation, and fulfill the objectives presented in this chapter. The Municipality will write ordinances or policy updates as necessary following plan adoption to formalize these standards.

- Grading: Minimize grading; use "terrain responsive" building techniques that fit buildings to the land, rather that fitting the land to the building.
- Site Disturbance:[2] Each lot shall have a site disturbance envelope which shall define the limits of all earth disturbance and vegetation clearing. Clearing, grubbing, or grading outside the site disturbance envelope is prohibited except to modify fuels in order to reduce fire risk or to accommodate utility service connections. The size of the site disturbance envelope shall be as follows:
  - Lots less than one acre in area: 10,000 square feet maximum.
  - Lots over one acre but less than two acres: 20,000 square feet maximum.
  - Lots over two acres but less than five acres: 30,000 square feet maximum.
  - Lots five acres or greater: 40,000 square feet maximum.
  - Areas outside the site disturbance envelope shall not be used for stockpiling materials or excess fill, construction vehicle access, storage of vehicles during construction, or similar uses. Temporary construction fencing shall be installed around the perimeter of the site disturbance envelope, to be removed after the final certificate of zoning compliance is issued.
- Natural Vegetation and Fire Protection: While complying with the site disturbance envelope, also protect residences from

2 - Note: The site disturbance standards presented here are taken from the draft Steep Slope Development Standards, in section 21.07 of the Title 21 Rewrite Public Hearing Draft. In the Hillside District, these standards will be applied both in steep slope areas and in upper elevations.

wildfire dangers. Where there are conflicts between these two objectives, ensure (at minimum) that low-growing natural vegetation remains intact, even if trees are removed.

- Establish standards and guidelines to minimize impervious areas, such as the use of permeable materials for low-traffic surfaces (for example, driveways and vehicle storage); consider the use of vegetative cover for parking areas and roofs.
- Establish and require compliance with standards for the capture of roof runoff (for example, by using "rain gardens" or other features that capture and infiltrate runoff using planted, gravel-filled retention areas).
- Establish and require compliance with standards for suitable outfalls for footing drains, including subsurface piped drainage systems and minimum requirements for on-site infiltration or day-lighting of footing drain discharge. If footing drains are proposed but there is no suitable outfall, require alternative foundation design that does not require continuous de-watering (such as slab-on-grade, pilings).

Drainage Easement

Policy 14-K

Acquire, where existing drainage systems are discontinuous, necessary drainage easements required to solve drainage problems, preferably through voluntary sales, or as a last resort, through eminent domain.

Background

Roadside ditches and other drainage conveyance systems require connectivity. However, in some places on the Hillside, the drainage system stops at the subdivision boundary or the end of a constructed road and the downstream conveyance is inadequate. In other places, subdivisions have been developed that block natural routes for the conveyance of water from upslope development. This policy will provide a clear means to acquire the missing links for comprehensive drainage connectivity. Drainage easements should be adequate for site access and span at least 10 feet on both sides of drainageways.

Conservation Subdivisions

Policy 14-L

Establish development standards for a Hillside Conservation Subdivision.

Background

As outlined in Chapter 2. Land Use, Title 21 establishes a conservation subdivision process; the Hillside District Plan establishes an additional variation on this policy, which applies throughout the Hillside District.

Rules for the Hillside Conservation Subdivision build from Title 21 conservation subdivision regulations. Like the Title 21 conservation subdivision, the Hillside Conservation Subdivision allows for flexibility in lot layout and a reduction in individual lot size. This approach encourages clustering residential development to provide greater protection of open space and to provide improved recreation opportunities for residents and the public. The general policy direction for this new development tool is outlined below, but implementation will require follow-up codification.

- Parcel Size: The minimum parcel size for the use of Hillside Conservation Subdivision is 10 acres.
- In order to qualify for a density bonus, the Hillside Conservation Subdivision requires a minimum of 50 percent of the overall land to be set aside as permanent open space.
- Individual Lot Size: The Hillside Conservation Subdivision allows for smaller lots than would be possible under baseline zoning. The minimum lot size may range from 25,000 square feet to 15,000 square feet, provided that homesite areas are adequately buffered. Lots must still meet municipal requirements for water and wastewater, so lots of less than 40,000 square feet will require the use of neighborhood wastewater systems or some other alternative to traditional on-site wells and septic systems.
- The Hillside Conservation Subdivision allows for a modest increase in the number of allowed lots. To be considered for a possible increase in the number of units (bonus units), an initial determination must be made of the number of lots that would be allowed under the baseline zoning, considering site-specific constraints that would reduce the hypothetical maximum number of lots. Exceeding this otherwise applicable maximum will be possible only if the developer demonstrates that the subdivision goes beyond otherwise applicable open space and environmental standards and provides substantive public benefits, as outlined below:

Definition of Terms

As was noted in Chapter 2. Land Use, there is potential for confusion in the use of terms "conservation" and "open space" subdivisions. The details are explained in Chapter 2; the short version is below:

- Conservation Subdivision refers to the general approach of allowing flexibility in subdivision layout.
- Title 21 Conservation Subdivision: Permits reduction in lot sizes but no increases in the number of lots than would otherwise be permitted (outlined in Chapter 8 of Title 21).
- Hillside Conservation Subdivision: Allows a small increase in number of lots than would otherwise be permitted, provided applicable open space standards are exceeded (HDP Policy 2-C).

  - Preserve extra open space (e.g., stream or trail corridors that exceed standard widths or that convey land to public use versus simply relying on development setbacks).
  - Preserve extra natural drainage features (e.g., protection of buffer areas around a wetland or a wider than required stream corridor).
  - Preserve more valuable open space (e.g., open space of particular value for recreation use or extra protection of wetlands or natural vegetation).
  - Provide open space that goes beyond normal standards for the connectivity of built/green infrastructure (e.g., connectivity of stream channels, trails, or wildlife movement).
  - Provide for public recreational use (e.g., dedicating land versus merely using development setbacks, providing space for public trailhead parking).
  - Preservation of significant trees and habitat, wildlife corridors, and distinctive natural features.
  - Preservation of steep hillsides with the objective of locating homesites and roads in ways that mitigate disturbance to the terrain and natural vegetation, and minimize visibility from surrounding neighborhoods and public streets.
  - Open space should be open to the general public where the area is part of or connects to a regional or sub-regional greenbelt. Where the intent is purely for use by the immediate neighborhood, access can be held by the homeowners association; but to qualify for a density bonus, the proposal must provide some demonstrable benefit to the broader community, such as permanent viewshed preservation or public access (for example, a neighborhood trail link).

- Number of Bonus Lots: Provision of bonus lots should be on a "sliding scale" ranging from a 5 to 20 percent density increase above what base zoning and site constraints would allow. The bonus will be proportional to the quality and quantity of open space in the conservation subdivision and the degree to which the design provides broad and permanent public benefits. Standard required dedications and setbacks do not count as the bonus-yielding open space.

- Require an open space buffer and screening landscaping (such as 100 feet deep) along the perimeter of development, especially when abutting a large-lot residential neighborhood. If high elevation or other site conditions preclude vegetative buffers from achieving the vegetative buffer intent, additional setbacks or larger lots will be required and limits to building heights, bulk, and the placement of homes will be made to avoid impact to abutting and adjacent lots.
- Using land form to produce cut-and-fill slopes compatible with existing land character, use of terrain-adaptive architecture.
- Connectivity: Open space shall provide continuity and link to open space area(s) of adjoining subdivisions and public open space, where feasible.
- Identification and Reservation of Open Space: Open space shall be delineated and identified on the plat. Open space, as dedicated in the Hillside Conservation Subdivision, is defined as areas preserved in their natural state, with the exception of trails, trailheads and small scale recreational improvements such as a bench or viewing area. Open space established through this process shall be preserved from development in perpetuity through the use of deed restriction or easement, and shall be conveyed to a homeowners association, the Municipality, or another organization with a stated mission to permanently preserve open space.
- Recreation Uses: Where the primary intent of the open space is for public recreation, particularly for trails, the means to protect open space shall be a public use easement, or dedication of the land to the Municipality or to a third party that will permit public use. This area shall be legally publicly accessible, or attached to an existing open space or greenbelt with public access. If attachment to an existing open space or greenbelt is proposed, it must be in an area feasible for the intended use. Though homeowners associations often own land crossed by public trail easements, public parking areas at trailheads will generally be sited on public land.
- Size and Uses of Open Space
    - The minimum size of any single open space parcel is one acre other than for linear features such as trails. No portion of the land preserved as common open space may be less than 100 feet in its smallest dimension. Exceptions to this 100-foot minimum width may be allowed for linear features (such as stream and trail corridors) that extend over the

Old Seward Highway extends toward Potter Marsh.

length of the property, and which may be as narrow as 30 feet.

- Community wells and community septic systems shall not be allowed within areas identified as conservation open space.

- No portion of the land preserved as common open space may be located within the boundaries of an individual lot for residential development or in a road right-of-way.
- Approval Process: Two conceptual plats will be required: 1) one traditional R-10 subdivision and 2) the proposed conservation subdivision. The conceptual plats determine the base density.

Road and Driveway Standards

Policy 14-M

Develop Hillside road standards for challenging site conditions and rural character, including bedrock, steep slopes, and sub-alpine and alpine elevations with the purpose of minimizing cut-and-fill, disruption to natural drainage, and visual impacts.

Gravel Road Standards

Policy 14-N

Develop standards for the use of gravel roads in limited circumstances: for new or existing roads that are unlikely to have further connections, have design speeds of 25 miles per hour or less, and will have no more than 100 ADT at full build-out.

Background for Policies 14-M and 14-N

The impact of roads and driveways can be significant in hillside areas. Extra effort is required to avoid creating serious impacts on drainage, visual quality, and water quality. Variations in the standards for road dimensions and surfacing have a major impact on road costs, and the design of roads has a major impact on road maintenance costs.

Over the course of the development of this plan, a new set of Anchorage-wide standards were developed, which were judged to meet the needs of the Hillside. These standards, summarized in the remainder of this section, allow for a road system that reflects Hillside character. Paving is required on public roads, but strip-paving (no curbs and sidewalks) and narrower rights-of-way are allowed in specific situations. This approach is intended

Table 6.8
Summary of General Standards for New Roads

Setting (related to Land Use Map)	Average Daily Traffic (ADT) greater than 2,000	ADT 2,000 to 500	ADT 500 to 100	ADT less than 100
Areas three dwelling units per acre (DUA) or greater: • Residential • Commercial • Park and Natural Resources • Community Facility in areas generally	• Surface paved (with curbs and gutter) • Min Surface Width: 24' • Max Slope: 8%	• Surface paved (with curbs and gutter) • Min Surface Width: 24' • Max Slope: 8%	• Surface: strip-paved • Surface width: 20' • Max slope: 10% *(Option for 12% with variance*)*	• Surface: strip-paved • Surface width: 20' • Max slope: 10% *(Option for 12% with variance*)*
Areas less than three dwelling units per acre (DUA): • Residential • Park and Natural Resources • Community Facility	• Surface paved (with curbs and gutter) • Min Surface Width: 24' • Max Slope: 8%	• Surface: strip-paved • Surface width: 24' • Max slope: 10%	• Surface: strip-paved • Surface width: 20' • Max slope: 10% *(Option for 12% with variance*)*	• Surface: gravel or strip-paved • Surface width: 20' • Max slope: 10% *(Option for 12% with variance*)*

**The variance is a solution of last resort; it is not to be used as a standard practice or considered the minimum acceptable design to work from.*

Sidewalks, walkways, and trails shall be provided in accordance with the Areawide Trails Plan and any adopted neighborhood or district plan.

to recognize the need for adequate emergency access, the desire to retain rural character, and the tradeoff between construction costs and maintenance costs.

Road standards vary based on context. The Anchorage-wide standards define three areas where different road standards are appropriate:

- Lower Hillside (areas within the Anchorage Roads and Drainage Service area): Urban Design Criteria Manual road standards apply.
- Central Hillside: Rural Design Criteria Manual standards apply, with the possible exception of major east-west streets.
- Southeastern Hillside: Rural Design Criteria Manual standards apply.

Road Development Standards
(Summary of existing Anchorage-wide policies)

- Hillside road standards address corridor width, grades, reducing impacts to viewshed, lighting, and minimizing disturbance to natural drainage.
- Table 6.8 presents Anchorage-wide standards that will apply on the Hillside. The standards allow for narrower rights-of-way in low-traffic-volume roads in rural settings. Rural streets are strip-paved (paved streets without curb-gutter or sidewalks), with shoulders to accommodate pedestrians, drainage ditches, and limited lighting. Urban streets typically have curb-gutter, lights, storm drains and sidewalks.
- These are minimum standards; if an individual, developer, homeowners association, LRSA, etc. prefers higher standards, this plan does not preclude such a decision. Detailed road design standards can be found in the Design Criteria Manual and the Subdivision Standards of Title 21.
- Existing primary or secondary Hillside streets that are not currently paved should be priorities for paving, with the final decision on timing to be determined by working with local residents and the proposed Hillside-wide funding and management entity board. Other streets that are not currently paved may be gradually improved over time, to reduce dust and maintenance costs. This will occur slowly, based on available funding, and considering neighborhood character and preferences.
- Develop construction standards for roads and other infrastructure in areas where shallow groundwater cannot be avoided to minimize subsurface water discharge. Establish construction standards for culverts and pipes conveying continuous groundwater flows across roadways.

Driveway Development Standards
(summary of existing Anchorage-wide policies)

- Minimize driveway length in steeply sloping areas to reduce visual and drainage impacts.
- Provide flexibility in the platting process to allow driveways on both sides of the road when doing so reduces the overall cut-and-fill, but continues to minimize off-site drainage impacts between lots.
- Allow for minimal building setbacks to reduce requirements for driveway-related cut-and-fill.

Cut-and-Fill Development Standards

(Summary of existing Anchorage-wide policies)

Developing roads and trails on the Hillside presents unique challenges. To provide connectivity and at the same time minimize environmental and visual impacts requires both high standards and the option for flexibility. The general objective for all roads and trails is to minimize the extent of roads and the extent of cut-and-fill, particularly in steeply sloping areas. Municipal standards currently set the upper limits on allowed road grades. In some situations, allowing steeper roads for short stretches, subject to an evaluation of the specifics of individual sites, may lead to reduced overall impacts while still providing a safe, acceptable road system.

Existing municipal policies allow a variance procedure for those situations where flexibility on municipal road standards may allow a net reduction in impacts, including avoidance of wetlands, reduced cut-and-fill, reduced drainage impacts, and/or preservation of land for some purpose. In such cases, alternative means and methods (such as retaining walls) could be applied subject to the Municipal Engineer, Traffic Engineer and Fire Marshal's approval.

Lighting Standards

Policy 14-0

Establish standards for lighting.

Background

The concept of limited lighting for this plan is intended to reflect similar light standards proposed in the new Title 21 Lighting Zone for low ambient light levels. The Hillside District Plan promotes this lighting standard to help preserve the "dark sky" character that many Hillside residents wish to preserve in residential areas. The low ambient light would apply to most rural areas, low-density rural residential and natural open space. Specific standards include:

- All residential lighting must be downward directed, avoiding creating glare on surrounding properties.
- Street lighting, particularly at intersections, will be necessary for safety reasons.

Ridgetop Development

Policy 14-P

Establish standards for ridgetop development.

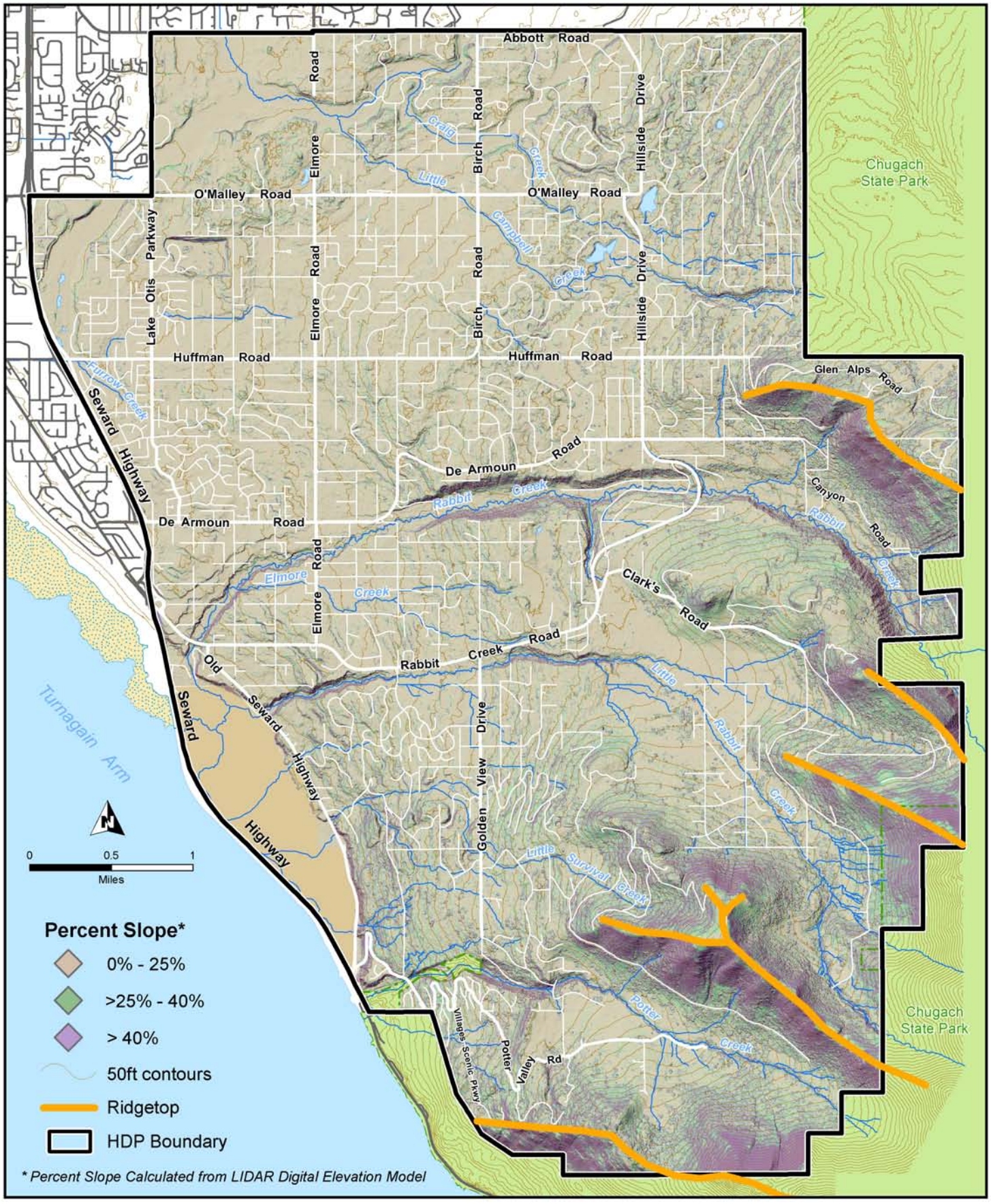
Background

Relative to development in other locations, ridgetop residential and other forms of land development are highly visible, often reducing the quality of views for other residential areas and recreational users over a wide area. Anchorage currently has no existing policies and procedures specific to ridgetop development.

The Hillside District Plan therefore recommends minimizing the visual impacts of ridgetop development with a set of standards for residential development that would apply to specific ridges (Map 6.9) that are particularly prominent from many different locations and separating major watersheds.

Recommended Standards for Ridgetop Residential Development:

- Building heights: shall not exceed 25 feet or two stories above ground.
- Building placement: locations straddling ridgelines should generally be avoided. Placing the building on one side of a ridge greatly reduces visual impacts and also reduces the problems with wind that have plagued previous ridgetop homes on the Hillside.
- Building materials and colors: use of a natural wood exterior is strongly encouraged; if the home is painted, neutral, non-obtrusive colors should be used (e.g., muted browns and greens).
- Roofs and walls: non-reflective materials should be used on roofs and walls.
- Roof lines and vegetation: should be used to help soften the profile of the structure so that the building blends into the horizon line.


Abbott Road
Elmore Road
Craig Creek
Little Birch Creek
Hillside Drive
Chugach State Park
O'Malley Road
Lake Otis Parkway
Campbell Creek
Huffman Road
Furrow Creek
Seward Highway
Glen Alps Road
De Armoun Road
Rabbit Creek
Canyon Rabbit Creek Road
Clark's Road
Old Seward Highway
Golden View Drive
Little Survival Creek
Turnagain Arm
Potter Valley Rd
Villages Scenic Pkwy
0 0.5 1
Miles
Percent Slope*
0% - 25%
>25% - 40%
> 40%
50ft contours
Ridgetop
HDP Boundary
* Percent Slope Calculated from LIDAR Digital Elevation Model

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Hillside District Plan

Appendices

Appendix A.

Hillside District Plan Supporting Documents

The following documents were prepared as supporting material for the Hillside District Plan. These documents have been referenced throughout the Plan where additional technical or background information will be helpful in understanding the policies in the Plan and how they came to be recommended. Electronic copies of all supporting documents may be obtained from the Municipality of Anchorage Planning Department.

Hillside District Plan Issues, Goals and Choices

Hillside District Plan White Papers

Factors Affecting Groundwater Quality

On-site Regulations and Approval Processes

On-site Wastewater Systems Advanced Technology

Cluster (Community) On-site Wastewater Systems

Does a Property Owner Have to Connect to Available Public Water or Sewer to Buy the Property?

Extending Public Water and Sewer Main Lines

Water & Sewer Service on the Hillside: Who's served and by whom?

Drainage Regulations

Drainage Maintenance

Development and Runoff

Road Connectivity

Road Maintenance and Service Areas

Roadway Classification

Hillside Trails and Chugach Connectivity

Hillside Area Household Survey

Hillside District Plan Alternatives: A Framework for Public Discussion

On-site Wastewater Supplementary Report

On-site Water and Wastewater Draft Recommendations

Transportation Alternatives Report

Hillside District Plan Pilot Watershed Drainage Plan: Little Rabbit Creek and Little Survival Creek Watersheds

Draft Potter Creek Watershed Drainage Plan

Appendix B.

Summary of HDP Implementation Actions

The chart below summarizes major implementation actions associated with the Hillside District Plan. As the plan is reviewed, revised and finalized, it is likely that the scheduled dates for carrying out this work, as well as the specific responsibilities, will be further refined. Policy numbers are the same as those in the plan; only polices requiring an explicit implementation action are included.

KEY:
Near-term = 1-3 years
Mid-term = 4-6 years
Long-term = > than 6 years

LAND USE & ENVIRONMENT		
Action	Responsibility	Time Frame
GOAL 1. Location and Intensity of Development Guide the amount and location of future development while maintaining the quality and diversity of the Hillside District as a place to live, ranging from low-density rural areas, to single-family suburban neighborhoods, to areas with duplexes and multi-family housing.		
Hillside as a Whole		
1-A. Encourage a greater proportion of future Hillside growth to occur in the lower Hillside, in areas located closer to existing services and infrastructure; to a limited degree reduce the amount of future development in the southeast Hillside.	See HDP Policies 1-B and 1-E.	
Southeast Hillside Residential		
1-B. Maintain policies for the amount of development as adopted under current land use designations. Shift the current boundary of the Maximum Perimeter of Public Sewerage in the Upper Potter Valley area west to Greece Drive, south of England Avenue. *(See HDP Maps 2.2 and 5.7.)*	Maximum Perimeter of Public Sewerage boundary changed with adoption of the Hillside District Plan.	At plan adoption
Central Hillside Residential		
1-C. Maintain the same land use designations and zoning in this area as were established prior to the beginning of this plan.	No action required.	

Action	Responsibility	Time Frame
Lower Hillside Residential		
1-D. Retain the current land use designation for the Furrow Creek area. Conduct a planning study to determine the future need and location of a sewer trunk as backbone infrastructure required based on land use patterns and development potential, evaluation of the data resulting from HDP recommendations and programs, soils, topographical conditions, lot sizes, failed septic systems and nitrate levels to determine the appropriate sewer service area boundary and cost feasibility.	MOA Planning Department, Anchorage Water and Wastewater Utility (AWWU).	Near-term
Land Use Plan Map		
1-E. Adopt the official Land Use Plan Map for the Hillside, which provides greater specificity than the *Anchorage 2020* Land Use Concept Plan and replaces the 1982 Generalized Land Use Plan.	The Hillside Land Use Plan Map will be incorporated into the Anchorage Bowl Land Use Plan Map to be adopted in 2010.	At plan adoption
GOAL 2. Character of Development Guide the character of development of individual properties, homesites and subdivisions to help maintain assets such as quiet, trees and other natural vegetation, natural drainage systems, wildlife habitat, good views, access to open space, access to clean water, and dark night skies.		
2-A. Establish new standards for development, addressing drainage, grading, and retention of vegetation, to apply in the upper elevation and steeply sloping areas of the Hillside.	Objectives are established by the Hillside District Plan; codification by MOA through AMC Title 21, other actions.	Near-term
2-B. Revise the current subdivision approval process to require submittal and approval of site environmental information at the pre-application meeting.	Objective established by the Hillside District Plan; MOA Planning Department.	Near-term
2-C. Establish a new "Hillside Conservation Subdivision" ordinance allowing flexibility in subdivision layout to better protect environmental and neighborhood character.	Objective established by the Hillside District Plan; codification by MOA through AMC Title 21.	Near-term

Action	Responsibility	Time Frame
GOAL 3. Infrastructure and Efficient Growth Patterns Plan land use, transportation infrastructure and other infrastructure to serve anticipated growth to be efficient in terms of public expense, energy use, and other resources.		
(Plans for Infrastructure to Serve Anticipated Growth) A range of drainage, transportation, and water/ wastewater policies.	See HDP Chapters 3-5.	
GOAL 4. Public Facilities Retain land to serve anticipated needs for public facilities and public use areas, such as schools, drainage-related facilities, fire stations, parks, greenbelts, or other natural resource conservation areas.		
4-A. *(Schools)* The Municipality of Anchorage and the Anchorage School District will continue a joint effort to identify school sites on the Hillside to accommodate future growth.	Yearly review of ASD monitoring of demographic trends and population growth as part of ten-year CIP.	Near- to Long-term
(Drainage) Addressed in HDP Policy 5B. The built/ green infrastructure approach identifies areas to be used for community drainage functions.	See HDP Policy 5-B and Chapter 3.	
4-B. *(Fire Stations and Other Public Facilities)* Carry out site selection study to identify needed sites.	Cooperative effort by MOA Planning Department and MOA Fire Department.	
(Parks, Greenbelts, and Natural Resource Conservation Areas) Addressed in HDP Policies 2-C, 5-A, 5-B, 5-C, 6-A, 6-B, 10-A, 10-B, 10-C, 12-A, 12-B, 12-C, 12-D, 14-A, 14-B, 14-C, and 14-L.	See HDP Policies 2-C, 5-A, 5-B, 5-C, 6-A, 6-B, 10-A, 10-B, 10-C, 12-A, 12-B, 12-C, 12-D, 14-A, 14-B, 14-C, and 14-L.	

Action	Responsibility	Time Frame
GOAL 5. Environmental Quality Protect environmental quality on the Hillside, including: providing corridors for drainage, protecting natural systems such as aquifer recharge areas and stream corridors, protecting wildlife travel corridors and habitat, and providing open space for views and recreation.		
5-A. Maintain and protect environmental quality at three scales: 1) individual lots, using new development standards 2) subdivisions, using a combination of new development standards and the conservation subdivision approach, 3) watershed, using the built/green infrastructure approach and other plan strategies.	See related HDP policies in other plan chapters.	
5-B. Working at the watershed scale, implement a mapped overlay of built/green infrastructure and use this information to guide the layout of future subdivisions.	Built/green infrastructure map approved with adoption of Hillside District Plan; Memorandum of Understanding among MOA Planning Department, MOA Project Management and Engineering Department apply this overlay to specific projects.	Near-term
5-C. Create a Riparian Greenbelt Acquisition Program.	HLB, Planning, Parks, State, Federal, Private Partnerships, and Hillside Management Entity.	Near- to Long-term

Action	Responsibility	Time Frame
GOAL 6. Parks and Open Spaces Maintain, supplement and enhance a system of parks, trails, open spaces and other active and passive recreation areas.		
6-A. Establish priorities and implementation methods to meet deficiencies in neighborhood and community parks, develop natural resource and greenbelt acquisition programs and funding, conduct additional greenbelt and natural resource inventory planning, and enhance the Hillside built/green infrastructure system.	Heritage Land Bank (HLB), MOA Planning Department, MOA Parks and Recreation Department, MOA Project Management and Engineering Department-Watershed Management Services, in consultation with the Alaska Department of Fish & Game (ADF&G) or other natural resource specialists.	Mid-term
6-B. Parks development should be phased and scaled to fit the level of road service, the limitations of on-site water and septic systems, and the rural character of the neighborhood. The design shall consider user and neighborhood safety and security and minimize overall impacts on the surrounding neighborhood.	MOA Parks and Recreation Department, review agencies and boards.	Near- to Long-term
GOAL 7. Visual Quality Protect views, both looking out from the Hillside and views of the Hillside as seen from the rest of Anchorage (for example, by maintaining vegetation, limiting cut-and-fill, and guiding the location and character of new residential development).		
7-A. Maintain and protect views by protecting natural vegetation, drainage corridors, significant natural features, and topography at the scale of watersheds, subdivisions and individual lots.	Covered under other plan sections.	
7-B. Establish new standards to reduce the visual impact of development on select, identified prominent ridgelines (identified on HDP Map 6.8).	Objective established by an overlay district; MOA.	Near-term

Action	Responsibility	Time Frame
DRAINAGE		
Goal 8. Drainage Management Develop a functional, watershed-based drainage management system for the Hillside District to achieve the following: • Create a practical, effective approach to manage the drainage needs of new and redevelopment. • Ensure existing residents and landowners are protected when new development occurs. • Resolve existing drainage problems and mitigate hazards and adverse impacts associated with inadequate drainage controls in existing developed areas. • Protect existing stream and wetland functions by maintaining the natural quantity, quality, and periodicity of recharge to natural waterbodies and wetlands.		
8-A. For steep areas, areas above timberline, lots with an unusually high percentage of developed impervious area, and important recharge areas, develop standards to reduce runoff from individual parcels and subdivisions. Such standards may include increasing retention of vegetation, using rain gardens, and retaining natural stream corridors.	Objectives are established by the Hillside District Plan; codification by MOA Planning Department and MOA Project Management and Engineering Department.	Near-term
8-B. Manage runoff on a watershed basis. Define an integrated system of drainage features at the watershed scale (built/green infrastructure) by preparing and following watershed drainage plans for all watersheds within the Hillside. Identify parts of drainage corridors that are privately owned and implement an easement acquisition program.	Watershed drainage plans prepared by MOA Project Management and Engineering Department-Watershed Management Services.	Near- and Mid-term
8-C. Develop Hillside-wide and Anchorage Bowl-wide background material to enhance watershed drainage planning and built/green infrastructure mapping, including a natural resource inventory and prioritization program. In particular develop and implement the Hillside Area Natural Resources Protection Plan and include aquifer recharge areas and wildlife movement corridors connecting Chugach State Park to Alaska Coastal Wildlife Refuge.	Cooperative effort of MOA Parks and Recreation Department and MOA Project Management and Engineering Department, in consultation with the Alaska Department of Fish & Game (ADF&G) or other habitat specialists.	Near- and Mid-term

Action	Responsibility	Time Frame
8-D. Establish a new Hillside drainage management entity to help fund and manage needed drainage improvements for existing and future development and watershed protection and aquifer recharge efforts.	See HDP Chapter 6.	
8-E. No net increase in runoff beyond existing peak flows for up to the 10-year event from development will be permitted unless regional facilities are in place and are adequate to accept the drainage.	Cooperative effort of MOA Planning Department, MOA Project Management and Engineering Department, and the MOA Development Services Department.	Near- and Mid-term
TRANSPORTATION		
GOAL 9. Roads Improve the system of Hillside roads to respond to current use and expected growth: • Improve road safety through, for example, physical changes in roads and intersections, speed limits, improving sight distance, minimizing cresting over roads, and improving strategies for providing road access in steep areas; • Improve road connectivity while maintaining neighborhood character, particularly in areas where new development is likely to occur; • Identify and design collector and arterial roads to avoid excessive and high-speed traffic in residential neighborhoods. The collector street system should be designed to discourage through traffic and to discourage continuous links between arterials; • Provide improved emergency access and egress; and • Align and design roads with regard for natural setting and neighborhood character by minimizing cut-and-fill, preserving views and landmark natural features, controlling traffic speeds, and modifying lighting.		
9-A. Identify proposed future road connections to improve the system of primary and secondary roads within the Hillside District.	Map approved with adoption of the Hillside District Plan; improvements follow as determined by the Hillside road management entity and available funding.	Near- to Long-term

Action	Responsibility	Time Frame
9-B. Apply recently adopted municipal road standards, and amend as appropriate, to accommodate challenging site conditions and rural character including bedrock, steep slopes, and sub-alpine and alpine elevations with the purpose of minimizing cut-and-fill, disruption to natural drainage, and visual impacts. In the new standards, include the use of gravel roads in limited circumstances.	See HDP Policies 14-M and 14-N.	
9-C. Prioritize maintenance and upgrades of primary and secondary roads, placing emphasis on projects that address existing safety and efficiency concerns, with optimum use of existing infrastructure and supporting efficient growth patterns.	General intent established in the Hillside District Plan; implementation by the Hillside road management entity.	Near- to Long-term
9-D. Upgrade Old Seward Highway to a multi-modal facility while retaining its rural and recreational character.	Responsible agencies pending funding: MOA Parks and Recreation Department, MOA Traffic Department, and MOA Non-motorized Transportation Coordinator to coordinate with the Alaska Department of Transportation and Public Facilities Department (ADOT&PF), Chugach State Park (CSP), and the Alaska Department of Fish and Game (ADF&G).	Mid- to Long-term
9-E. Prior to the establishment of the Hillside Road Management Entity, avoid new public projects that increase problems on substandard parts of the existing road system.	MOA Project Management and Engineering Department, MOA Planning and Zoning Commission as guidance to CIP.	Near- to Mid-term

Action	Responsibility	Time Frame
GOAL 10. Trails Develop a Hillside trails system to benefit Hillside residents and visitors to the area: • Design the trail system so that it links neighborhoods and connects to schools, parks, area destinations, access points to Chugach State Park and the citywide trail system; and • Develop trails that serve a variety of uses and users, including trails that serve as transportation and recreation.		
10-A. Identify proposed trails and trailheads to improve the system of trails within the Hillside District and provide access to Chugach State Park.	HDP Map 4.6 approved with adoption of the Hillside District Plan and supersedes the existing Anchorage Trails Plan (for the Hillside study area). Means to obtain trails and trailheads include the subdivision process, purchases, land trades and donations.	Near- to Long-term
10-B. Provide a range of trailheads and parking areas to Chugach State Park, including neighborhood and auto-access trailheads.	Trails and trailhead policy approved with adoption of the Hillside District Plan. Specific location and implementation by MOA Parks and Recreation Department, Chugach State Park and Planning. Planning resources need to be identified.	Near- to Long-term
10-C. Apply Anchorage Bowl trail standards for recreational, off-street rights-of-way, as well as roadside facilities.	Standards developed by the MOA Parks and Recreation Department; no action is required.	

Action	Responsibility	Time Frame
GOAL 11. Transit Improve viability for transit within the Hillside District, including: • Supporting the opportunity and potential for park-n-ride lots on the Hillside; and • Promoting transit service for the lower Hillside (west of Elmore).		
11-A. Future route structuring by People Mover should consider service to the University/Medical area from the lower Hillside.	MOA Public Transportation (as they carry out service evaluations).	Near- to Long-term
11-B. Create park-n-ride lots in the Hillside District, as needed. Priority is on the lower Hillside in the area between Huffman Road and Rabbit Creek Road near the Seward Highway.	MOA Public Transportation (as they carry out service evaluations).	Long-term
GOAL 12. Funding, Maintenance and Operations Create an enhanced and efficient maintenance, operations and capital program for roads and trails within the Hillside District.		
12-A. Establish a new Hillside District funding and management entity to manage and finance roads, drainage, built/green infrastructure watershed protection and aquifer recharge, and trails at a watershed and/or community-wide scale.	Anchorage Assembly, Hillside residents; initiative led by MOA Project Management and Engineering Department. See HDP Chapter 6.	
12-B. Extend the Anchorage Parks and Recreation Service Area boundary to include the entire Hillside District as well as the initial mile of Chugach State Park.	Anchorage Assembly, Hillside residents; initiative led by the MOA Parks and Recreation Department. See HDP Policy 14-B.	
12-C. Create a new funding and management program targeted on improved Chugach State Park access.	Anchorage Assembly, Hillside residents; initiative led by the MOA Parks and Recreation Department. See HDP Policy 14-C.	
12-D. Develop maintenance, repair and schedule priorities for roads and trails.	Hillside Road, Trails and Drainage Service Area/funding and management entity (once formed).	

Action	Responsibility	Time Frame
WATER AND WASTEWATER		
GOAL 13. On-site, Public Wastewater Treatment, and Neighborhood Systems Provide a combination of on-site, neighborhood and public water and wastewater services in a manner that protects public health, ensures environmental quality, provides cost-effective installation and operation, and meets resident and landowner needs. Preserve the viability of on-site water and wastewater systems and the quality of domestic water supplies.		
Primary Policy		
13-A. The existing boundary of the AWWU public water and sewer service area on the Hillside, as defined by existing Maximum Perimeter of Public Sewerage, will generally stay the same as it is today, with the exception of one small area: upper Potter Valley (boundary contracts).	HDP Policies 13-B — 13-E.	
Neighborhood Systems		
13-B. Permit the use of neighborhood wastewater treatment systems as a viable treatment technology for the Hillside District only outside of the Recommended Maximum Perimeter of Public Sewerage after HDP Policies 13-C, 13-D, 13-E, 13-F, 13-G, 13-H, and 13-K are implemented.	Implemented through HDP Policies 13-C – 13-H, 13-K.	
13-C. Transfer regulatory and enforcement responsibilities for oversight of neighborhood wastewater treatment systems from the Alaska Department of Environmental Conservation (ADEC) to the MOA Development Services Department, On-site Water and Wastewater Program, provided that the Municipality dedicates the resources necessary to successfully undertake its responsibilities assumed with this new authority.	MOA On-site Services Section.	Mid-term
13-D. Adopt (through municipal code) appropriate policies for the ownership and operation of neighborhood systems.	Contingent on HDP Policy 13-C; MOA On-site Services Section.	Mid-term

Action	Responsibility	Time Frame
13-E. Contract the boundary of the AWWU Certificated Service Area in the Hillside District to match the Maximum Perimeter of Public Sewerage.	AWWU.	Mid-term
On-site Wastewater Problem lots		
13-F. Develop solutions to wastewater problem lots on a case-by-case basis.	MOA On-site Services Section, working with other landowners, MOA Departments, and/or AWWU.	Near- to Long-term
Well Water Protection Program		
13-G. Develop and implement a Hillside Well Water Protection Program.	See HDP Chapter 6.	
13-H. Develop and implement a comprehensive program to improve understanding of aquifer system conditions.	MOA On-site Services Section.	Mid-term
13-I. Develop and implement a program to protect water wells through actions of individual property owners.	MOA On-site Services Section.	Mid-term
13-J. Develop and implement a program to protect water wells through community actions.	MOA On-site Services Section, after plan adoption.	Mid-term
13-K. Develop a system for funding the Well Water Protection Program.	Anchorage Assembly and MOA On-site Services Section.	Mid-term
On-site Standards		
13-L. Revise the existing Wastewater Disposal section of the Anchorage Municipal Code to improve the construction and operation of on-site wastewater systems.	Anchorage Assembly and MOA On-site Services Section.	Mid-term
Maximum Perimeter of Public Sewerage		
13-M. Modify the Maximum Perimeter of Public Sewerage as shown on HDP Map 5.7.	Change made with the adoption of the Hillside District Plan.	

Action	Responsibility	Time Frame
IMPLEMENTATION: FUNDING & MANAGING INFRASTRUCTURE; DEVELOPMENT STANDARDS		
Part 1: Funding and Managing Infrastructure		
14-A. Establish a new Hillside District funding and management entity to manage and help to finance roads, drainage, built/green infrastructure, watershed protection and aquifer recharge, and trails at a watershed and/or community-wide scale.	Anchorage Assembly, MOA Project Management and Engineering Department. *A change in service area requires a vote of the service area.*	Near-term *(highest priority)*
14-B. Extend the Anchorage Parks and Recreation Service Area boundary to include the entire Hillside District as well as the initial mile of Chugach State Park.	Anchorage Assembly, MOA Parks and Recreation Department, MOA Legal Department, MOA Planning Department. *A change in service area requires a vote of the service area.*	Mid-term
14-C. Create a new funding and management program targeted at improved Chugach State Park access with trailhead and parking facilities.	Anchorage Assembly, MOA Parks and Recreation Department, MOA Legal Department, MOA Planning Department.	Mid-term
14-D. Establish a Hillside Well Water Protection Program and new programs and standards for managing neighborhood wastewater systems.	Anchorage Assembly, Hillside residents, MOA On-site Services Section.	Mid-term
14-E. Contract the boundary of the AWWU Certificated Service Area in the Hillside District to match the Maximum Perimeter of Public Sewerage.	Anchorage Assembly, Anchorage Water and Wastewater Utility (AWWU), and the Department of Health and Human Services (DHHS).	Mid-term
14-F. Extend the Anchorage Building Safety Service Area, and with this, the requirement for building permits, to the entire Hillside District.	Anchorage Assembly, MOA. *A change in service area requires a vote of the service area.*	Mid-term

Action	Responsibility	Time Frame
Part 2: Development Standards and Procedures		
14-G. Modify submittal and review requirements for subdivisions on the Hillside. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; codification by MOA Planning and MOA Project Management and Engineering Department.	Near-term
14-H. Clearing, grading, and other site modifications will not be permitted prior to the approval of a preliminary plat, building permit, or land use permit. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; codification by MOA Development Services Department, MOA Project Management and Engineering Department-Watershed Management Services.	Near-term
14-I. Establish a new set of development standards for subdivisions in upper elevation or steeper slope areas of the Hillside. *(Applies to upper elevation or steeper slope areas of the Hillside District)*	Objective established by the Hillside District Plan; codification by MOA Planning Department and MOA Project Management and Engineering Department.	Near-term
14-J. Establish a new set of development standards for individual lots or parcels in upper elevation or steeper slope areas of the Hillside. *(Applies to upper elevation or steeper slope areas of the Hillside District)*	Objective established by the Hillside District Plan; codification by MOA Planning Department and MOA Project Management and Engineering Department.	Near-term
14-K. Acquire, where existing drainage systems are discontinuous, necessary drainage easements required to solve drainage problems, preferably through voluntary sales, or as a last resort, through eminent domain. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; implementation by MOA Development Services, MOA Project Management and Engineering Department-Watershed Management Services.	Near-term
14-L. Establish development standards for a Hillside Conservation Subdivision. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; codification by the MOA Planning Department.	Near-term

Action	Responsibility	Time Frame
14-M. Develop Hillside road standards for challenging site conditions and rural character including bedrock, steep slopes, and sub-alpine and alpine elevations with the purpose of minimizing cut-and-fill, disruption to natural drainage, and visual impacts. *(Applies to the entire Hillside District)*	MOA Traffic Department, MOA Project Management and Engineering Department	Near-term
14-N. Develop standards for the use of gravel roads in limited circumstances: for new or existing roads that are unlikely to have further connections, have design speeds of 25 miles per hour or less, and will have no more than 100 ADT at full build-out. *(Applies to the entire Hillside District)*	MOA Traffic Department, MOA Project Management and Engineering Department	Near-term
14-O. Establish standards for lighting. *(Applies to the entire Hillside District)*	Objective established by the Hillside District Plan; codification by the MOA Planning Department.	Mid-term
14-P. Establish standards for ridgetop development. *(Applies to the areas specified on HDP Map 6.8)*	Objective are established by the Hillside District Plan; codification by the MOA Planning Department.	Near-term