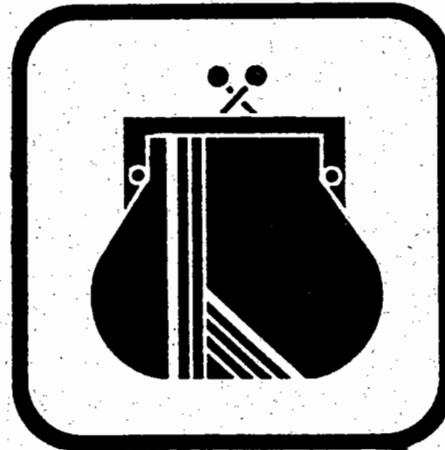
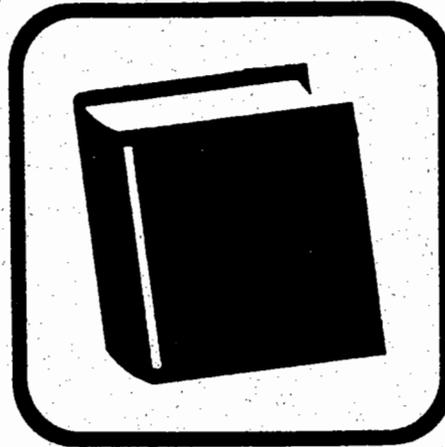
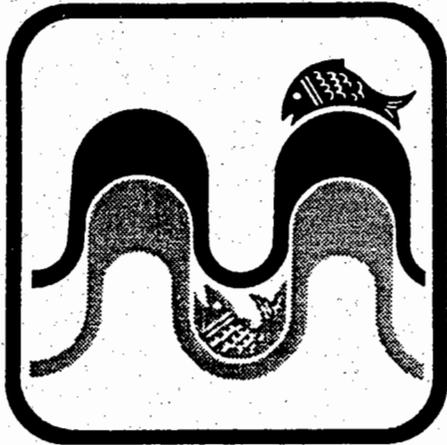


1994

COMPREHENSIVE DRAINAGE PLAN



CITY OF BELLEVUE



UTILITIES DEPARTMENT

ADOPTED 10/24/94

1994 COMPREHENSIVE DRAINAGE PLAN

TABLE OF CONTENTS

CHAPTER 1 SUMMARY	1-1
CHAPTER 2 INTRODUCTION	2-1
CHAPTER 3 GENERAL AND FINANCIAL POLICIES	
Preface	3-1
General Policies	3-4
Financial Policies	3-36
CHAPTER 4 CAPITAL PROGRAM	
Needs Assessment	4-1
Project Summaries	4-11
CHAPTER 5 FINANCIAL INFORMATION	5-1
CHAPTER 6 APPENDICES	
Utility Element - Bellevue Comprehensive Plan	6-1
Environmental Element - Bellevue Comprehensive Plan	6-5
Glossary	6-14
References	6-23
City-wide Project List	6-24

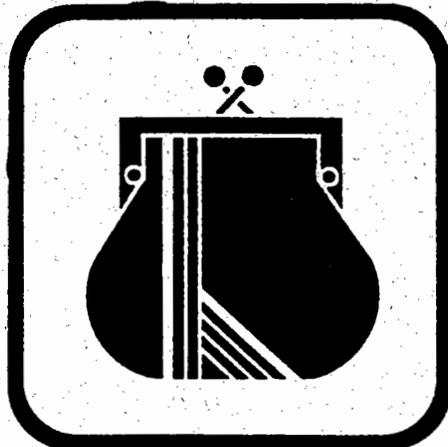
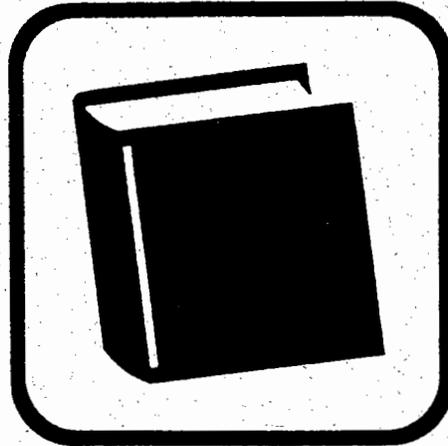
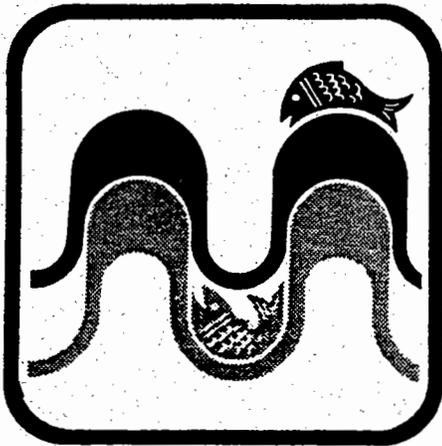
1994 COMPREHENSIVE DRAINAGE PLAN

LIST OF EXHIBITS

Exhibit C1	Completed Project List	4-4
Exhibit C2	Deleted Project List	4-5
Exhibit C3	Projects In Progress	4-6
Exhibit C4	Estimated Project Cost by Year	4-7
Exhibit C5	High Priority Capital Projects (Map)	4-8
Exhibit C6	High Priority Project Rankings	4-9
Exhibit C7	Problem Types	4-10
Exhibit F1	Surface Water Utility Debt	5-2
Exhibit F2	Surface Water Utility Revenue, Expenses, & Reserve Balances	5-4
Exhibit F3	Surface Water Utility CIP Funding Status	5-5
Exhibit F4	Water Works Utility Comparative Balance Sheet	5-6
Exhibit F5	Water Works Utility Combined Operating Statement	5-7

CHAPTER 1

SUMMARY



1994 COMPREHENSIVE DRAINAGE PLAN

SUMMARY

The 1994 Comprehensive Drainage Plan (CDP) is an update of the Plan which was adopted in 1988. Updating of the Plan is required by Section 24.06.070 of the Bellevue City Code. The original Plan, entitled the Drainage Master Plan was adopted by the Bellevue City Council in December 1979. The original Plan established a program of construction projects for management of the City's drainage system. Pipelines, in-stream regional flood control facilities, and stream channel improvements were included in the program. The original Drainage Master Plan (DMP) philosophy emphasized the following:

1. Maintaining the existing stream character and riparian area wherever possible to preserve open spaces and natural resources for the future.
2. Creating runoff controls on new land developments to mitigate the impacts of urbanization on natural and man-made drainage systems.
3. Minimizing drainage pipe enlargement to create a more cost-effective Capital Investment Program for the Utility.
4. Constructing regional flood control facilities in existing wetland areas to reduce peak stream flows.

The current plan still adheres to the first three principles. However, construction of flood control facilities in existing streams and wetlands is not consistent with current State regulations for streams and wetlands protection, and may no longer be feasible or desirable. Additionally, the present Utility's mission and policies have guided the plan update especially in the area of infrastructure funding.

The 1994 update of the Plan consists of two main elements: General and Financial Policies and Capital Program. The policies chapter includes both general and financial policies which guide Utility operations and fiscal stewardship. The capital program chapter includes a needs assessment which identifies proposed drainage system improvements, a financial summary, and individual project summaries.

The policies chapter preface includes historical and current policy references and also provides short summaries of the changes which have been made to the 1988 Comprehensive Drainage Plan policies. Under each policy, a statement of the policy and a discussion is provided. General policies provide guidance regarding such topics as drainage system operation and responsibility, capital improvements to the system, and surface water quality. Financial policies provide direction regarding fiscal management, capital investment funding, development charges, reserves, rate setting and equipment replacement.

SUMMARY

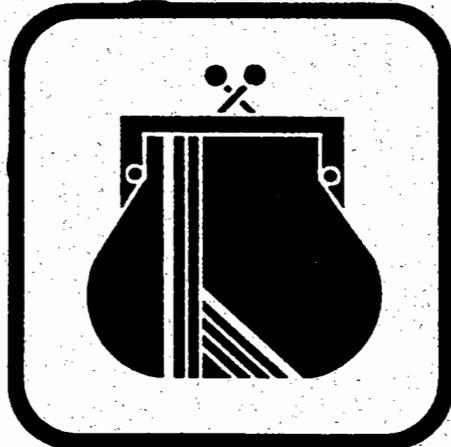
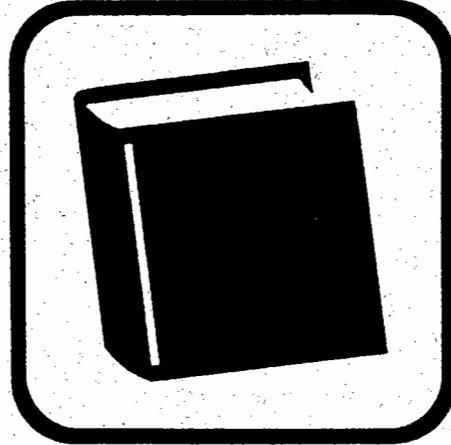
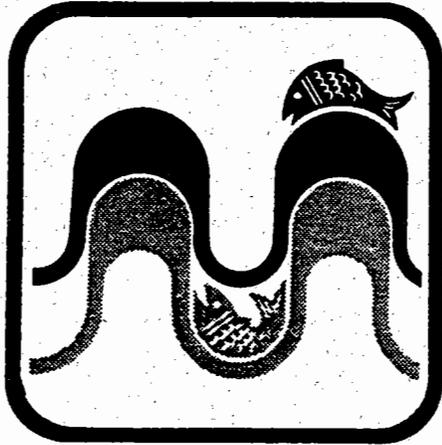
The Needs Assessment section includes a description of assessment process and its results. A prioritized list of potential capital improvement projects is presented. The Project Summaries section provides general information on the type and scope of the identified project, a potential solution, and planning-level cost estimates.

Through a needs assessment, approximately \$20 million (85 projects) in potential capital improvements to the surface water system were identified. Given the current and foreseeable economic conditions, it is unlikely that the Utility could adequately fund all projects. Therefore, the Utility will focus implementation efforts on the 20 highest priority projects (\$8.9 million) during the course of the current CIP (1994-1999). These system improvements are needed to meet the Utilities responsibility of drainage system maintenance, flood control, water quality assurance and resource/habitat protection.

This document also includes an Introduction which outlines the history of the Utility, and Appendices. The Appendices include City Comprehensive Plan policies which guide the Utility, a glossary, references and a City-wide project list and its ranking.

CHAPTER 2

INTRODUCTION



1994 COMPREHENSIVE DRAINAGE PLAN

INTRODUCTION

Bellevue, Washington, is an incorporated city with a population of approximately 99,000 (1994 estimate) located in central King County. Bellevue is bordered on the east and west by two major freshwater lakes, Lake Sammamish and Lake Washington. The City limits presently include approximately 30 square miles. Bellevue contains a mix of single-family and multifamily housing and commercial, light industrial, and office uses.

The topography ranges from flat wetland areas to slopes of fifty percent or greater, with the majority of the area being gently rolling terrain. The total relief within the City limits is approximately 1,200 feet from lowest point to highest. The geology of the area is typical of the Central Puget sound basin, consisting largely of glacially-derived deposits near the surface with few exposures of bedrock. The native vegetation in the area consists generally of mixed conifer and deciduous second-growth forest. The climate is heavily influenced both in temperature and precipitation by storms from the North Pacific Ocean and by the presence of the Olympic Mountains on the west and the Cascade Range on the east. The total precipitation averages 35 to 40 inches per year, with little of that rainfall occurring during the summer.

Twenty-six drainage basins have been identified within the City, most having a year-round stream within the basin boundaries. Seventeen of these basins discharge into Lake Washington and nine drain toward Lake Sammamish. Not all drainage basins are totally contained within the Bellevue City limits. The major drainage network within Bellevue is the Kelsey Creek System with approximately 16 total miles of channel. Three small lakes and several smaller ponds are also part of the natural drainage system.

Due to both the high visibility of the area's natural streams and the generally high participation in outdoor activities in the Pacific Northwest, citizens of Bellevue have always taken a keen interest in their streams, wetlands, and open spaces. Concerns about the impact of increasing urbanization on City water resources led to the formation of the Citizen's Advisory Committee on Stream Resources in 1970. With the aid of a consultant, this group prepared a set of recommendations dealing with stream-side development and requirements for surface water drainage related to stream courses.

Prior to 1970, the City had relied on the traditional approach to stormwater management in the Puget Sound region. That approach was to treat storm runoff as a nuisance to be eliminated as quickly as possible. Public roads and private property were drained to the nearest watercourse, which often had to be dredged, armored against erosion, and lined or

INTRODUCTION

piped to mitigate impacts of increased flows. Those impacts often included flooding, erosion, and other forms of property damage and commonly resulted in a deterioration of water quality. Consequently, natural streams, wetlands, and open spaces were permanently lost to human use and enjoyment. Fisheries and wildlife habitats were also destroyed. Drainage planning was rarely coordinated between government agencies or even between different departments of the same agency involved in drainage management.

By 1970 the problems associated with urbanization had already become apparent in Bellevue. A long series of studies of Kelsey Creek stream ecology, started in 1971 by the University of Washington, showed that while the system was generally in "good" condition, profound changes were beginning to occur. The study concluded that "... the present management mentality for engineering the fastest storm runoff collection and discharge from the point of interception is in error."

It was determined that costs for solving these problems would be high and that a funding source committed to stormwater management would be needed. It was also apparent that an agency was needed to take responsibility for all aspects of stormwater management within the City.

During this period, Bellevue's community leaders recognized that to avoid the past problems, innovative planning and funding solutions would be needed to deal with the impacts of future urbanization. In 1967 the State Legislature had amended the state law (Cities RCW 35.67 and Counties RCW 36.94) to include storm drainage as a Utility function along with such traditional areas as water supply, sanitary sewerage, and electric power supply. This action was seen as a means to obtain a dedicated revenue source to accomplish the community's goals of preserving natural streams and water resources.

The Bellevue City Council formed the Storm and Surface Water Utility in the spring of 1974. At that time, a consulting team was formed to investigate funding alternatives. They recommended a service charge to each property based on runoff rate. Funds received from this source would be used for maintenance and operation of the existing system and capital improvement projects needed to reduce flooding and erosion within the City. This approach was considered innovative at the time and is still looked upon as a model for other agencies across the nation seeking alternate financing sources for stormwater management.

Despite considerable effort to involve the citizens in formation of the Utility, the first service charge bills raised many questions. In response to a petition from area residents, a Storm Drainage Utility Task Force was set up to study past decisions and recommend future actions for the Utility. Among the Task Force's recommendations were:

1. All actions taken by the Utility in the future should be based on a comprehensive plan.

INTRODUCTION

2. Maximum use should be made of the existing natural, open drainage system.
3. Surface water control requirements should be strengthened to protect those streams.
4. The Utility should consider alternate financing schemes for capital improvements and put these alternatives before the electorate in an advisory ballot.
5. The existing Utility service charge should be used to cover start-up costs and maintenance and operations but not long-term capital improvements.
6. The Utility should act to improve water quality as well as control flooding and property damage.

In a study considered to be a departure from traditional drainage system master plans, the consulting team of Kramer, Chin & Mayo - Water Resources Engineers/Yoder, Trotter, Orlob & Associates (KCM - WRE/YTO) prepared the original Drainage Master Plan for the City of Bellevue in 1976. The purpose of the Plan was to provide the following:

1. A listing of properties to be acquired for project construction
2. A listing of specific projects for construction
3. Preliminary budget estimates for the construction program

In addition to traditional drainage concerns, the consulting team considered alternate drainage control methods, aesthetics, water quality, and system reliability factors in evaluating alternative improvement schemes. The Drainage Master Plan recommended a concept combining on-site stormwater controls with regional flood control facilities and maximizing use of the natural drainage system. A capital improvement program consisting of two phases was proposed: the first phase to provide a series of regional flood control ponds and stream improvements to allow the ponds to function properly, the second phase being a long-range plan to bring the system up to ultimate capacity.

In 1976 the City Council established a Storm and Surface Water Advisory Commission charged to provide the following:

1. Short-term and long-range storm and surface water planning
2. Annual storm and surface water management budget
3. Storm and Surface Water rate structures

INTRODUCTION

4. Storm and Surface Water bond proposals
5. Major property development proposals, and major land use changes directly related to storm and surface water management
6. Storm and surface water management-related ordinances and resolutions
7. City of Bellevue policies related to storm and surface water control

In 1979 the Utility completed an analysis of the Drainage Master Plan alternates and updated the work done by the consulting team. The City Council formally adopted the Plan with the proviso that funding be approved by the electorate. The capital improvement program adopted with this plan continued the two-phased approach. Phase 1 was proposed to cost \$8,395,000 and Phase 2, \$22,032,000 in 1979 dollars.

This initial phase cost was projected over the first five years at \$10 million. The Plan was then placed on an advisory ballot in 1980 and was approved with over 60% of the vote. A separate drainage basin plan was prepared for the Meydenbauer Basin in 1980, recommending direct discharge to Lake Washington in this intensely-developed area; the Drainage Master Plan was subsequently amended.

Between 1979 and 1984, the City of Bellevue participated in the Nationwide Urban Runoff Program with the Environmental Protection Agency and the U.S. Geological Survey. As a result of this work and other local studies, much data has been collected on the water quality impacts of urban runoff. This work has been instrumental in the formulation of local water quality managements plans.

Major portions of the Drainage Master Plan improvements were completed between 1981 and 1984. Approximately 70 acres of wetlands and riparian area were acquired to construct these projects. Eight regional flood control facilities and 13,000 lineal feet of pipeline were constructed at a total cost of nearly twelve million dollars. In 1983, the Utility's capital improvement projects were incorporated into the City's first overall Capital Improvement Program plan.

In early 1985, the consulting firm of Brown and Caldwell was retained to update the Drainage Master Plan as required by the Bellevue City Code. The 1988 Comprehensive Drainage plan included Utility operating policies, potential improvement projects with pre-design reports and a Utility rate study. This plan was reviewed by the Storm and Surface Water Advisory Commission and was adopted by the City Council in August of 1988.

On January 18, 1986, an intense storm hit the central Puget Sound area. Over four inches of rain fell in twenty-four hours, causing over one million dollars in unanticipated costs to the

INTRODUCTION

Storm and Surface Water Utility. As a result of this storm, the Apple Valley ravine stabilization and Bel-Red Road streambank stabilization projects were constructed on an emergency basis. The Newport Shores Berm project was moved forward and construction occurred in the summer of 1987. As a result of the storm experience, ten projects were added to the project listing.

Between 1984 and 1987 over 50 public meetings were held between citizens and City officials concerning the City's Natural Determinants policies and regulations. On April 30, 1985, the City Council adopted an update to the Natural Determinants Element of the Comprehensive Plan (Resolution No. 4541). The stated goals of this amendment were to provide for the preservation and enhancement of water, earth, and vegetation resources. In April of 1987, Natural Determinants regulations were adopted with the establishment of the Sensitive Area Overlay District Section 20.25H of the Land Use Code (Ordinance 3775) and amendments to the Clearing and Grading Code (Ordinance 3776). The City's Design and Development Department and the Storm and Surface Water Utility were given joint authority over the Sensitive Area regulations in the Land Use Code.

Since 1985, Bellevue has been working in cooperation with the City of Redmond, City of Issaquah, King County, D.O.E. and METRO on a long-term, area-wide water quality protection plan for Lake Sammamish. The goal of the Lake Sammamish Water Quality Management Project is to protect the lake's quality as development increases in the basin by managing the quality of surface runoff in the watershed. Initial studies of the lake were completed in 1991. The Utility currently serves on an interagency committee overseeing management of the lake and is participating in several D.O.E. funded projects to evaluate treatment methods and source control measures to limit phosphorus releases into the lake.

In 1987, the Phantom-Larsen Lakes Restoration Assessment Phase 1 report was completed. This assessment sought to restore and improve the water quality and wildlife habitat of Phantom and Larsen Lakes. Construction was completed in 1991. The restoration work included treatment with alum and an aeration system to reduce nutrient levels (which were undesirably high), construction of channel improvements and a settling pond. The American Engineering Council presented a certificate to the SSWU for engineering excellence for the Phantom/Larsen Lake Restoration in 1993.

In early 1988, following extensive work by citizen's committee, the SSWU Advisory Commission, City, County and METRO staff and technical consultants, the Bellevue City Council and King County Council adopted the Coal Creek Basin Plan and Interlocal Agreement. This landmark agreement calls for strict erosion and stormwater controls on new development in the basin, outlines joint funding responsibilities for approximately \$7 million worth of flood control facilities, and sedimentation control facilities, and prescribes means to enhance salmon spawning in Coal Creek.

INTRODUCTION

Also in 1988, the Stream Team program was developed to increase awareness and involve the public in protection and enhancement of Bellevue's streams, fish and wildlife. This program has been supported by the Puget Sound Water Quality Authority, and the Washington State Department of Ecology (D.O.E.) Centennial Clean Water Fund and by King County Surface Water Management for expansion into unincorporated King County. In 1991, the Washington State Ecology Commission presented the City of Bellevue with the Environmental Excellence Award for the Stream Teams efforts.

In January of 1990, the City of Bellevue received 3.02 inches of rainfall in a 24-hour storm event. This amount of rainfall has a probability of occurring once in 15 years. However, due to very wet conditions prior to this rain, the runoff volumes approached a 100-year event. In contrast to the 1986 storm, very little damage occurred in this storm. The drainage improvements constructed following the previous storm were instrumental in preventing damage in 1990.

In 1990, the Business Partners for Clean Water program was established as a cooperative effort between the Storm and Surface Water Utility and local businesses. The goal of this program is to reduce pollution and stream corridor degradation by local businesses and to recognize businesses which take steps to protect water. The program was developed with the help of a business advisory group and was partially funded by a D.O.E. Centennial Clean Water Fund grant. In 1993, this program received a Municipal Achievement Award of Merit from the Association of Washington Cities.

In June of 1991 the City Council voted to create a new Environmental Services Commission to replace the former Storm and Surface Water Advisory Commission. The new commission assists the Council in establishing city policy regarding water, sewer and solid waste functions as well as storm and surface water services. The commission has financial and program oversight responsibilities including recommending rate structures.

One of the results of the Lake Sammamish Water Quality Management Project was a multi-purpose detention and water quality treatment system built within the Lewis Creek Basin. By 1992, most of the construction of the Lakemont Filtration Detention system was completed and the system was fully operational by early 1994. This system was financed by a joint partnership between the City and the developers of the Lakemont Subdivision, the first of its kind. The City financed the water quality treatment portions of the system while the developer paid for the quantity portions. This innovative treatment system was designed to remove dissolved phosphorus as recommended by the Lake Sammamish Basin Study. The City is scheduled to monitor the performance of the facility with a grant from D.O.E. until 1998.

After operating as a separate utility for 10 years, the Storm and Surface Water Utility joined the City's other utilities to become one comprehensive Bellevue Utilities Department

INTRODUCTION

(B.U.D.) in August of 1993. With this City reorganization, most of the responsibility for sensitive area and clearing and grading development regulations were transferred to the new Department of Community Development. The Bellevue Utilities Department was assigned the responsibility of managing drinking water, wastewater, surface water, solid waste and private utility franchises. Within B.U.D., the storm drainage utility operations include flood control, maintenance and enhancement of surface water quality, protection of sensitive areas and public education.

Under the Bellevue Utility Department (B.U.D.), the drainage utility is guided by the B.U.D. Mission Statement and the policies outlined in the Utilities and Environmental Elements of the 12/6/93 City Comprehensive Plan (included in the appendices). The policies which specifically address the storm drainage utility are as follows:

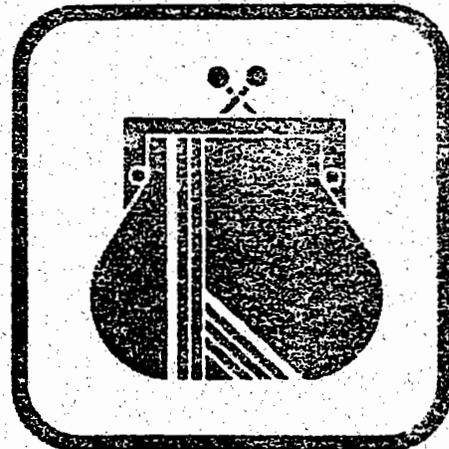
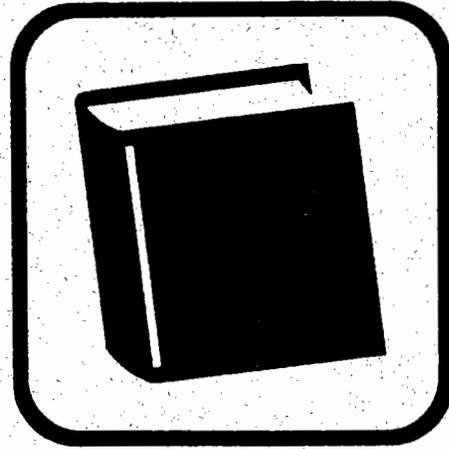
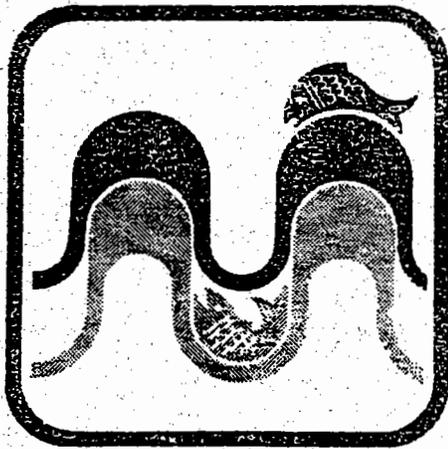
- Policy UT-28. Manage the storm and surface water system in Bellevue to maintain a hydrologic balance in order to prevent property damage, protect water quality, provide for the safety and enjoyment of citizens, and preserve and enhance habitat and sensitive areas.
- Policy UT-29. Enforce surface water controls to protect surface and ground water quality.
- Policy UT-30. Educate the public on water quality issues.

These policies set the direction for this update of the Comprehensive Drainage Plan.

CHAPTER 3

GENERAL AND

FINANCIAL POLICIES



GENERAL AND FINANCIAL POLICIES

PREFACE

City of Bellevue's Comprehensive Plan, updated and adopted December 1993 to comply with the Growth Management Act and the 1993 City reorganization, established a broad framework of goals to guide subsequent policy making. The Utilities and Environmental Elements of the plan outline the city's goals of protecting the natural environment, pursuing a strong and diverse local economy, and providing needed community services and facilities. To that end, the major goals of the Utilities Department are:

1. To facilitate the development and maintenance of all utilities at the appropriate levels of service to accommodate the City of Bellevue's projected growth.
2. To facilitate the provision of reliable utility service in a way that balances the public's concern about safety and health, consumer's interest in paying no more than a fair and reasonable price for the utility's product, Bellevue's natural environment and the impacts that utility infrastructures may have on it, and the community's desire that utility projects be aesthetically compatible with surrounding land uses.
3. To process permits and approvals for utility facilities in a fair and timely manner in accord with development regulations which encourage predictability.

Policies specific to all city-managed utilities, including sewer, water, surface water, and solid waste management, are also defined within the Utilities and Environmental Element of the Plan. The policies which specifically address the storm drainage utility are as follows:

Policy UT-28. Manage the storm and surface water system in Bellevue to maintain a hydrologic balance in order to prevent property damage, protect water quality, provide for the safety and enjoyment of citizens, and preserve and enhance habitat and sensitive areas.

Policy UT-29. Enforce surface water controls to protect surface and ground water quality.

Policy UT-30. Educate the public on water quality issues.

These specific policies led to development of surface water policies that govern various facets of utility functions, which are included in this Comprehensive Drainage Plan.

GENERAL & FINANCIAL POLICIES

A policy committee comprised of department management and engineering and maintenance staff outlined the issues and developed the policies discussed herein. To develop the policies the committee considered new federal and state stormwater regulations, current and long-standing city and industry practices, operations and financial policies, impact and liabilities and customer service expectation. The committee prepared a draft with staff recommendations for each policy, and these policies were reviewed by the Environmental Services Commission.

This 1994 Comprehensive Drainage Plan (CDP) contains twelve general policies and seventeen financial policies. When compared with the 1988 CDP general policies, eight policies have been revised and updated, two deleted, four policies have been combined in two policies, and two new policies have been created. A financial policy section has been added in lieu of a rate study because rate studies are revised more frequently than the CDP.

A summary of the changes are presented below. The complete text of each policy is contained within the General Policies section of this CDP.

Policy #1 (formerly #2) - Emergency Response: Similar to the 1988 CDP policy but clarifies relationship to City's Emergency Operation Plan and the role of Director of Emergency Services.

Policy #2 (formerly #1) - Residential Drainage Control: Similar to the 1988 CDP Policy except it no longer promotes a constitutional amendment to allow City loans for single family home owners to fix drainage problems.

Policy #3 (new) - Neighborhood Enhancement Projects: Provides funding for neighborhood enhancement drainage projects.

Policy #4 (formerly #5 and #6) - Conveyance System Responsibility: Combines and modifies two prior policies; #5 Conveyance System Ownership and #6 Acceptance of Drainage Easements.

Policy #5 (formerly #14) - Detention System Responsibility in Single Family Residential Plats and Short Plats: Modifies the prior policy regarding detention system maintenance to limit City acceptance of single family detention systems in order to reduce City cost and liability.

Policy #6 (formerly #4) - Capital Project Identification and Prioritization: Similar to the 1988 CDP Policy, Capital Improvement Project Prioritization, but it clarifies the reasons for drainage capital improvement projects, increases emphasis on water quality and deletes the specific rating guide and other implementation steps.

GENERAL & FINANCIAL POLICIES

Policy #7 (formerly #13) - Property Site Restoration: Similar to the 1988 CDP Policy, Construction Site Restoration.

Policy #8 (formerly #8) - Stormwater Detention Requirements: Provides a broad framework for the update of the City's Codes required to comply with the Growth Management Act. The proposed policy allows for retaining current detention requirements or making changes ensuring that the overall environmental and utility elements of the City Comprehensive Plan are met.

Policy #9 (formerly #7 and #9) - Water Quality: Combines two 1988 CDP policies, #7 Construction Performance Standards and #9 Water Quality Control. Deletes quantitative water quality standards for construction and sets up a goal of meeting state and federal water quality requirements.

Policy #10 (formerly #10) - Lake Management: Refines the 1988 CDP policy by highlighting the importance of managing stormwater run-off throughout a lake's watershed and identifies specific lakes where special watershed controls are warranted.

Policy #11 (formerly #11) - Deltas: Similar to the prior policy except adds text to address existing legal obligations and deletes references to source control since they are covered in other policies.

Policy #12 (new) - Regional, State and Federal Policy Development: Recognizes and validates the role the Utility takes in developing and implementing regional, state and federal policy development.

Deleted Policies

Capital Improvement Program Projects vs. Major Maintenance Program Projects (formerly #3).

A separate MMP program is no longer warranted because:

- Under the current capital project rating, small projects can now compete with large ones.
- Capital funds are now limited. Low-ranking MMP projects should not be built before high-ranking CIP projects.

Landfills and Waste Sites (formerly #12)

A policy on pollution from landfills and waste sites (including any City-owned waste sites) is not needed in the Comprehensive Drainage Plan because the issues are adequately covered through state law and through policies in the City's Comprehensive Plan.

GENERAL POLICIES

Policy #1 Emergency Response

POLICY:

The Utility shall respond to drainage-related emergencies and undertake emergency protective measures or projects as needed in the event of an imminent threat to public health, safety, or public resources (such as infrastructure, fisheries, and water quality), or an imminent threat of significant property damage.

DISCUSSION:

The City responds to many kinds of emergencies. The Utility has historically responded to drainage-related threats to life, health, or property. Since the 1988 Comprehensive Drainage Plan (CDP) was adopted, the Utility has also responded to threats to water quality and aquatic resources. This policy continues the policy that was adopted in the 1988 CDP.

It is sometimes necessary to undertake projects on private property to adequately respond to an emergency. The Utility should seek permission from the owner. However, it may not be possible to reach the owner, and delaying response may lead to significant property or resource damage. In those cases, the Utility will proceed with the work as long as that is consistent with general policy direction from the City's Emergency Operations Plan. In that way, the Utility will minimize the liability associated with work on private property while protecting property and resources.

When the demand for emergency work exceeds available City crews or equipment, or the emergency work requires specialized expertise or equipment, project-specific direction from the Director of Emergency Services is warranted. This allows the Director to weigh the project against other city-wide emergency needs.

**Policy #2
Residential Drainage Assistance**

POLICY:

The Utility should continue to offer education and advice to all single-family property owners with private drainage problems.

DISCUSSION:

Since the establishment of the Utility, staff members have investigated many customer requests for assistance with drainage problems on residential property. When the cause of the problem is water from a public street or easement, Utility funds can be spent to solve the problem through its maintenance or capital investment programs. Where public drainage systems are not involved, public funds cannot be spent; state statutes restrict expenditures of public funds to benefit private properties.

The division between private and public drainage systems (including streams) is the boundary between private property and City right-of-way unless:

- * The City has a drainage easement (or other property rights conferring drainage responsibility) across the private property.

As previously noted, public funds can not be spent on private drainage problems. However, it is appropriate for staff to give advice regarding drainage problems because:

- * Staff need to respond to the call anyway to determine if the problem is caused by the public system.
- * Unresolved private drainage problems can cause damage to streets, easements, and other public property.
- * Customers learn more about the Utility and appreciate the service.

Of the customer action requests received by the Utility, about 200 each year result in the Utility providing advice; many of these relate to drainage issues. Each call takes about two hours of staff time, considering administrative time (taking the call, logging it in) plus the actual response and related correspondence.

This policy of providing advice is basically unchanged from the 1988 CDP. The 1988 CDP also mentioned advice regarding slope stability. Slope stability problems related to drainage

GENERAL POLICIES

issues are covered by the broader term "drainage problem." Slope stability issues unrelated to drainage are outside the Utility's mission.

The 1988 CDP also called for the Utility to develop legislation to amend the State Constitution so that the Utility could provide below-market rate loans for single family home owners to fix private drainage problems. Pursuing a Constitutional amendment and loan program is no longer recommended, because:

1. There was little support outside the Bellevue drainage staff for pursuing a constitutional amendment. Amending the constitution is difficult, ultimately requiring a vote before the people at a general election.
2. Expanding Utility services has budget implications, and the Utility already faces budget challenges. The estimated cost of a loan would be approximately \$100,000.

Recent case law has liberally interpreted the state prohibition against loans to private individuals. According to case law, such loans are allowed if they provide a public benefit. Therefore, there may be instances when the Utility could provide a loan for drainage work on private property. However, pursuing a loan program is still not recommended due to Utility budget constraints.

**Policy #3
Neighborhood Enhancement Projects**

POLICY:

Each year the Utility shall allocate part of the capital budget to construct drainage projects identified through the Neighborhood Enhancement Program.

DISCUSSION:

In 1988 the City began its Neighborhood Enhancement Program (NEP). Each year, City staff hold workshops for one section of the City to find out neighborhood concerns. Up to \$600,000 is spent from the general fund on requested improvements (typically transportation and parks improvements).

Drainage concerns may also be raised by the residents during the NEP process. Often the drainage concerns are minor (for example, debris in a stream) and can be resolved by simple maintenance. Sometimes a capital project is needed to solve the identified problem. This policy provides funds for NEP drainage projects, since drainage projects must be paid for out of Utility funds, rather than City general funds.

The funds to be set aside should not exceed an annual amount of \$50,000 with no more than \$10,000 to be spent on any given project. Unspent funds should stay in the capital budget and should not increase the amount of NEP funds available in future years.

It is appropriate to set aside funds for drainage projects identified through the City-wide neighborhood enhancement program, since the intent of the program is to respond to resident needs in specific geographic areas in concert with other City NEP objectives.

In addition, there should be a separate project element identified in the CIP for minor capital projects not specifically identified in the CIP. This allows the City to respond to unanticipated needs such as those arising from minor emergencies.

**Policy #4
Conveyance System Responsibility**

POLICY:

The Utility shall own and maintain all elements of the storm drainage system in the right-of-way and in easements or tracts dedicated to, and accepted by, the Utility. The Utility should not acquire or accept additional new or existing components of the stormwater conveyance system (through easements, ownership, or other property rights) except when needed for Utility construction projects identified in the Comprehensive Drainage Plan, or when all of the following conditions are met:

1. There's a public benefit;
2. An easement or property is offered by the property owner at no cost;
3. The system meets City standards or is brought up to City standards by the owner;
4. There is access for Utility maintenance from public right-of-way; and
5. The Utility has adequate resources to maintain the system.

DISCUSSION:

Much of Bellevue's stormwater conveyance system is privately owned. Private drainage conveyance systems are those on private property on which the Utility does not have an easement or maintenance responsibility. Conveyance systems in public right-of-way are owned and maintained by the Utility. In addition, the Utility has acquired easements, right-of-way, or fee title (through purchase or dedication) for some additional conveyance system segments.

Some system components were installed by developers and then dedicated to the City, but most of the significant acquisitions were for City drainage projects. In particular, several stream reaches were obtained in order to build in-stream flood control facilities, and a supplemental trunk pipeline was built in City right-of-way in the Meydenbauer basin.

The City's historical policy has been to acquire control of conveyance system components on an as-needed basis when brought up to City standards by others or through an approved Utility project. The 1988 Comprehensive Drainage Plan generally reflects the historical policy.

GENERAL POLICIES

The current policy is similar to that in the 1988 CDP. However:

- * It combines two prior policies--one dealing with the primary conveyance system (the large, regional systems) and one dealing with the smaller conveyance system elements.
- * This policy clarifies that the City will sponsor a project to bring a system up to standards only if the project is identified in the Comprehensive Drainage Plan (CDP). (If there's sufficient public benefit to upgrade a substandard private conveyance system, the project eventually will become part of the CDP.)
- * Unlike the 1988 policy, this policy requires that there be access from public right-of-way and resources for Utility maintenance before the Utility will accept responsibility for a system.

An aggressive program to acquire additional segments of the conveyance system is not recommended because:

- * Owning and maintaining the conveyance systems would not address the City's water quality and flood control responsibilities, since pollutants and runoff originate throughout each drainage basin. Also, most of the primary conveyance systems are streams (riparian corridors), and streams are adequately protected through local and state regulations.
- * If substandard systems are accepted, the City could assume liability for damage to adjacent private structures to the extent they are damaged by flow from the conveyance system.
- * The cost of acquiring all conveyance systems and bringing them up to standards would be high and would also result in increased operation and maintenance costs.

**Policy #5
Detention System Responsibility in
Single-Family Residential Plats/Short Plats**

POLICY:

The Utility shall own and maintain all detention systems in the public right-of-way and easements of tracts dedicated to, and accepted by, the Utility. The Utility should not accept ownership and responsibility for new detention systems or for existing private detention systems (through easements or other property rights) unless all of the following conditions are met:

1. There's a public benefit;
2. An easement or property is offered by the property owner at no cost;
3. The system meets City standards or is brought up to City standards by the owner;
4. There is access for Utility maintenance from public right-of-way;
5. The Utility has adequate resources to maintain the system; and
6. The system serves a residential plat or short plat (rather than a commercial property).

Where practical and in the public interest, multi-purpose detention facilities with shared maintenance responsibilities, should be encouraged.

DISCUSSION:

Detention systems need to be maintained to make sure they function as designed for flood control. Detention system maintenance also benefits water quality; trapped pollutants are removed from the system rather than flushed downstream in a major storm. The City can ensure that maintenance occurs either by:

- * Owning the facilities (and allocating maintenance resources); or
- * Requiring maintenance through its private maintenance and inspection program (PMI).

The 1988 Comprehensive Drainage Plan policy called for the Utility to seek ownership of private detention systems in single-family plats, regardless of whether those systems met standards. The policy called for the Utility to prioritize system improvements with other Utility needs. That policy was adopted for three reasons:

1. City ownership clarifies maintenance responsibility (and therefore can improve reliability); maintenance responsibility among property owners in a single-family plat may be poorly defined or assigned to a homeowners' association that is not well organized.

GENERAL POLICIES

2. It was consistent with City acceptance of substandard drainage systems in annexed areas.
3. It was perceived as more equitable to single family ratepayers.

However, since that policy was adopted only two of the 21 private detention systems in single-family plats were assumed by the City due to budget constraints. The current policy does not seek to acquire all private single-family plat (or short plat) detention systems (but instead would have the City accept them under more limited circumstances) for the following reasons:

1. Assuming substandard systems could increase City liability.
2. If all the single-family private detention systems were assumed by the City and upgraded to current standards, the City would incur over one million dollars in capital costs
3. Annual maintenance cost would be significant. There are currently 19 private single-family plat detention systems and 45 private short-plat systems, and the cost of City maintenance would be about \$2,200 per plat and \$250 per short plat. This cost would be partially off-set by reduced staff time needed to inspect the systems.
4. It is not necessarily more equitable to ratepayers for the City to assume ownership of private systems. Private systems cost less to install, and the original economic benefit should have been passed down to the property owners. Also, the 1988 policy pertained to plats, not short plats, so not all detention systems serving single-family homes would become public under that policy. Finally, the question of ratepayer equity can be looked at in rate studies.

The current policy allows City ownership of detention systems under circumstances that minimize City costs and liability. The Utility's private maintenance and inspection program will continue to work with property owners to ensure maintenance of privately owned detention systems.

**Policy #6
Capital Project Identification and Prioritization**

POLICY:

The Utility shall identify drainage capital projects that prevent or reduce flooding or property damage, protect or improve water quality, and maintain or improve the reliability and integrity of the drainage system. The Utility shall implement projects based on priorities that are systematically identified using a rating guide to be developed by staff.

DISCUSSION:

The overall drainage mission of the Utility is to manage the storm and surface water system to prevent property damage and protect water quality for the safety and enjoyment of citizens and the preservation and enhancement of wildlife habitat. Capital projects that prevent or reduce flooding or property damage, protect or improve water quality, or maintain or improve the reliability and integrity of the drainage system are consistent with this mission.

Once projects are identified, a system for setting capital project priorities is needed to facilitate and document schedule and budgeting decisions.

A numeric rating guide will be used to systematically set priorities. The guide should include factors such as health and safety, property damage, water quality, and environment, and may include other factors as well. Health and safety should be granted the highest weight. The rating guide should recognize the need and opportunity for making infrastructure improvements in conjunction with other capital projects. In addition, the rating system should recognize that special factors--such as a court order requiring project implementation or total or significant outside funding--justify accelerating project implementation. Similarly, other special factors may make a project inappropriate (for example, if the project significantly increases City liability.)

The rating approach in this policy is similar to the one in the 1988 CDP. However, the actual rating guide and other implementation steps are no longer part of the policy, since they provide more detail than typically included at the policy level.

**Policy #7
Property Restoration**

POLICY:

During the project design process, the Utility shall consider the impact to private property due to Utility construction.

When property disruption is unavoidable, the Utility shall restore the area to the pre-existing conditions to the extent practical. Where not practical, the Utility may compensate the owner for ornamental landscaping in lieu of restoration; compensation is limited to the reasonable replacement value of destroyed specimens in kind, but not in size.

Consistent with state and local law, the Utility shall not install landscaping improvements that increase the value of private property unless that is compensation for property rights granted to the Utility or unless the primary purpose is to benefit the City-wide drainage system.

DISCUSSION:

Construction of public drainage facilities can damage or disturb private property. Projects often require removal of vegetation which provided property owners with an aesthetic amenity and/or created a sense of privacy or security. It can take years to return the property to the pre-construction condition because replacement plants need to be immature to ensure survival.

Property disruption can be difficult for property owners; therefore it should be minimized to the extent possible (given the project objectives). This can be accomplished by considering impacts to private property when evaluating alternative designs. When property disruption is unavoidable the Utilities should work cooperatively with the property owner to develop suitable restoration plans.

State and local law prohibits the Utility from giving gifts to individuals. Therefore, the Utility can not install landscaping improvements that increase the value of private property unless that is compensation for property rights granted to the Utility or unless the primary purpose is to benefit the City-wide drainage system.

The Utility may plant vegetation for reasons unrelated to private property restoration or compensation for granting property rights. For example, grass seed, sod or other plantings are often placed to control erosion. Vegetation removed along streams or in wetlands is usually replaced to restore shading or habitat as required to mitigate identified environmental impacts. Ornamental landscaping typically is not planted to benefit water quality or aquatic habitat.

This policy is essentially the same as the construction site restoration policy adopted in the 1988 CDP.

**Policy #8
Stormwater Runoff Control Requirements**

POLICY:

The Utility should develop appropriate Codes, Regulations and Standards to carry out the City Comprehensive Plan policy of restricting the runoff from all new development and re-development. The goal of this policy is to maintain a hydrologic balance that provides for the safety and enjoyment of citizens, and preserves and enhances habitat and sensitive areas. To address the goal of this policy, the City must minimize the potential for flooding and streambank erosion.

DISCUSSION:

With Urban development, changes in the surface of the land, such as installation of impervious surfaces and compaction of soils, result in a decrease in the amount of rainfall which can infiltrate into the ground. This causes an increase in the volume of stormwater which runs off the land, and in the rate of such runoff. As more land is developed there is an increase in the frequency and severity of floods. In addition, the increase in runoff also causes erosion in streams and decreases their usefulness as habitat for fish and other aquatic life.

The Utility's approach to controlling runoff from urban development is consistent with the right to drain precept that has evolved from the past case law. Current Washington law allows a property, when developing, to collect or channel surface water on the property and discharge it onto the downstream property. However, the discharge is to flow in its natural pattern and not be in a rate greater than or in manner different from the flow that existed prior to the development unless approved by the downstream property owner. This allows the upstream property to drain and thus utilize his property while at the same time limiting the burden to the downstream property owner to approximately that which would have occurred without the upstream development.

When reviewing drainage system for proposed land development, the Utility will take reasonable care to ensure that the downstream property is protected from significant impact due to upstream development.

History

Early in the 1970's, the City looked into ways of alleviating the flooding which was occurring as a result of development in Bellevue. In 1976 the City completed a Drainage Master Plan which looked at four alternatives for controlling runoff. The objective of the

plan was to provide a storm and surface water system capable of handling a 100 year storm. The alternative which was adopted sought to limit plan implementation costs through the use of natural streams for conveyance systems rather than structural conveyance solutions. The plan used the runoff which would be generated from undeveloped sites, during a 10 year storm, as the basis for designing regional and on-site detention facilities and downstream conveyance systems. This rate of runoff was chosen because it was generally believed that the natural streams could accommodate that level of flow, without major damage.

The regulations for new developments which were adopted as a result of the Drainage Master Plan sought to require developments to provide on-site detention facilities which could store the difference between the 100 year storm runoff following development and the 10 year runoff prior to development on the site, during a 4 hour duration storm.

In an attempt to do this, a simplified calculation method was developed for designing detention systems. This method allowed a release rate of 0.2 cubic feet per second per acre and required 1 inch of detention volume over impervious areas and 0.5 inches of detention volume over pervious areas. The plan looked to limit peak flows in streams through requiring on-site runoff controls on developments and through construction of regional stormwater storage facilities.

These requirements were reevaluated during the formulation of the 1988 Comprehensive Drainage Plan. A sample stream study at this time showed that despite the regional and on-site detention facilities which had been constructed on new developments since 1976, flows were still on the rise in Kelsey Creek. Experience with the detention systems designed under the simplified method showed these systems to be under sized. To correct these deficiencies the City adopted Standards that required a 30% increase in detention volumes for the simplified method. In addition, sites which were larger than 5 acres or which were within 1/4 mile of a Type A or B stream were required to use computer modeling to determine required detention volumes. The duration of the design storm was increased from 4 hours to 24 hours.

For the sites which were required to use computer modeling to design detention systems, the City also incorporated requirements for restricting the flow released from the system during the more frequent smaller storm events in an effort to control erosion in streams. To do this developments were required to hold the runoff from the developed site during the 10 year storm to the runoff which would have occurred during the 2 year, 24 hour storm prior to development of the site.

GENERAL POLICIES

PRESENT STORM WATER RUNOFF CONTROL REQUIREMENTS:

- For greater than 5-acre sites and sites within 1/4 mile of a Type A or B stream detention facilities are designed to accommodate the runoff from the developed sites during a 100 year storm (a storm with a 1% chance of occurring in any given year) having a 24-hour duration. Allowable release rates for these systems are not to exceed the peak runoff rate from the pre-development sites during a 10 year (10% probability), 24-hour storm.
- Bypass conveyance facilities shall provide 100 year capacity and drain directly to Lake Washington or Lake Sammamish. Water quality treatment shall be provided prior to discharge to a lake.
- All other sites calculate detention volumes and release rates using the simplified method described above.
- Developing properties which are required to comply with these criteria:
 - All new commercial and industrial developments.
 - All new residential developments creating two or more building lots.
 - All developments and roadway improvements which create new impervious surface of greater than 3,000 sq. feet.
 - All developments where significant adverse impacts are likely to occur down stream.
 - All redevelopment which result in substantial remodeling to building or structures of a commercial development. Substantial remodeling means construction which increases the floor area of the existing building or structure(s) by more than twenty (20) percent, or any alterations or repairs made, which together exceed fifty (50) percent of the value of the previously existing building structure.

FUTURE CONSIDERATION:

The City is in the process of updating its Codes and Standards. The results of the update process could alter some elements of the current requirements. The Utility Code must be compatible with other related City Codes, i.e. Land Use, Clear & Grade and State and Federal stormwater regulations. The challenges will come from a need to balance the economic and environmental elements of the recently adopted City Comp Plan. The Utilities main storm water management goal is to maintain a hydrological balance in order to prevent

GENERAL POLICIES

flooding, protect water quality, provide for the safety and enjoyment for citizens, and preserve and enhance habitat and sensitive areas, and further to maintain utility rates as low as possible while meeting this goal. This storm water management goal must be balanced with the economic element of the City Comp Plan which calls for pursuing a strong and diverse local economy, as well as developing a balanced regulatory environment that promotes economic activity, maintains jobs, encourages new jobs, and maintains and promotes a high quality of life in Bellevue.

**Policy #9
Surface Water Quality**

POLICY:

The City shall develop and update surface water quality protection programs as needed and shall carry out those programs and best management practices (BMPs) in order to make progress toward meeting state and federal requirements¹ and the City Comprehensive Plan water quality and related resource goals. City surface water quality programs may include (but not necessarily be limited to):

- * Water quality studies and investigations;
- * A water quality response program, including enforcement;
- * Education programs (including promoting source controls);
- * Preservation of wetlands and streams;
- * Stormwater quality controls on new development and redevelopment (including, but not limited to, temporary erosion and sedimentation controls during construction and permanent runoff treatment best management practices);
- * An operation and maintenance program, including an inspection program to ensure private maintenance of private drainage systems;
- * Capital projects to address identified water quality problems; and
- * Participation in regional studies and in the development of regional, state, and federal surface water quality policy. See Comprehensive Drainage Plan policy #12 Regional, State and Federal Policy Development.

¹ The City seeks to meet the state and federal surface water quality requirements. However, the federal Clean Water Act currently includes some requirements that are not achievable, and Bellevue and other jurisdictions are seeking amendments so that compliance will be possible. The Standards were initially set to control point sources of pollution, such as discharges from wastewater treatment plants, and for baseflows. The Clean Water Act--as interpreted by regulatory agencies--requires that stormwater discharges meet these water quality standards for wet weather flows. The State of Washington currently designates all Bellevue streams as class AA (extraordinary), the classification with the strictest standards which are not always achievable in urban areas (and are often exceeded even in some pristine settings).

DISCUSSION:

Background

Surface water quality protection is required by federal, state, and local regulations and policies. The City of Bellevue Comprehensive Plan includes a policy to "maintain good surface water quality as defined by federal and state standards" and rehabilitate degraded surface water. Related policies call for the protection of natural surface water systems, biological health and diversity, wetlands, aquatic and riparian habitats, and groundwater resources.

To a large extent, surface water quality protection in the City depends on managing stormwater runoff. Stormwater runoff collects pollutants such as oil, grease, and sediment as it travels along the ground surface, and can therefore be a significant pollutant source.

Stormwater management and surface water quality protection is required by state and federal mandates, most notably:

1. The Puget Sound Water Quality Management Plan (adopted by the Puget Sound Water Quality Authority) requires local agencies to develop and implement stormwater management programs, subject to the availability of appropriated funds or other funding sources. The Washington State Department of Ecology (Ecology) provides details on what those programs should include. Ecology's guidance is primarily contained in two documents: The Stormwater Program Guidance Manual for the Puget Sound Basin, and The Stormwater Management Manual for the Puget Sound Basin (the technical manual). Table 1 summarizes the stormwater program requirements and compares them to current Bellevue programs. The state's target compliance date for the earliest state requirements is December 31, 1994. As shown in Table 1, the City already meets many of the requirements.
2. The federal Clean Water Act (through rules promulgated by the U.S. Environmental Protection Agency) requires that municipalities with populations over 100,000 people obtain a National Pollutant Discharge Elimination System (NPDES) permit for their stormwater systems. In addition, the state authority, the Washington State Department of Ecology (Ecology), may require smaller municipalities to apply based on a watershed approach or may include them in a County permit. Because of this and because the City's population will soon exceed 100,000, Bellevue anticipates being subject to an NPDES permit. A municipal NPDES permit involves developing a stormwater management program (similar to that required by the state) plus meeting additional requirements such as monitoring. Exact NPDES requirements are not yet known, so the City may need to modify this policy and its programs to meet them when they

become known. The NPDES permit application requires an estimate of program costs and source of revenues needed. City of Bellevue intends to condition program implementation subject to approval of the Utilities Department budget by City Council. As noted in footnote 1, regulatory agencies are currently interpreting the NPDES requirements to mean that stormwater discharges must meet water quality standards--that it's not enough to have a stormwater management program. Bellevue is working to amend the law to ensure that compliance is achievable through the adoption of more realistic standards in urban areas.

3. The federal Clean Water Act includes additional requirements that affect surface water management. Most notably, State water quality standards (different water quality standards apply depending on which beneficial uses a water body is classified as providing), promulgated by Ecology, are revised every three years. Relative to these standards, every two years, Ecology must submit to the U.S. Environmental Protection Agency (EPA) a "water quality limited list"--a list of water bodies that don't meet current standards and that are not subject to documented water quality protection programs likely to result in compliance with the standards. Once the list is approved by EPA, Ecology must prioritize the listed water bodies and conduct studies to determine Total Maximum Daily Loads (TMDLs) of the violated pollutant for the water bodies. The local jurisdictions must then meet the TMDLs. As noted in footnote 1, compliance with the current standards is not always possible, and Bellevue is working to make sure that state and federal requirements are achievable.

The federal and state requirements are being coordinated. Both focus on mitigating surface water quality impacts through source controls and head-of-the-pipe treatment. Source controls include any measures that keep pollutants out of the stormwater runoff (for example, erosion control and spill containment are source controls). Head-of-the pipe treatment includes facilities such as oil/water separators and sedimentation ponds that remove pollutants from runoff before they enter the main stormwater conveyance system. This is as contrasted to prevention which avoids water quality problems. Examples are limitations on development and reduction in or prohibition of use of polluting materials, such as lead in gasoline.

The emphasis on source controls and head-of-the pipe treatment is intended to ensure a supply of clean water throughout the stream system, to avoid irreversible resource damage, and to reduce the possible need for costly future treatment. Additional treatment of urban runoff could be required in the future if the current approach proves inadequate.

Source controls and head-of-the pipe treatment are needed both during and after construction, and other on-going pollution prevention strategies are needed as well. These different aspects of water quality protection are discussed further below.

Controlling pollutants from construction

Construction activities can be a significant source of sediment. In fact, as stated by the EPA in 40 CFR (Code of Federal Regulations), Part 122, "Over a short period of time, construction sites can contribute more sediment to streams than was previously deposited over several decades." Construction activities also can contribute other pollutants such as lubricants, oils or greases, and construction wastes.

Through the clearing and grading permit process, the City requires erosion and sedimentation control best management practices (BMPs) to mitigate construction-related impacts to streams, wetlands, and the constructed drainage system.

The City Development Standards provide guidance on erosion and sedimentation control BMPs. Such BMPs include, but are not limited to: marking clearing limits, restricting construction in some drainage basins to the dry weather season, temporary sedimentation ponds, and runoff filtering devices. Revisions to the Development Standards (and the Clearing and Grading Code) will be made to ensure equivalency with the erosion control requirements in the State Stormwater Management Manual for the Puget Sound Basin

Staff strive to ensure that BMPs to control erosion, sedimentation, and other construction-related pollutants are adequate considering site conditions, the proposed development, expected weather conditions, and inspections made during the actual construction. However, erosion and sedimentation can occur regardless of the BMPs employed. Some degree of adverse impacts to the natural and designed drainage systems are inevitable. Costs associated with mitigating these impacts should be borne by the responsible parties.

Permanent stormwater controls on new development

Once construction is complete, there is still a potential for pollution. Therefore, to mitigate the impacts, new development and redevelopment (over a certain threshold) must include permanent stormwater quality controls. These include, but are not limited to, source controls and runoff treatment BMPs (such as wetponds and biofiltration swales). Although the City already requires certain water quality controls on new development and redevelopment, the state requirements necessitate additional controls. City codes and the Development Standards will need to be revised accordingly.

When a site is developed, staff ensure that significant wetlands and streams are protected, and that impacts to steep slopes are avoided or minimized, consistent with the Sensitive and Protected area requirements in the City's Land Use Code. These regulations prevent direct destruction of streams and wetlands and prevent major erosion and other problems otherwise caused from inappropriate development on steep slopes.

On-going pollution prevention

In addition to the controls discussed above with respect to new development and redevelopment, the City has other water quality protection programs:

Education programs: The City has education programs to make sure residents and businesses understand their on-going role in pollution prevention. Education is important, since many source controls require on-going actions such as properly disposing of wastes and minimizing the use of pesticides.

Operation and maintenance requirements: Permanent stormwater controls need to be properly operated and maintained in order to function as intended. The City has an operation and maintenance program to maintain its own facilities. In addition, it has an inspection program to ensure private maintenance of private detention facilities. To meet the State stormwater program requirements, private maintenance will need to be required of additional private stormwater facilities.

Spill control and water quality response: Pollutants are sometimes spilled or dumped into the storm drainage system (in violation of state and local law). The City's water quality response program responds to water quality complaints, spills, etc. and can initiate enforcement action, if warranted.

Monitoring and other investigations: The City investigates water quality in order to evaluate current problems and how best to protect water quality. For example, the City has conducted monitoring and has also studied individual watersheds and water bodies (such as Phantom and Larsen lakes). When appropriate, the City coordinates with other jurisdictions when conducting studies and developing action plans.

The state and federal requirements are likely to result in an increased emphasis on basin planning, additional monitoring, a new program to rank pollutant sources, and additional BMPs.

Capital projects

Sometimes capital projects are needed to solve an identified water quality problem. Capital projects are identified and prioritized as discussed in CDP policy #6.

Regional cooperation and input on state and federal policy

As noted in footnote 1, Bellevue and other jurisdictions are working to ensure that state and federal requirements are achievable. See CDP policy #12 for further discussion of the City's role in regional, state, and federal policy development.

Summary

It is clear that no single action can guarantee surface water quality protection. Therefore, consistent with state and federal mandates, the City protects surface water quality through a myriad of programs. This policy is similar to that in the 1988 Comprehensive Drainage Plan. However, it now addresses the control of construction-related pollutants, previously covered by a separate policy. In addition, it has been updated to reflect the most recent state and federal requirements.

Although the City's overall water quality programs are in place, the new state and federal requirements are likely to result in changes that will increase costs and the Utility's required level of service. The expected (and in some cases known) changes include additional operation and maintenance; increased emphasis on basin planning; increased inspection of private storm drainage facilities, additional monitoring; increased emphasis on water quality controls on new development and redevelopment; and a new program to rank pollutant sources. Some of the changes (such as expanding the private maintenance inspection program and modifying requirements for new development) necessitate changing City codes and standards. Complying with state and federal requirements also necessitates completing reports and other documentation.

Note that the state and federal requirements use the term best management practices (BMP). The City considers BMPs to be equivalent to best available technology or BAT. Finally, as previously noted, NPDES requirements are not yet firm, so City programs--as well as this policy--could change further as they become known.

Table 1	
Current State stormwater program requirements stemming from the Puget Sound Water Quality Management Plan	Current Bellevue programs pertinent to the state requirements
Identify and rank significant pollutant sources.	The Utility identified problem areas, and will use the results to rank significant pollutant sources.
Investigate problem storm drains and take corrective actions.	The Utility investigates problem storm drains and takes corrective action as needed.
Implement a program for operation and maintenance.	The Utility has operated and maintained the public drainage system since its inception and has required maintenance of private systems with detention since 1983.
Implement a water quality response program.	The Utility has a water quality response program which has served as a model for other communities.
Assure adequate local funding for the stormwater program.	Utility rates provide a dedicated funding source.
Create local coordination arrangements.	The Utility coordinates as needed. It participates in interlocal agreements (such as for the Lake Sammamish study) and regional forums (such as the APWA stormwater managers group).

Table 1

<p>Current State stormwater program requirements stemming from the Puget Sound Water Quality Management Plan</p>	<p>Current Bellevue programs pertinent to the state requirements</p>
<p>Require stormwater controls for new development and redevelopment. Details are given in the State Stormwater Management Manual for the Puget Sound Basin. The minimum requirements include:</p> <ul style="list-style-type: none"> * Temporary erosion control * Preserving natural drainage systems and discharge locations * Source controls * Runoff treatment BMPs * Streambank erosion control * Protecting wetlands from stormwater pollutants * Applying more stringent requirements as needed * Analysis of off-site impacts * Use of basin planning to modify standards * O&M plans for stormwater facilities and BMPs * Performance bonds or other financial instruments 	<p>The City requires stormwater controls through:</p> <ul style="list-style-type: none"> * The Clearing and Grading Code (which addresses construction controls); * The Storm and Surface Water Utility Code; * The City Development Standards; and * The Land Use Code (which includes wetland and riparian corridor preservation requirements) * The Bellevue Comprehensive Plan

GENERAL POLICIES

Provide education programs for residents, businesses, and industries.	The Utility has had an education element since its inception. Education programs include the Stream Team and Business Partners for Clean Water.
Provide inspection, compliance and enforcement	Several inspection and compliance programs are in place: * Clearing and grading permit inspectors check controls on new development. * The Private Inspection and Maintenance Program oversees private detention O&M. * Source controls and the water quality response unit address illicit discharges. Enforcement is through the City's civil infraction code.

**Policy #10
Lake Management**

POLICY:

The Utility should take a lead role in lake management for flood control and water quality purposes only. Maximum use should be made of grants or other outside funding sources and financial cooperation of benefitted lake property owners. The Utility should not take a role in lake management issues for recreational or aesthetic purposes.

The Utility has currently identified Lake Sammamish, Phantom Lake, and Larsen Lake as lakes with public access that are sensitive to nutrient loadings and require special controls throughout their watersheds. The Utility should:

- * Ensure that nutrient controls (and other mitigating measures related to flood control or water quality that are identified in a pertinent lake management plan) are required of new development and re-development throughout the lakes' watersheds. These controls are in addition to standard City requirements for controlling water quantity and quality.
- * Continue to educate and involve businesses and residents in lake protection through on-going Utility education programs and other management mechanisms.

DISCUSSION:

Bellevue is bounded on the east and west by Lake Washington and Lake Sammamish. Bellevue also includes three small lakes--Larsen Lake which is City owned, Phantom Lake which includes private and public land, and Lake Bellevue which is privately owned. Larsen Lake is managed as a regional detention (flood control) facility, and Lake Bellevue provides a similar flood control function for private development.

Lakes tend to become repositories for pollutants (such as nutrients, oil, and pesticides) that enter them with urban runoff, groundwater, or--to a lesser extent--rain. In addition, once nutrients enter a lake and settle to the bottom, they can cycle from the bottom sediments back to the water, where they're available for algae growth. High nutrient levels can fuel nuisance amounts of algae; decaying algae in turn can deplete dissolved oxygen levels, needed by fish and other aquatic animals.

The 1988 Comprehensive Drainage Plan concluded that the Utility should have a role in lake management for water quality and flood control only and that maximum use should be made of outside funding sources such as grants and financial cooperation of benefitted lake property owners.

GENERAL POLICIES

Consistent with that policy, the Utility obtained state grants to pursue several water quality projects related to lake protection. Specifically, the Utility:

- * Completed the \$2 million Phantom/Larsen lakes restoration project aimed at breaking the lakes' cycle of nutrient-enrichment; about 70% of that cost was paid from state grants.
- * Participated in a grant-funded water quality study of Lake Sammamish.
- * Formed a public/private partnership to construct a combined nutrient-control/detention facility at a development in the Lake Sammamish watershed (the Lakemont dry pond filtration facility).
- * Obtained grants to monitor the effectiveness of three nutrient-control techniques recommended in the Lake Sammamish study.

The work related to Phantom/Larsen lakes and Lake Sammamish emphasized the need for on-going lake and watershed management to limit phosphorus loading. On-going management involves maintaining any capital facilities (such as the aerator installed at Phantom Lake) and working to minimize the entry of phosphorus and other pollutants into the lakes.

This policy expands the 1988 policy by highlighting the importance of managing stormwater runoff throughout the lakes' watersheds to reduce nutrient (and other) pollution.

Reducing pollution can be accomplished by:

1. Ensuring best management practices (BMPs) are required of new development and redevelopment, including BMPs for nutrient control.
2. Continuing to educate businesses and residents on their role in lake protection.

The City routinely requires BMPs to control runoff from new development and redevelopment (except for very minor projects). Consistent with requirements in the state Stormwater Management Manual for the Puget Sound Basin, the City requires BMPs for water quality control, not just quantity control (see the CDP water quality policy).

In addition to requirements that apply City-wide, nutrient controls are warranted on new development and redevelopment in the watersheds of Lake Sammamish and Phantom and Larsen lakes. This is consistent with minimum requirement #7 in the state Stormwater Management Manual for the Puget Sound Basin which requires jurisdictions to impose more

stringent water quality controls where needed to protect water quality sensitive areas. In particular, the State Stormwater Manual requires nutrient controls (such as constructed wetlands and specially designed wet ponds) for new development and redevelopment in watersheds draining to receiving waters where nutrients are a concern.

The State Stormwater Manual also requires local jurisdictions to have educational programs. In Bellevue, education programs are already in place.

The policy refinement outlined above should not increase City fiscal costs, since staff must already review development proposals and are already involved in business and resident education. However, Utility operation and maintenance costs may increase for sites where public nutrient-control facilities are required. The City is studying the feasibility of adding a water quality component to its rate base.

Because a lake is affected by residents and businesses throughout its watershed, and because lakes are highly valued by many residents, the Utility should involve the public when undertaking its lake management activities. For example, the Utility could create a watershed management group to involve watershed businesses and residents in setting lake management priorities related to flood control and water quality.

**Policy #11
Deltas**

POLICY:

The Utility will fund delta removal only in situations involving a threat to life, health or dwellings from flooding or where the Utility has an existing legal obligation by easement or agreement. Any delta removal should be limited to that needed to alleviate such flooding or to fulfill the legal obligation.

The Utility may provide non-financial support to any private or third-party-funded dredging projects that are found to be environmentally acceptable.

DISCUSSION:

Deltas are deposits of sediment, such as gravel, sand and silt, that are found at the mouths of streams (and rivers) and are typically fan-shaped. Sediments are carried by streams and settle to the bottom when the water velocity slows to the point where the water no longer has enough energy to move the soil particles downstream. Larger particles take more energy to move than smaller ones, and so larger sized particles carried in suspension or dragged along the streambed will be dropped before small ones. Fine sediments are deposited when the stream enters still water, such as a lake.

Sediment in the streams may come from naturally occurring streambed erosion or slides or may result from human activities such as logging or construction. Development activities which increase peak stream flows may increase stream erosion. Therefore, deltas will and do form naturally, but any human activity which increases erosion will also tend to increase delta growth.

Within Bellevue and the surrounding sphere of influence there are at least fourteen streams which discharge into Lake Sammamish and Lake Washington and many more intermittent streams, gullies, and storm drains which also form deltas through the same mechanisms as do streams. Several of the streams, including Coal, Lewis, Phantom, Meydenbauer, Lakehurst and Wilkins creeks are known to have large deltas. Deltas also exist in some of the small inland ponds and lakes.

GENERAL POLICIES

Deltas formation has various consequences, including:

- * Shorebird habitat is often expanded as a delta increases in size.
- * Fish migration paths may be disrupted.
- * A navigation hazard may be created, since charts may not be updated often enough to keep up with the changes in delta size and shape. When significant commercial navigation is affected, the U.S. Army Corp of Engineers will often perform maintenance dredging. None of the Bellevue area deltas have been identified for dredging by the Corps.
- * Delta growth may interfere with some types of recreation such as swimming and boating.

Often the sediment that creates deltas is associated with sands which are also deposited in the lower reaches of the stream channel. The lower reaches of streams tend to be flatter--and therefore more prone to sedimentation--than the upper reaches, since streams naturally tend to erode their beds and establish profiles which are flatter as they proceed downstream. This deposition may reduce channel capacity and therefore increase flooding risks. However, typically the delta itself would not markedly affect channel capacity or flooding risks.

The problems associated with deltas do not pertain to the Utility's overall mission of flood and water quality control. Moreover, the Utility is not an insurer against all natural phenomena and catastrophic events. Therefore, the Utility should not have a role in delta removal unless the delta involves a threat to life, health, or dwellings from flooding (or it has an existing legal obligation by easement or agreement). Any delta removal should be limited to that needed to alleviate the flooding (or fulfill the legal obligation).

However, the Utility should provide non-financial support to any private or third-party funded dredging projects found to be environmentally acceptable. Appropriate support includes:

- * Creating an LID wholly funded by benefiting property owners.
- * Using surcharge funding.
- * Providing advice on how to obtain permits or approvals.

In addition, the Utility should pursue opportunities for interjurisdictional cooperation.

GENERAL POLICIES

Finally, the Utility requires water quantity and water quality source controls throughout the City, consistent with other policies in the Comprehensive Drainage Plan. Such source controls--including strict application of erosion control measures on new construction, drainage facility maintenance, and the construction of detention and sediment control facilities--slow the rate of delta formation. Requiring water quantity and water quality source controls is consistent with the Utility's flood control and water quality mission.

This policy is the same as that adopted in the 1988 Comprehensive Drainage Plan except that it refers to existing legal obligations and no longer addresses source controls. Source controls are adequately covered in other CDP policies.

**Policy #12
Regional, State, and Federal Policy Development**

ISSUE:

The Utility role in developing and implementing regional, state, and federal surface water policies and programs.

POLICY:

The Utility shall continue to have a role in developing and implementing regional, state, and federal surface water policies and programs and, in doing so, shall seek to:

- * Achieve the City's environmental goals;
- * Contain Utility ratepayer costs;
- * Ensure state and federal requirements are achievable;
- * Maintain local control and flexibility in policy/program implementation; and
- * Provide consistency with County-wide Planning Policies.

The Utility's role in developing and implementing regional, state, and federal surface water policies and programs may include:

- * Influencing legislation through lobbying and through written and verbal testimony during formal comment periods;
- * Participating in rule-making;
- * Reviewing technical documents;
- * Serving on advisory committees and work groups; and
- * Participating in multi-jurisdictional studies and basin planning.

DISCUSSION:

The Utility has participated--and should continue to participate--in the development and implementation of regional, state, and federal drainage policies and programs for a number of reasons:

- * Water resource issues are by nature regional; watersheds cross jurisdictional boundaries, and different watersheds can often benefit from similar flood control and water quality protection programs.
- * The City has a direct interest in helping shape state and federal water resource mandates since they affect Utility costs, can result in rigid programs that preclude more creative

GENERAL POLICIES

or effective local ones, or can result in requirements that are impossible to meet. For example, the City is seeking to ensure that Bellevue surface waters aren't subject to numeric water quality standards that can't be achieved. (See the surface water quality policy for more information.)

- * The City has been looked to as a regional and national leader with respect to storm and surface water management and therefore has had an opportunity to serve as a technical resource and as a participant in shaping policy and programs to benefit the City.
- * The City benefits from learning about the experiences and technical expertise of others.

The Utility's role in developing regional, state, and federal policies and programs varies from influencing legislation, rules, and policy to sharing technical information and participating in joint studies. Through its involvement, the Utility seeks to achieve the City's environmental goals while keeping down costs to Utility rate payers and maintaining local control and flexibility.

The Utility seeks to influence legislation in a number of different ways. For example, the Utility lobbies the U.S. Congress through several channels such as through the American Public Works Association and the National Association of Flood and Stormwater Management Agencies (the Utility is a board member of the latter). The Utility provides support to the Association of Washington Cities (which analyzes and seeks to influence legislation), testifies at hearings, and serves on policy-development and technical advisory committees such as state wetland forums.

The Utility also participates in regional studies. For example, the Utility is cooperating with King County (and represents the interests of the Suburban Cities Association) on a regional surface water needs assessment, in which Seattle and Metro are also participating. This two-year study will help establish roles, responsibilities, and financing strategies for surface water management across the County over the long term.

Past Utility involvement has contributed to a number of specific benefits to the City and its rate payers including:

- * Reduced flood insurance rates in recognition of Bellevue's flood protection program;
- * Grant funding for a variety of projects;
- * The lessening of impractical requirements in the Clean Water Act and the Puget Sound Water Quality Management Plan;

GENERAL POLICIES

- * Useful research and training from the Washington Center for Urban Water Resources Management;
- * A share of the funds from the King County Conservation District assessment; and
- * Coordinated water quality protection efforts in watersheds subject to joint planning studies.

In summary, the Utility has a varied role in regional, state, and federal surface water issues in order to protect the City's interests. This policy recognizes the validity of that role.

FINANCIAL POLICIES

Policy #1 Fiscal Stewardship

POLICY:

The Utility's funds and resources shall be managed in a professional manner in accordance with applicable laws, standards, and City financial practices.

Discussion:

It is incumbent on the management of the Storm and Surface Water Utility to provide professional fiscal management of utility funds and resources. This requires thorough knowledge of and conformance with the City financial management processes and systems as well as applicable laws and standards. It also requires on-going monitoring of revenues and expenses in order to make decisions and report to City officials, as needed, regarding utility financial status.

Policy #2 Self-Sufficient Funding

POLICY:

The Utility shall remain a self-supporting enterprise fund.

Discussion:

Utility revenues primarily come from customer charges dependent on established rates. State law requires that utility funds be used only for utility purposes. The City's General Fund can legally contribute to utility operations, but historically has not done so. The City budgeting process includes a balanced and controlled annual utility budget. This requires careful preparation of expense and revenue projections that are reviewed by City management, the Environmental Services Commission, the general public and the City Council prior to approval of any rate increases.

Policy #3

Capital Investment Program - General Scope

POLICY:

The Capital Investment Program will provide funding for the following types of projects:

- 1) Projects needed to meet water quality policies;
- 2) Projects addressing flood control problems;
- 3) Projects needed for renewal/replacement or additions to current infrastructure and facilities; and
- 4) Projects necessary for resource protection/stewardship

Discussion:

Four basic types of projects will be considered for funding through the annual Capital Investment Program. Individual projects will be ranked according to the *Capital Project Identification and Prioritization* policy.

Policy #4

Capital Investment Program Levels

POLICY:

To the extent of available funding limitations, the annual Capital Investment Program (CIP) shall be sustained at a level necessary to meet water quality policies, implement cost effective flood control mitigation, maintain system integrity and provide required resource stewardship and protection.

Discussion:

All current capital improvements are funded by transfers of annual revenues from the operating budget and proceeds from State Public Works Trust Fund loans previously secured to construct designated facilities. To the extent that the annual level of capital spending can be managed by scheduling and scoping of projects, CIP contributions from the operating budget shall be maintained at a fairly uniform level, to avoid significant fluctuations in annual rate revenue requirements. To further this objective, flexibility needs to be maintained in the CIP fund to manage cash flow variations caused by the nature of the costs and timing of projects.

**Policy #5
Capital Investment Financing Strategy**

POLICY:

In the future, the Utility will strive to build its capital funding to a level that will support necessary capital improvements on a "pay-as-you-go basis".

Discussion:

In its early years, the Utility sold a series of revenue bonds to fund the substantial capital costs of building major new components of its public drainage system. Annual debt service payments for outstanding Trust Fund loans and these revenue bond issues currently consume a significant portion of annual Utility budget resources. To maintain Utility rates at acceptable levels, the need for additional revenue to expand the Capital Investment Program must be balanced against the level of these existing debt repayment obligations.

In the future, as these historical debts are retired, the Utility's goal will be to move toward a point where necessary capital expenditures can be funded on a pay-as-you-go basis. In the interim, based on current funding constraints, the Utility will use a combination of available resources, including the possibility of additional debt financing, to meet necessary CIP objectives.

**Policy #6
Cost Recovery**

POLICY:

The Utility shall establish fees and charges to recover all utility costs related to development.

Discussion:

In general, all utility costs related to development shall be recovered through fees and charges established under City Council authorization. Fees and charges under this policy will be periodically reviewed to ensure that targeted cost recovery objectives continue to be met. Basic categories of Utility fees aimed at development cost recovery include:

- 1) Direct costs and applicable overhead charged to developer extension projects to cover the lengthy but variable level of inspection and development review staff support typically required to implement these projects.

FINANCIAL POLICIES

- 2) General facilities charges collected from all newly developed properties to reimburse the Utility for historical costs that have been incurred by the general rate base to provide necessary facilities throughout the service area.
- 3) Rate surcharges and special general facilities/connection charges collected from properties in designated service areas where special-purpose facilities and/or extraordinary maintenance efforts are required due to prevailing drainage conditions.
- 4) Latecomer fees to be established in the future to allow recovery by developers/private parties for facilities constructed at their own expense and subsequently donated to the Utility for general operation. Properties subsequently connecting to those systems will pay a connection fee that will be forwarded to the developer under terms of the latecomer agreement. The Utility will collect and retain an overhead fee on this charge to pay for processing the agreements and payments.

Policy #7 Affordable Housing Consideration

POLICY:

The Utility shall base connection charges on the number of units allowed under the basic zoning. Only incremental cost increases, if applicable, will be charged to affordable housing units.

Discussion:

The City has adopted bonus density incentives for developers to build units specifically for affordable housing. Presently, these additional bonus units have no impact on Utility connection fees which are based on total property area, rather than the number of units to be constructed. However, if any change is made in the connection charge system in the future to incorporate dwelling units in the fee calculation, the Utility will not charge for additional density resulting from affordable housing credits, to sustain developer incentives for including these units in their projects.

**Policy #8
Rate Levels**

POLICY:

Rates shall be set at the lowest level necessary to cover Utility program expenses, meet debt coverage requirements and sustain a reserve balance consistent with these policies, on a long-term basis.

Discussion:

A variety of factors including rate stability, revenue stability and encouragement of practices consistent with Utility objectives, are considered in developing Storm & Surface Water Utility rates. As a general policy, rates are set as low as possible to accomplish the on-going operations, maintenance and repairs, replacements, capital improvements, debt payment obligations and general business of the Utility. The annual budget process provides opportunity to add to or cut current service levels. Since a balanced budget is required, rates must be set at a level sufficient to cover associated expenses once target program levels are established.

Utility rate levels may also be modified to alleviate financial impacts of anticipated future revenue/expense events and transition toward higher future rate requirements, instead of waiting until those events require an unacceptably large annual increase. Five-year forecasts of future revenue/expense needs are prepared annually to assist management in making necessary decisions regarding appropriate program levels and rate strategy on both a short-term and long-term basis.

**Policy #9
Rates - Debt Coverage Requirements**

POLICY:

Storm & Surface Water Utility rates shall be maintained at a level necessary to meet minimum mandated debt coverage levels, based on its independent financial status.

Discussion:

In setting its annual rates, the Utility will ensure that sufficient revenue will be generated to achieve a minimum 1.25 debt coverage level, based on its independent operations. Existing revenue bond covenants legally require the City's combined Waterworks Utility which includes the Water, Sewer and Storm & Surface Water Utilities, to demonstrate this minimum debt coverage ratio on a combined basis. In 1994, Council also adopted a policy

which mandates the three Utilities to maintain a target combined debt coverage level of 2.0 or above, to further protect the City's historically favorable Utility revenue bond ratings. Water and Sewer Utility resources are counted in the official coverage calculation but Storm & Surface Water is responsible for the major portion of current outstanding Utility debt, and also has the potential need to issue future debt to finance its capital program. Requiring Storm & Surface Water to separately maintain the minimum 1.25 legal debt coverage level will help ensure that necessary coverage requirements are met, and that customers of the other Utilities will not be unfairly burdened with the cost of meeting this obligation.

**Policy #10
Frequency of Rate Evaluation/Adjustments**

POLICY:

Storm & Surface Water rates shall be evaluated annually and adjusted as necessary to achieve Utility financial policy objectives.

Discussion:

Utility rates will be evaluated on an annual basis and adjusted as necessary to ensure that they are effectively managed to achieve current and future financial policy objectives. Annual rate review will include the preparation of 5-year forecasts of Utility revenues, expenditures and reserve balances, and analysis of the impact of various budgetary elements, i.e., CIP transfers, debt service costs, debt coverage levels, operating expenses and reserves, on both current and future rate requirements.

**Policy #11
Rate Equity**

POLICY:

Utility rates will allocate costs between different customer classes on an equitable basis.

Discussion:

As required under state law, Utility rates will provide equity in the rates charged to different customer classes. In general, rates by customer class are designed to reflect the contribution by a customer group to system-wide service demand, as determined by cost-of-service analysis. The RCW also authorizes utility rates to be designed to accomplish "any other matters which present a reasonable difference as a ground for distinction." Formal rate studies will be periodically conducted to assure ongoing rate equity between customer classes

FINANCIAL POLICIES

and guide any future rate modifications necessary to support changing Utility program or policy objectives.

When conditions in particular service areas require extraordinary operations or maintenance costs to be incurred, special surcharges may be adopted to recover those costs directly from properties contributing to the specific service demand, instead of assigning that cost burden to the general Utility rate base.

Policy #12 Rate Structure

POLICY:

The Utility rate structure will be based on a financial analysis considering cost-of-service and other policy objectives, and will provide adjustments for actions taken under approved City standards to reduce related service impacts.

Discussion:

In the existing Storm & Surface Water rate structure, customer classes are defined by categories of development intensity, i.e., *undeveloped*, *lightly developed*, *moderately developed*, *heavily developed* and *very heavily developed*. Based on theoretical run-off coefficients for each of these categories, higher rates are charged for increasing degrees of development to reflect higher run-off resulting from that development. Under this structure, billings for both residential and non-residential customers are determined by total property area and rates assigned to applicable categories of development intensity. Customers providing on-site detention to mitigate the quantity of run-off from their property receive a credit equal to a reduction of one rate level from their actual development intensity. Property classified as "wetlands" is exempt from Storm & Surface Water service charges.

Future design of a water quality rate component, presently in the planning phase, will also use cost-of-service principles to assign defined costs to customer classes, according to their proportionate contribution to Utility service demand. It is anticipated that these rate structure revisions will also provide financial incentives to customers taking approved actions to mitigate related water quality impacts.

**Policy #13
Rate Uniformity**

POLICY:

Rates shall be uniform for all utility customers of the same class throughout the service area.

Discussion:

Under RCW, Utilities are required to charge uniform rates to all customers in a given customer class, regardless of property location within the service area. The present Storm and Surface Water rates and rate structure comply with this requirement and will continue to do so in the future. Unlike other City Utilities which serve substantial areas outside the City, the Storm and Surface Water Utility currently only serves areas within City limits.

**Policy #14
Rate Assistance**

POLICY:

Rate assistance programs shall be provided for specific low income customers.

Discussion:

Continuing increases in all utility rates have had a significant impact on low income customers. The City has adopted a rate discount or rebate program for disabled customers, and senior citizens over 62 years old, with incomes below specified amounts, as defined in Ordinance No. 4458. The assistance program has two levels, one discounting utility rates by 40% and the other by 75%, based on the customer's income level. Customers that indirectly pay utility charges through their rent can obtain a rebate for the prior year's utility charges based on the same income criteria. The City also rebates 100 percent of the utility tax for these customers. The cost of this program is absorbed in the overall utility expenses and is recovered through the rate base.

The Utility's continuing goal will be to strive to maximize relief provided to low income customers within the bounds of current and future State law.

Policy #15
Reserve Level

POLICY:

The Storm and Surface Water Utility's annual budget and rate recommendations shall provide funding for the following reserve components:

- 1) A working capital component based on 45 days of the current year's budgeted operating and maintenance expenses. Under no circumstances shall a budget be submitted for a planned drop in reserves below this level.
- 2) A plant emergency/contingency component to cover excessive costs resulting from unexpected catastrophic events or system failures. Based on historical Utility experience, this amount will be set at \$500,000 which is the estimate of the net cost of emergency services to be paid from rate resources, excluding any potential reimbursements that may be received from FEMA grants, the City's General Liability Fund, or other external revenue sources.

Discussion:

Storm and Surface Water resources not spent for annual utility operations remain in the fund and are referred to as reserves. At the end of each year, these funds are carried forward to the next year's budget and become a potential revenue source for funding future programs and operations. Under the terms of this policy, the annual Utility budget is targeted to include a minimum balance of funds for the specific purposes outlined above. While included in the total operating budget, these reserves will only be available for use pursuant to these reserve policies and written authorization by the City Manager. Setting aside these annual budget resources in the reserve balance will help to ensure continued financial rate stability in future Utility operations and protect Utility customers from service disruptions that might otherwise result from unforeseen economic or emergency events.

The purpose of these reserve policies is to guide the City Manager and Utilities Department Director in managing the Utility's financial resources and operations. The Utility's annual operating and capital improvement budgets, rate structure and rate levels should all reflect the principles contained in these reserve policies.

**Policy 16
Replacement of Reserves**

POLICY:

If reserves are depleted below target levels, they shall be replaced as outlined below:

1. If the working capital component is depleted by any amount, immediate rate relief should be requested at a level sufficient to replenish the working capital component to recommended levels in no more than 2 years.
2. If actual monies to repair plant emergency damage exceed the balance provided in the related reserve component, additional funds should be obtained from short-term borrowing. In the following order, the borrowing should be from:
 - Other City Utility Funds
 - The City's General Fund or General Cumulative Reserve Fund
 - External Financial Institutions

All emergency loans for this purpose should be repaid over no more than a 3-year period.

3. If the plant emergency/contingency component is depleted in any amount, subsequent budgets and rates should be adjusted so that the target balance can be restored in no more than a 3-year period.

Discussion:

The Utility shall set annual budgets and rates to maintain a sufficient reserve balance, as defined by related reserve policy. Short-term borrowing may be needed to fund specific emergency expenses but generally should not be required for normal operating expenses. When borrowing is required due to emergency circumstances, necessary rate adjustments should be made to allow related debt to be repaid within time limits outlined in this policy.

Policy #17
Equipment Replacement Account Level

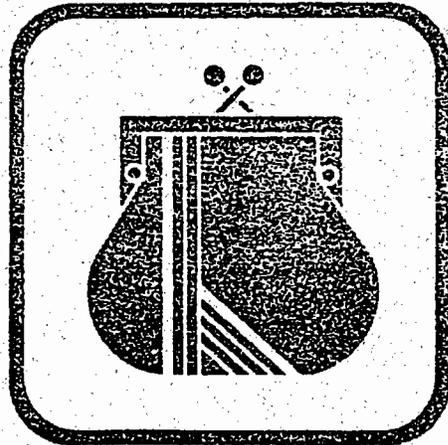
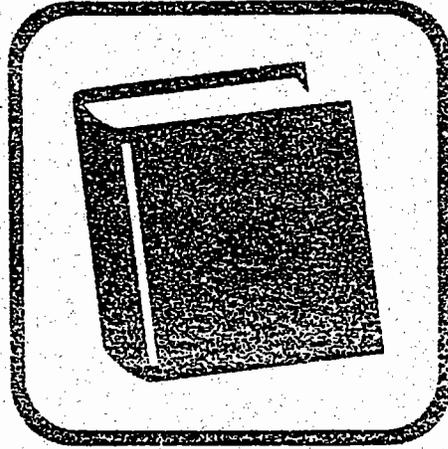
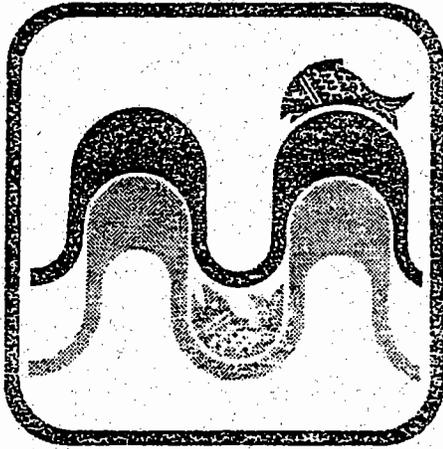
POLICY:

The annual Storm and Surface Water Utility operating budget will include a separate equipment replacement account to allow funds to be accumulated for future replacement of designated major equipment items.

Discussion:

Providing a separate equipment replacement account will allow monies to be set aside over the service life of major equipment items to pay for their eventual replacement and alleviate one-time rate impacts that these purchases might otherwise require. Items presently covered by this policy include the Utility's vacuum trucks, large equipment and telemetry systems computer. Other items with a substantial purchase cost may be added at a future date, as changing equipment needs require. For each item covered by this policy equal annual amounts will be added to the replacement costs over the expected life of the asset so that a balance equal to the estimated replacement cost will be available in the year the item is scheduled to be retired.

CHAPTER 4



CAPITAL PROGRAM

NEEDS ASSESSMENT

INTRODUCTION

Through a needs assessment, staff has identified approximately \$20 million (85 projects) in potential capital improvements to the surface water system. These system improvements are needed to meet the Utility responsibilities of drainage system maintenance, flood control, water quality assurance, and resource/habitat protection. A prioritized list of the twenty highest-ranked projects has been prepared. Project summaries which outline some background information as well as possible solutions were developed to identify the relative scope of capital funding needs for these priority projects.

NEEDS ASSESSMENT

Staff began the process of identifying potential projects by reviewing the 1976 Drainage Master Plan (DMP). The 1976 DMP highlighted approximately 230 capital projects in ten drainage basins to remedy flooding and erosion problems. Most of the identified projects have been constructed under the Utility Capital Investment Program (CIP), other city department capital programs (eg: Transportation improvements), or by private sector development. Approximately 35 projects remain to be implemented.

Staff also reviewed the 1988 Comprehensive Drainage Plan (CDP) for those projects which have not been selected for construction through the CIP (about 18 in all). To date, 32 projects from 1988 CDP have been completed (Exhibit C1), 9 projects have been deleted (Exhibit C2), and 4 projects are in progress (Exhibit C3). Remaining projects from both plans were placed on the list of potential capital projects.

The most significant source of potential projects was derived from reviewing Customer Action Requests (CARs) and from Maintenance Division's own knowledge and research of system problems and deficiencies. Large storm events have typically generated a large quantity of customer requests. These requests were reviewed to determine whether a capital improvement is needed to resolve the problem. In addition, potential projects are identified through coordination with other City departments when implementing their capital programs. The Transportation Department with its annual overlay program and relatively large CIP identifies potential opportunities where storm drainage deficiencies can be resolved at a reduced cost to the Utility and its ratepayers.

Since the 1988 CDP was developed, significant annexations have taken place, particularly in south Bellevue. These annexations include additional drainage facilities to operate and maintain. A pre-annexation assessment of the existing facilities helped to identify some

system deficiencies. Staff also reviewed King County files to uncover drainage complaints and system deficiencies in the newly annexed areas.

Together, this research identified over 85 capital projects. These projects were categorized into six groups: 1) Flood hazards; 2) Existing storm drainage system rehabilitation and repair; 3) non-point source pollution water quality problems; 4) sedimentation water quality problems; 5) resource management/habitat enhancement, and 6) miscellaneous projects.

While a sizable number of projects were identified, a potentially large number of projects have yet to be discovered. Bellevue's storm drainage infrastructure is beginning to show its age and for some of the older systems, repairs or replacement is coming due. This is particularly evident with many of the corrugated metal pipe (CMP) systems that were installed 25 to 30 years ago which are now reaching the end of their useful life. The Utility will undertake an infrastructure condition assessment to identify those pipelines which have the highest potential for failure (age, material, size, etc.), inspect these pipes, and prioritize the ones in the worst condition for replacement through the CIP. Currently, the Utility has programmed \$150,000 per year to address the infrastructure replacement opportunities generated by the Transportation Department's overlay and CIP programs. As the condition assessment proceeds, the amount currently allocated for infrastructure rehabilitation may not be sufficient to meet the need for the system repairs/replacement which could result in reprioritizing the current project list.

PROJECT LIST

Based on Policy #6, "Capital Project Identification and Prioritization," staff prepared a prioritization process to evaluate the various projects for their relative implementation order. The prioritization criteria places the greatest emphasis on resolving flood hazards which threaten public safety, infrastructure and private property. Water quality projects will never rate as high as a serious flood hazard; however, rating criteria point scores were adjusted so that serious water quality problems will rank higher than moderate flooding or drainage problems. This is in keeping with the change in regulatory attitudes which are giving water quality problems much more attention.

Projects identified through the needs assessment process were evaluated and ranked using the prioritization criteria. Staff from the Engineering, Maintenance, and Resource Management divisions participated in the process. Scores varied from a maximum of 190 to just 10 points out of a total of 190.

Projects that scored high (80 and greater) in the rating process typically involved a threat to public safety, potential damage to habitable dwellings and public facilities (roads, utilities, etc.), a legal obligation (eg. easement), or a substantial water quality problem.

NEEDS ASSESSMENT

Middle-ranking projects (50 to 79 points) typically involved erosion/sedimentation control projects, minor flooding problems, storm drain repairs/replacement, and regional detention facilities on the smaller stream systems where flooding has not been a serious problem.

Projects scoring less than 50 points typically included nuisance flooding (yards, landscaping, etc.), minor erosion problems, and storm drain facilities requiring frequent maintenance (root sawing).

FINANCIAL SUMMARY

Of the \$20 million in capital projects identified through the needs assessment, approximately \$8.9 million is for projects whose priority rating is considered to be high (greater than 80 points). The Utility will focus implementation efforts on these highest rated projects during the course of the current CIP (1994-1999). Given the current and foreseeable economic conditions, it is unlikely that the Utility could adequately fund middle or lower priority ranked projects. Deferring the middle ranked projects will expose the Utility to some economic and environmental risk. These projects and the lower ranked projects will be monitored. If their condition and their corresponding ranking change dramatically, then these projects may be implemented in place of other projects.

Exhibit C4 shows the estimated five year implementation schedule for the top twenty highest ranked capital projects which total \$8.9 million. The Utility has allocated \$1.25 million of future revenue for Neighborhood Enhancement, Infrastructure Rehabilitation, and Minor Capital programs over the next five year period. Since the sum of these costs exceed the revenues estimated in the current rate structure, significant funding above the current proposed level will most certainly require a rate increase.

Funding strategies will be examined during the rate study and budget processes. CIP project selection and implementation strategies will be evaluated when the CIP is updated.

CDP PROJECT NUMBERS

Each project was assigned a number for tracking purposes. Projects from the 1988 CDP have retained their same numbers (1 through 260). New projects which were included in the 1994 CDP begin with project number 300. These numbers are used to locate the projects on the location map. Since the numbering system has remained the same, it is possible to reference projects in the 1988 CDP where more detailed information such as predesign reports for some projects is available.

NEEDS ASSESSMENT**COMPLETED PROJECT LIST**

<u>CDP No.</u>	<u>Project Title</u>
1	Newport Shores Channel Berms
22	Apple Valley Pipeline, Phase 2
38	SE 6th Street Channel Improvements
121	Lower Kelsey Creek Wetland Purchase
122, 123	Kelsey Creek Channel Improvements
160	West Tributary Channel Improvements
171	130th Avenue N.E. Pipeline
216	Valley Creek Bypass
218	West Tributary/Bel-Red Road Drainage Improvements
219	Goff Creek Culvert Replacement
221	Springhills Pipeline
222, 223	Ashwood Storm Drain, Phases I & II
224	Woodridge/SE 20th Street Pipeline
225	Woodridge Division No. 1 to Richards Road Pipeline
226	Woodridge/Lake Hills Connector
227	Bel-Red Road Bank Stabilization
229	Lake Hills Greenbelt Dredging
230	Fox Chase Landscaping Improvements
231	134th Avenue NE Culvert Replacement
234	Weowna Beach Park Outfall Extension
237	Newport Hills Gully Erosion (1-4) (by King Co. SWM)
238	Newport Hill Gully Erosion (5-7)
240	Coal Creek Parkway Detention Pond (by King Co. SWM)
241	Upper Main Channel Stabilization
244	Sparks Pipeline
245	Wetland Acquisition Opportunity
246	Apple Valley Pipeline, Phase I
248	NE 4th Pipeline
249	Phantom Lake Restoration
250	Farmers Road Culvert

NEEDS ASSESSMENT

DELETED PROJECT LIST

<u>CDP No.</u>	<u>Project Title</u>	<u>Reason</u>
30	Upper Yarrow Detention Site	Outside City
48, 49	100th Avenue NE Pipeline	Not needed
60	Mraz Detention Site	Not needed
89, 94	Sturtevant Cr. Channel Impr.	Not needed
93	Lake Bellevue Detention Site	Not feasible
105	Sunset Ravine Detention Site	Unstable slopes
202	NE 40th Street Detention Site	Flood plain developed

NEEDS ASSESSMENT

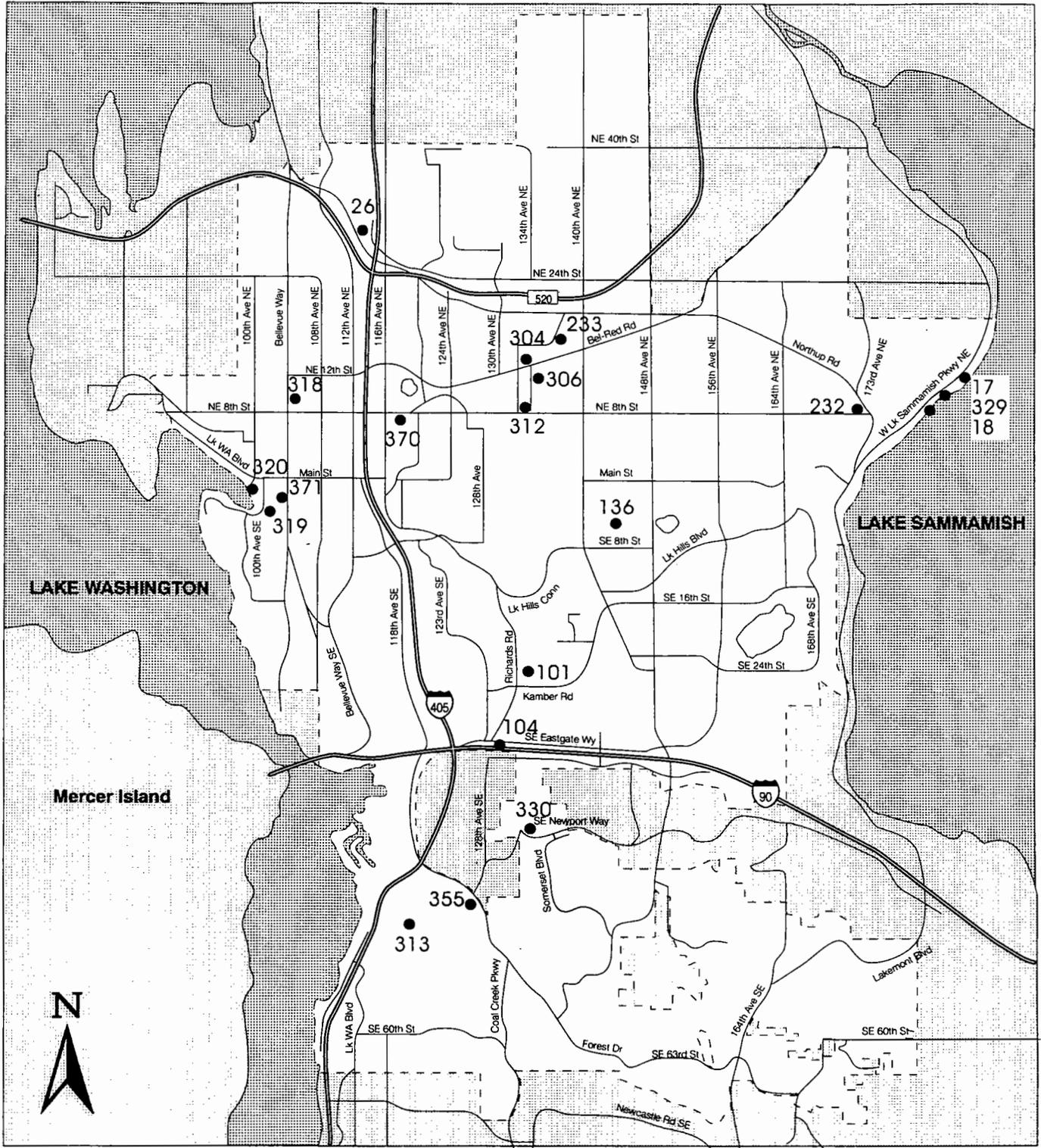
PROJECTS IN PROGRESS

<u>CDP No.</u>	<u>Project Title</u>
2	I-405 Detention Pond
236	Lower Newport Hills Channel
239	Coal Creek Parkway Sedimentation
260	Lake Heights Slope Stabilization

NEEDS ASSESSMENT

ESTIMATED PROJECT COSTS BY YEAR

Priority Score	Project Name/Description	1995	1996	1997	1998	1999	Total Project Cost
190	Meydenbauer Outfall	\$136,000	\$ 254,000				\$ 428,000
130	Northup Way Pipeline	10,000	110,000				148,000
125	Sunset Creek Flood Hazard	129,000	240,000				369,000
110	Bock Gabion Wall Repair	80,000					80,000
110	Sammamish Pipeline #1	16,000	49,000				65,000
105	136th Ave. NE Channel Improv.	149,000	199,000	\$ 299,000	\$ 348,000		995,000
105	Sammamish Pipeline #2	13,000	38,000				52,000
95	Coal Creek Parkway #2	7,000	23,000				30,000
90	Espana Pipeline Improvements		171,000	513,000	513,000	\$ 513,000	1,543,000
90	Bcl-Red Manhole Replacement		20,000				69,000
85	SE 32nd St. Detention Facility	95,000	190,000	671,000			958,000
85	Meydenbauer Basin NP Pollution		200,000	600,000	600,000	600,000	2,000,000
85	Meydenbauer Creek Erosion Control			37,000	113,000		136,000
80	Meydenbauer Creek Channel Improvements			80,000	240,000		320,000
80	Kamber Road Detention Facility			73,000	55,000	236,000	370,000
80	Rosemont Beach SD Improvements	49,000	92,000				141,000
80	Northup Detention Facility			149,000	111,000	483,000	750,000
80	Lk. Heights Catch Basin Replacement				22,000	80,000	102,000
80	NE 8th St. SD Improvements at Midlakes				34,000	101,000	185,000
80	Kelsey Creek Fishway Reconstruction				29,000	86,000	115,000
TOTAL PROJECT COSTS		\$684,000	\$1,586,000	\$2,422,000	\$2,065,000	\$2,099,000	\$8,856,000



CITY LIMITS - - - - -

- | | |
|-------------------------------|---|
| 17 - Sammamish Pipeline #2 | 312 - Kelsey Cr. Fishway Reconst. |
| 18 - Sammamish Pipeline #1 | 313 - Lk. Heights Catchbasin Repl. |
| 26 - Northrup Detention Fac. | 318 - Meydenbauer Basin Non-pt. Pollution |
| 101 - Kamber Rd. Detention | 319 - Meydenbauer Cr. Erosion Control |
| 104 - SE 32nd St. Detention | 320 - Meydenbauer Outfall Maintenance |
| 136 - Espana Pipeline Impr. | 329 - Rosemont Beach Storm Drain Impr. |
| 232 - Northrup Way Pipeline | 330 - Sunset Cr. Flood Hazard Reduction |
| 233 - 136th Ave. NE Channel | 355 - Coal Cr. Pkwy Outfall #2 |
| 304 - Bel-Red Rd. MH Repl. | 370 - NE 8th St. SD Impr. @ Midlakes |
| 306 - Bock Gabion Wall Repair | 371 - Meydenbauer Cr. Channel Impr. |

NEEDS ASSESSMENT

HIGH PRIORITY PROJECT RANKINGS

Score	Project Title	CDP No.	Problem	Basin	Est. Cost
190	Meydenbauer Outfall Maint.	320	3	MEY	\$ 428,000
130	Northup Way Pipeline	232	1	WIL	148,000
125	Sunset Cr. Flood Hazard Reduct.	330	1	SUN	369,000
110	Bock Gabion Wall Repair	306	2	KEL	80,000
110	Sammamish Pipeline #1	018	4	ROS	65,000
105	136th Ave. NE Channel Impr.	233	1	KEL	995,000
105	Sammamish Pipeline #2	017	4	ROS	52,000
95	Coal Creek Pkwy. Outfall #2	355	2	COA	30,000
90	Espana Pipeline Improvements	136	1	KEL	1,543,000
90	Bel-Red Rd. Manhole Repl.	304	2	WES	69,000
85	SE 32nd St. Detention Fac.	104	1	RIC	958,000
85	Meydenbauer Basin NP Pollution	318	3	MEY	2,000,000
85	Meydenbauer Cr. Erosion Control	319	4	MEY	136,000
80	Meydenbauer Cr. Channel Impr.	371	1	MEY	320,000
80	Kamber Rd. Detention Fac.	101	1	RIC	370,000
80	Rosemont Beach SD Improvement	329	1	ROS	141,000
80	Northup Detention Facility	026	1	YAR	750,000
80	Lake Heights Catchbasin Repl.	313		NEW	102,000
80	NE 8th St. SD Impr. at Midlakes	370	2	STU	185,000
80	Kelsey Cr. Fishway Reconstr.	312	5	KEL	115,000
HIGH PRIORITY PROJECT TOTALS			20 projects @		\$8,856,000

LEGEND

<u>No.</u>	<u>Category</u>
1	Flood Hazard
2	Drainage System Rehab/Repair
3	Non-point Source Pollution
4	Erosion/Sedimentation
5	Resource/Habitat Management

NEEDS ASSESSMENT**PROBLEM TYPES**

<u>Problem</u>	<u>Score</u>	<u>Project Title</u>	<u>CDP No.</u>	<u>Basin</u>	<u>Est. Cost</u>
1	80	Northup Detention Facility	026	YAR	\$ 750,000
1	85	SE 32nd St. Detention Fac.	104	RIC	958,000
1	90	Espana Pipeline Improvements	136	KEL	1,543,000
1	130	Northup Way Pipeline	232	WIL	148,000
1	105	136th Ave. NE Channel Impr.	233	KEL	995,000
1	80	Rosemont Beach SD Hazard Reduct.	239	RPS	141,000
1	125	Sunset Cr. Flood Hazard Reduct.	330	SUN	369,000
1	80	Meydenbauer Cr. Channel Impr.	371	MEY	320,000
SUBTOTAL PER PROBLEM TYPE			8 project(s) @ \$5,224,000		
2	80	Kamber Rd. Detention Fac.	101	RIC	\$ 370,000
2	90	Bel-Red Rd. Manhole Repl.	304	WES	69,000
2	110	Bock Gabion Wall Repair	306	KEL	79,000
2	80	Lake Heights Catchbasin Repl.	313	NEW	102,000
2	95	Coal Creek Pkwy Outfall #2	355	COA	30,000
2	80	NE 8th St. SD Impr. @ Midlakes	370	STU	185,000
SUBTOTAL PER PROBLEM TYPE			6 project(s) @ \$ 835,000		
3	85	Meydenbauer Basin NP Pollution	318	MEY	\$2,000,000
3	190	Meydenbauer Outfall Maint.	320	MEY	428,000
SUBTOTAL PER PROBLEM TYPE			2 project(s) @ \$2,428,000		
4	105	Sammamish Pipeline #2	017	ROS	\$ 52,000
4	110	Sammamish Pipeline #1	018	ROS	66,000
4	85	Meydenbauer Cr. Erosion Control	319	MEY	136,000
SUBTOTAL PER PROBLEM TYPE			3 project(s) @ \$ 254,000		
5	80	Kelsey Cr. Fishway Reconstr.	312	KEL	\$ 115,000
SUBTOTAL PER PROBLEM TYPE			1 project(s) @ \$ 115,000		
TOTALS			20 projects @ \$8,856,000		

LEGEND

<u>No.</u>	<u>Category</u>
1	Flood Hazard
2	Drainage System Rehab/Repair
3	Non-point Source Pollution
4	Erosion/Sedimentation
5	Resource/Habitat Management

PROJECT SUMMARIES

PROJECT SUMMARIES

A brief summary of each of the highest priority projects, those which scored 80 or more points are included in this section. The summaries are intended to provide general information on the type and scope of the project, a potential solution, and planning-level cost estimate. A more detailed, project-specific report will be prepared if warranted, when the project is scheduled for implementation. The planning-level cost estimates will change depending on the final scope of work and the alternative selected.

PROJECTS WITHOUT SUMMARIES

Only the twenty highest ranked projects (those with scores of 80 or more points) had summaries prepared for them. Given the current limited CIP funding levels, preparing summaries for all 85 identified projects was not warranted. A list of all identified projects included in the appendix.

PROJECT SUMMARIES

Reference Numbers: CDP 17; SSWDMP 17; DMP RM-4-123

Basin: Rosemont/Sammamish Slope

Date: May 1994

Project Title: Sammamish Project No. 2

Location: South of N.E. Rosemont Place between West Lake Sammamish Parkway N.E. and the Lake Sammamish shoreline

Description:

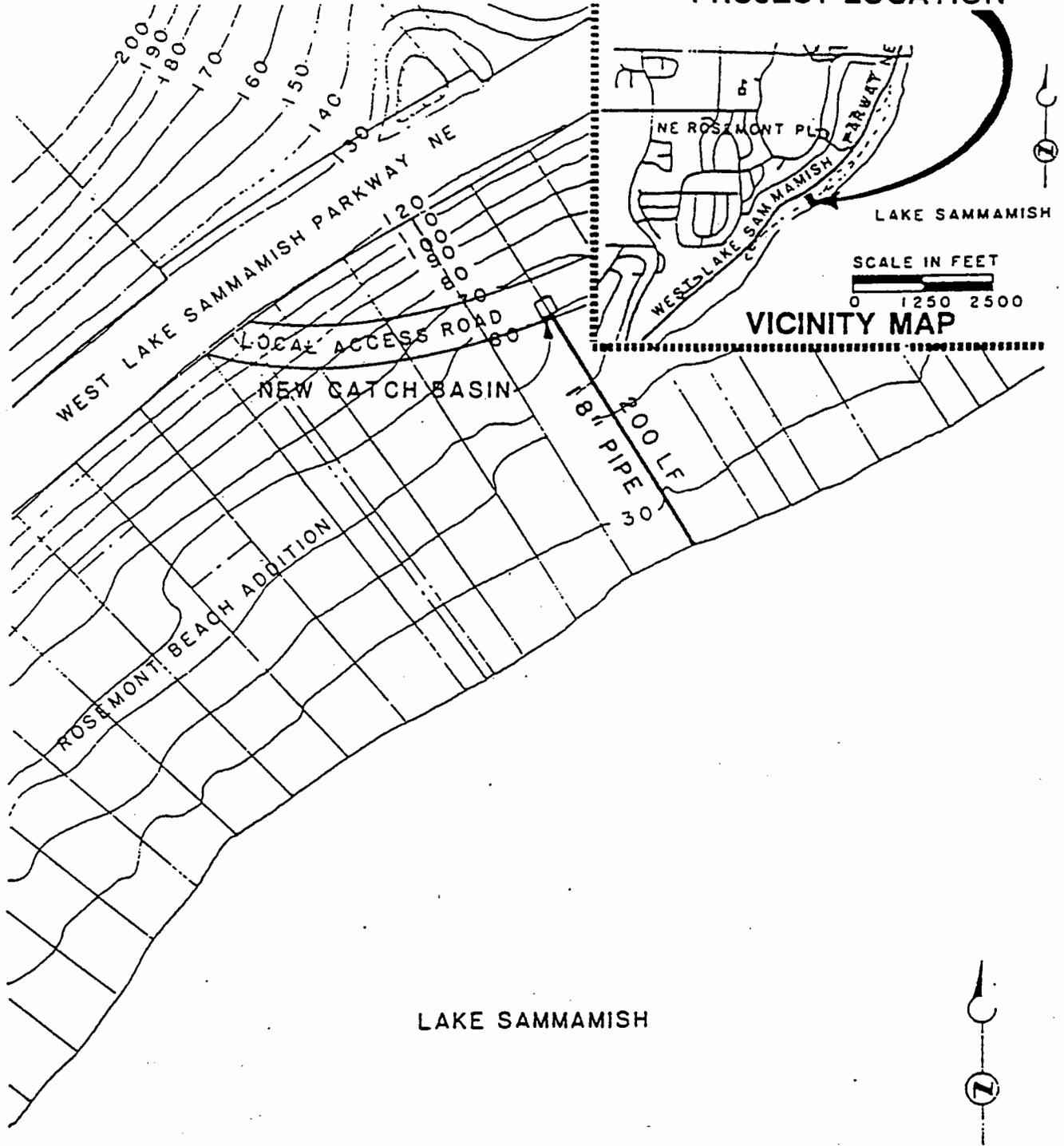
This work is required to complete the drainage network serving the Lake Sammamish shoreline and to eliminate potential flooding and erosion problems. Currently, runoff is collected in a culvert under West Lake Sammamish Parkway N.E. and drops steeply to Lake Sammamish through a recently installed corrugated metal pipe, which is located between houses and partially above ground.

The project involves installation of a new inlet and approximately 200 linear feet of 18-inch storm drain following the existing alignment from the Rosemont beach local access road to the outfall at the lake. The project also calls for the replacement of a storage shed and for landscaping along the storm drain. An easement for access and maintenance will be required. The project would prevent failure of the partially above-ground pipe, reducing flooding potential and liability for the City of Bellevue.

Estimated costs:

Total project costs are estimated to be \$52,000 in 1993 dollars (ENR-CCI: 5630). Annual operation and maintenance costs are estimated to be \$120.

PROJECT LOCATION



LAKE SAMMAMISH



SAMMAMISH PROJECT NO. 2

Project No. 17

PROJECT SUMMARIES

Reference Numbers: CDP 18; SSWDMP RM-18; DMP RM-4-125

Basin: Rosemont/Sammamish Slope

Date: May 1994

Project Title: Sammamish Project No. 1

Location: South of N.E. Rosemont Place between West Lake Sammamish Parkway N.E. and the Lake Sammamish shoreline, at 1020 West Lake Sammamish Parkway N.E.

Description:

This work is required to resolve problems of flooding and erosion. An existing storm drain conveys runoff from West Lake Sammamish Parkway to an open channel east of the Rosemont Beach Addition local access road, where the runoff ultimately discharges to Lake Sammamish. The existing storm drain is undersized and passes under the porch of the residence at 1020 West Lake Sammamish Parkway N.E., causing periodic flooding and limiting maintenance access.

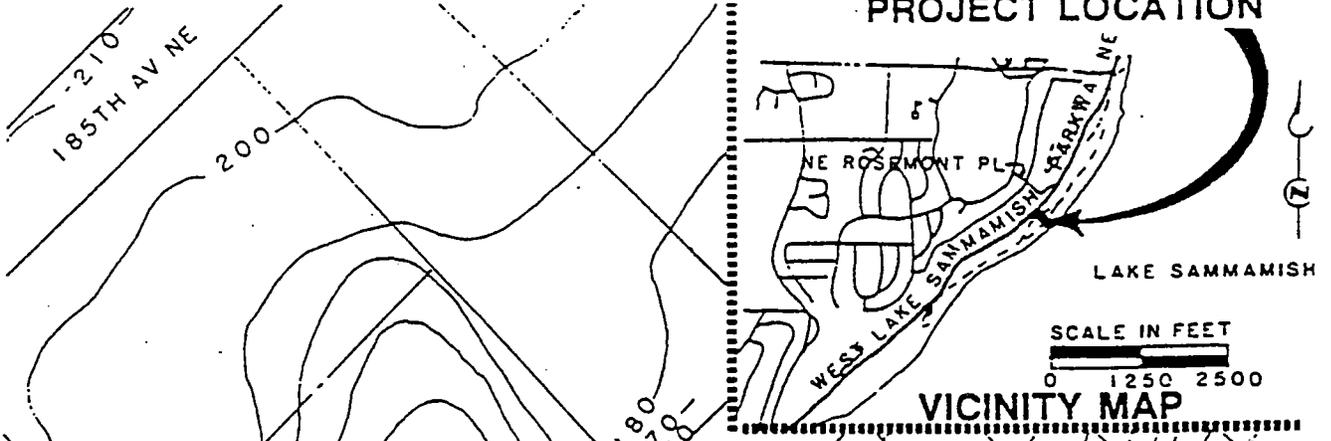
The proposed project would bypass the existing pipe system with 200 feet of new pipe, provide two additional catch basins, and improve the open channel to provide bank protection. A survey of the project site is required to verify ground surface elevations, locate utilities, and determine the project limits. The results of the survey should be used to prepare easement and access agreements and to assess which pipe materials will be appropriate given the topographic constraints of the site.

The project would affect local property owners in the form of easements. The benefits of the new conveyance system would be increased flow capacity, reduced flooding and liability for the City of Bellevue, improved maintenance access, and reduced channel erosion, which would prevent further deterioration of water quality.

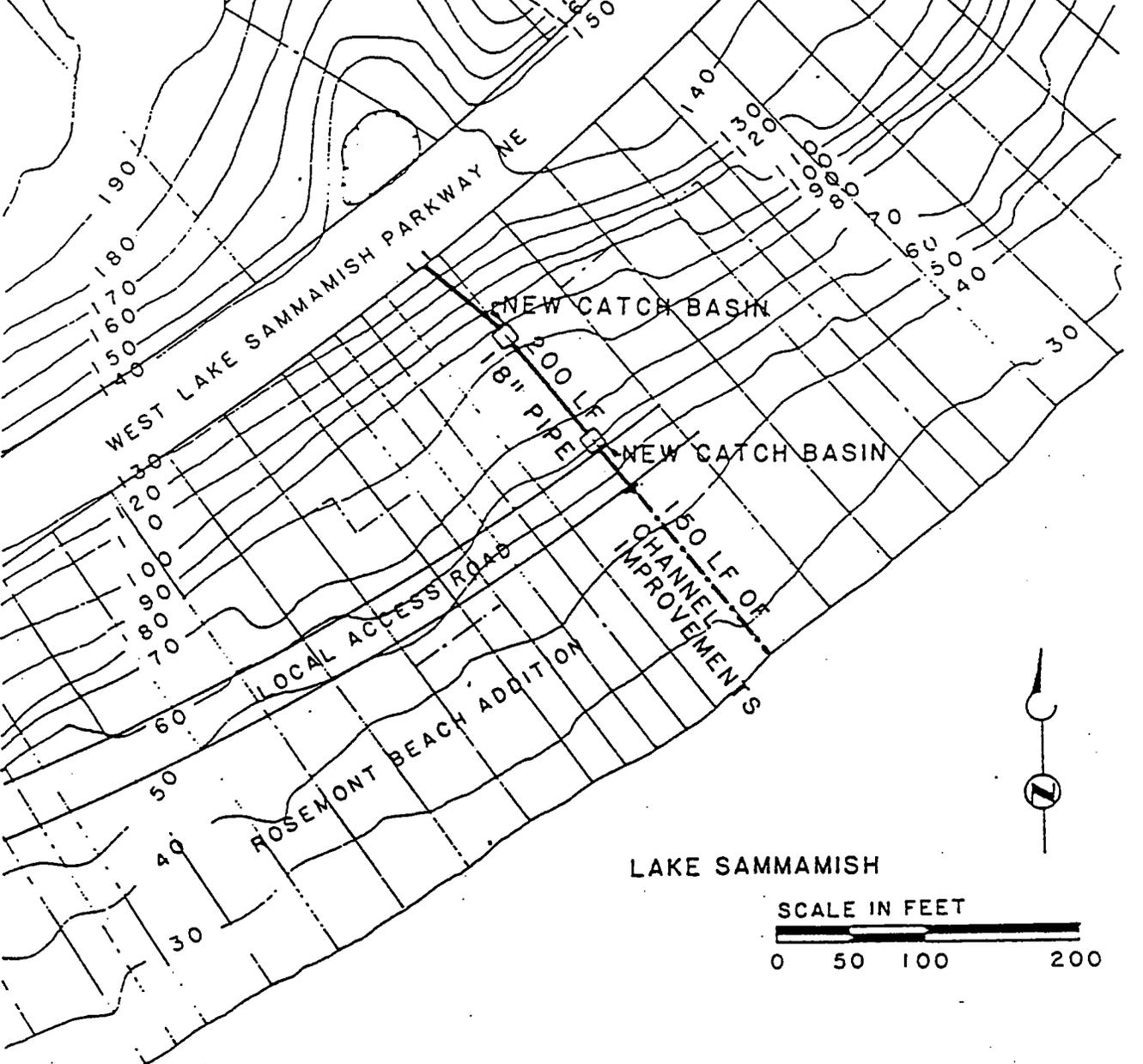
Estimated costs:

Total project costs are estimated to be \$66,000 in 1993 dollars (ENR-CCI: 5630). Annual operation and maintenance costs are estimated to be \$120.

PROJECT LOCATION



VICINITY MAP



SAMMAMISH PROJECT NO. 1

Project No. 18

PROJECT SUMMARIES

Reference Numbers: CDP 26; SSWDMP 26; DMP Y-4-2026

Basin: Yarrow Bay

Date: May 1994

Project Title: Northup Stormwater Detention Site

Location: North of Northup Way, west of I-405 and east of 108th Avenue N.E.

Description:

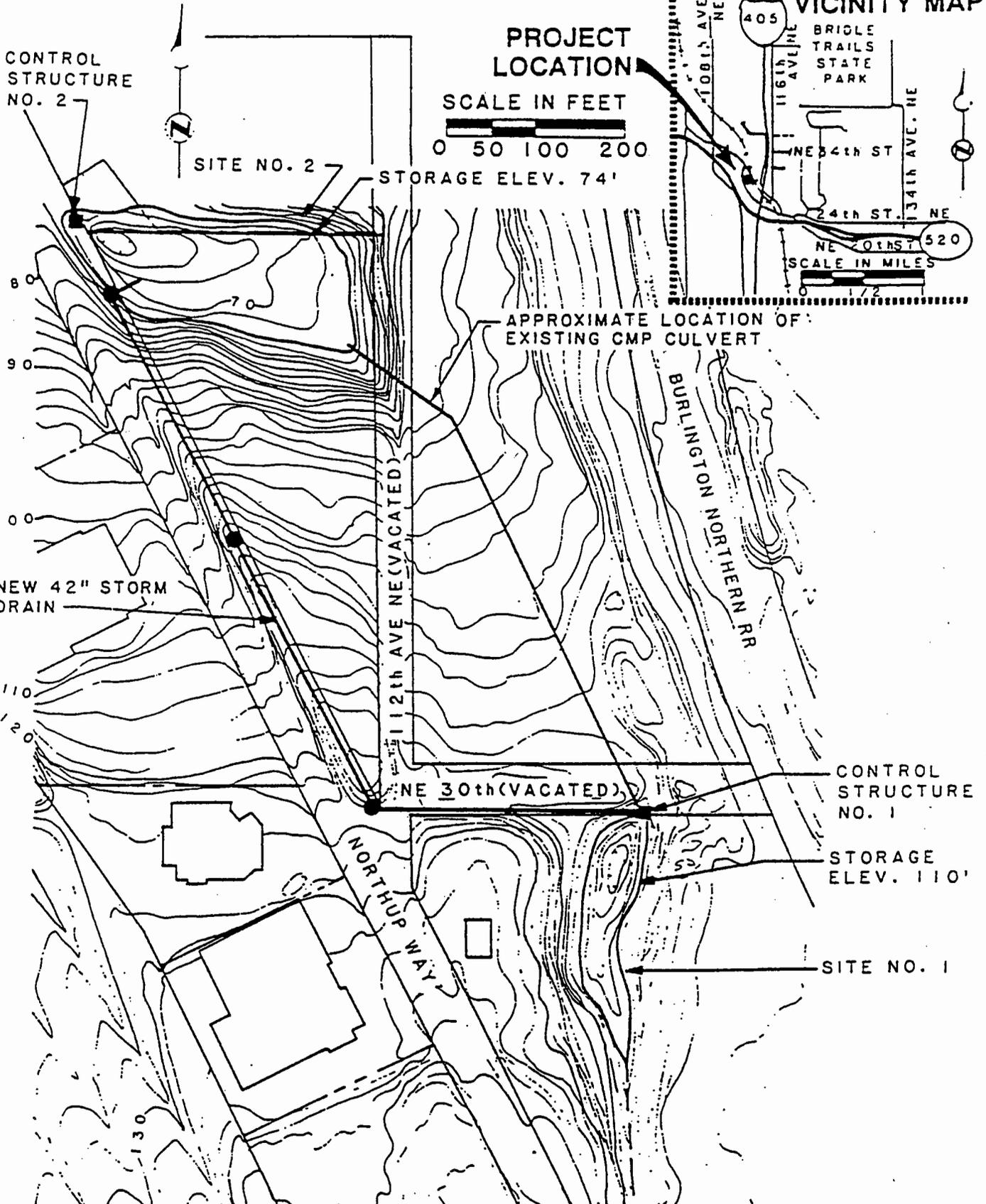
This project will create a regional stormwater detention site to partially mitigate the impacts of increased stormwater runoff caused by urbanization in the Yarrow Basin. The current drainage system has undersized components, which results in localized flooding, erosion, and sedimentation. The areas affected include SR 520 and the wetlands near the mouth of Yarrow Slough.

The proposed project will provide stormwater detention in two existing open basins located north of Northup Way and east of 108th Avenue N.E., in-stream on Yarrow Creek. Because of existing roadway embankments, no berm construction will be required. Orifice control structures will be built in each basin. The 36-inch storm drain pipe that now connects the basins will be replaced by approximately 1000 linear feet of 42-inch storm drain, which will be located within existing road rights-of-way. The conveyance capacity of the outfall culvert flowing from the lower basin will be increased by replacement with a 48-inch storm drain. The proposed facility will limit fish passage, although fish passage is currently obstructed by the control structure of the detention pond immediately upstream of the project site. The proposed pond will attenuate peak runoff rates and release stream flow at a reduced rate (the 100-year peak flow rate would be reduced from about 163 cubic feet per second [cfs] to 107 cfs), reducing downstream erosion and sedimentation. Sediments will accumulate in the basins during high flows.

Preliminary soils investigations reveal that soils in the uppermost basin may be unstable; a full geotechnical investigation is necessary to determine the extent of instability problems and the feasibility of mitigating them. Easements of property rights for portions of the project site have been obtained through donations. The hydrologic modeling on which the predesign is based should be verified prior to final design.

Estimated costs:

Total project costs are estimated to be \$750,000 in 1993 dollars (ENR-CCI: 5630). Annual operation and maintenance costs are estimated to be \$5,650.



NORTHUP STORMWATER DETENTION SITE
Project No. 26

PROJECT SUMMARIES

PROJECT SUMMARY

Reference Numbers: CDP 101; SSWDMP 101; DMP R-4-2031

Basin: Richards Creek

Date: May 1994

Project Title: Kamber Road Stormwater Detention Site

Location: North of S.E. 26th Street (Kamber Road) and east of Richards Road

Description:

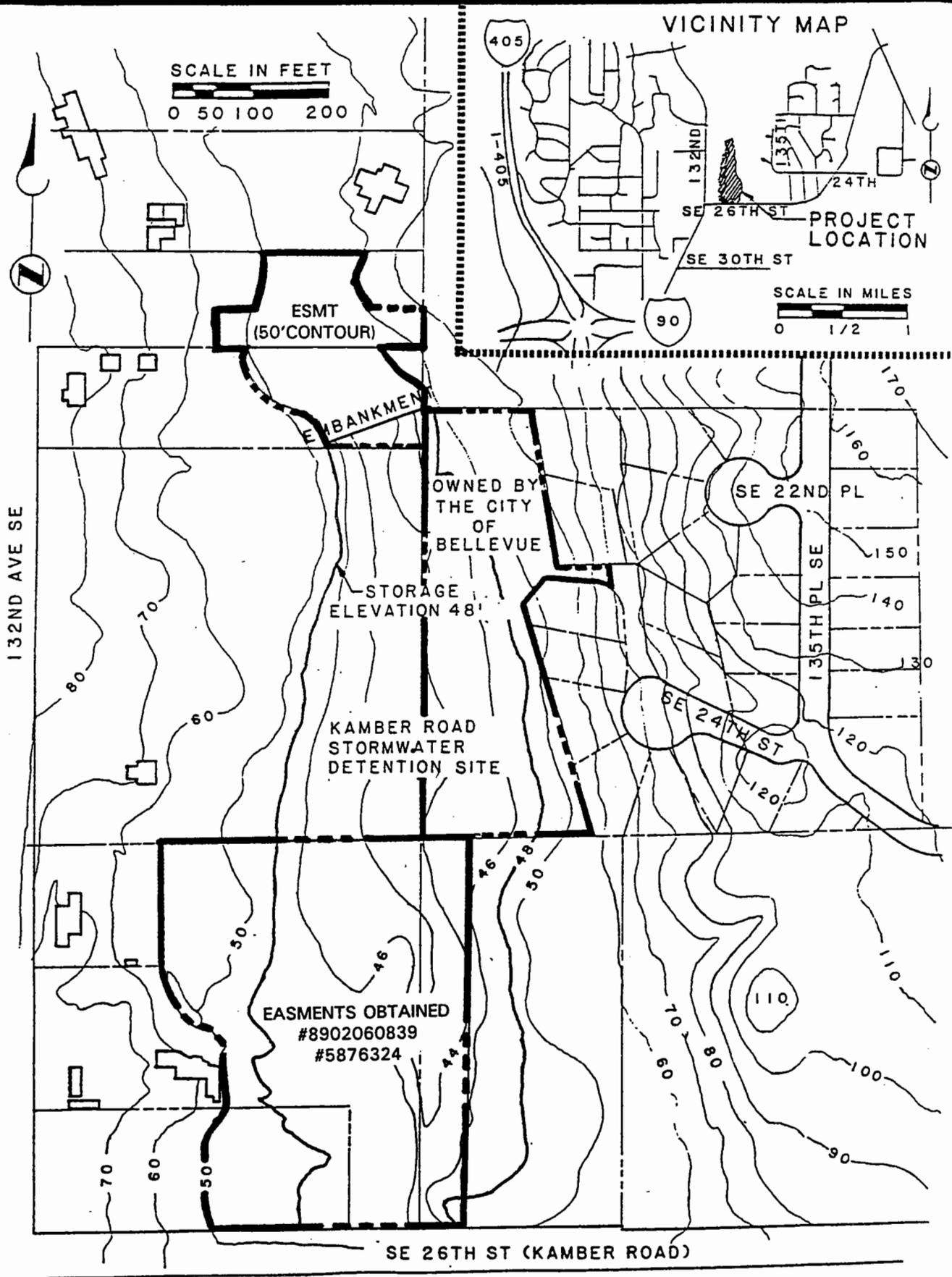
This project is intended to protect the water quality in Richards Creek, a salmonid-bearing stream in the southern portion of the Kelsey Creek drainage basin, by reducing downstream sedimentation and mitigating the impacts on water quality caused by basin urbanization. The project site is a natural wetland on Richards Creek located just north of S.E. 26th Street and east of Richards Road.

The privately owned wetlands for this stormwater treatment and detention project need to be acquired. The City of Bellevue currently owns about one-third of the land and has acquired storm drainage easements on another one-third through the development process. The undeveloped wetland storage is estimated at 28 acre-feet; this eventually could increase to 65 acre-feet through improvements, including the construction of a berm. The wetland currently provides some flow attenuation. Downstream flooding affects at least one downstream driveway crossing. Since the Sunset Creek regional detention was deleted due to poor soil conditions, peak flows will be higher than anticipated in the 1976 OMP.

Policies regarding the use of natural wetlands to treat stormwater have changed dramatically since this project was first proposed in the 1976 Drainage Master Plan and was later described in the 1988 CDP. The use of waters of the State and waters of the United States (which include wetlands) for the treatment or conveyance of wastewater (including storm runoff) is prohibited under law. A review of the policies and regulations applicable to this project is required prior to further action.

Estimated costs:

The estimated cost to acquire the wetland site is \$370,000 in 1993 dollars (ENR-CCI: 5630), pending negotiation with the owners or condemnation proceedings. An additional amount should be allowed for permitting.



KAMBER ROAD STORMWATER DETENTION SITE
PROJECT NO. 101

PROJECT SUMMARIES

Reference Numbers: CDP 104; SSWDMP 104; DMP R-4-2032

Basin: Richards Creek

Date: May 1994

Project Title: S.E. 32nd Street Stormwater Detention Site

Location: South of S.E. 32nd Street and east of Richards Road, on the west fork of Richards Creek.

Description:

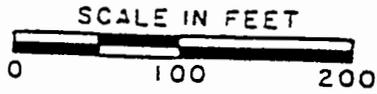
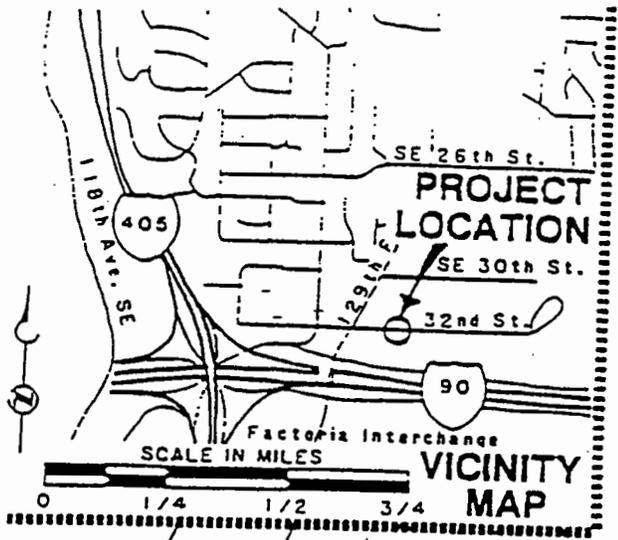
The lower portion of Richards Creek is experiencing siltation as a result of erosion in the steep upper reaches of the basin. Siltation has reduced channel capacity and degraded fish habitat in the creek (Richards Creek is one of the most active salmon spawning habitats in the city). Additionally, the existing site is partially inundated during peak rainfall events, because of the limited conveyance capacity of the existing culvert.

The proposed project will form a regional stormwater detention facility on the west fork of Richards Creek by constructing a flow control structure, installing two 42-inch diameter culverts, and raising the level of S.E. 32nd Street. The proposed detention facility will reduce downstream flooding, erosion, and sedimentation by providing a quiescent area for siltation. The project will improve water quality and fisheries habitat in Richards Creek.

Several permits will be required prior to construction. In-line detention facilities are discouraged by resource agencies; there probably will be significant discussion between these agencies and the Utility about how to address all of the agencies' needs. This permitting process could take up to two years. An easement must be obtained to inundate several small areas before proceeding with the project. Inundation rights will also have to be obtained from the Washington State Department of Transportation. Some additional liability may have to be assumed if the project is constructed because of the inundation of the freeway culvert.

Estimated Costs:

Total project costs are estimated to be \$958,000 in 1993 dollars (ENR-CCI: 5630). Although a set of plans has already been developed, full engineering costs are included in this estimate because of the additional work that will be required for a wider embankment and for hydrologic, hydraulic, and geotechnical analyses necessary to evaluate the impacts on the freeway culvert and fill. Annual operation and maintenance costs are estimated to be \$2,700.



2-42" DIA
 OUTLET
 CULVERTS

LIMITS OF CLEARING

NEW 12" DI
 WATER MAIN

SE 32nd St.

NEW
 STORM
 DRAIN

EXISTING
 SANITARY SEWER
 FLOW/CONTROL
 STRUCTURE

ABANDON EXISTING
 12" AC WATER MAIN

STORAGE
 ELEVATION: 76

RICHARDS
 CREEK

ADDITIONAL EASEMENT
 TO BE ACQUIRED

INTERSTATE 90

S.E. 32nd STREET STORMWATER DETENTION SITE

Project No. 104

PROJECT SUMMARIES

Reference Numbers: CDP 136; SSWDMP 136 and 141; DMP K-4-57, K-4-006, K-4-53, K-4-56, K-4-51, and K-1-58

Basin: Kelsey Creek

Date: May 1994

Project Title: Espana Pipeline and Channel Improvements

Location: Area bounded by Main Street on the north, 140th Avenue S.E. on the west, S.E. 8th Street to the south, and 148th Avenue S.E. on the east

Description:

This work is required to prevent flooding in at least 20 areas served by the current conveyance system upstream of the 148th Avenue S.E. crossing, extending as far south as S.E. 26th Street. The flooding is caused by inadequate channel sections and pipeline sizes.

The project consists of four main components. The first component is the installation of 1,100 feet of 42-inch storm drain pipe and appurtenant manholes, through the Espana, Aspenwood, and Port Apartment complexes, parallel to the existing pipe. The second component is the installation of 1,100 feet of 48-inch storm drain pipe and appurtenant manholes, through the Sammamish Senior High School athletic fields, parallel to the existing pipe but around the new baseball field. The third component is an increase in the conveyance through the wetland west of 148th Avenue S.E. (Wetland #2-A, Sensitive Areas Notebook). There are two alternatives for this third component. **Alternative 1** consists of dredging a channel 30 feet wide and 3 feet deep through the wetlands to Kelsey Creek. This would allow equilibration between wetlands west of 148th Avenue S.E. and the Larsen Lake/Kelsey Creek system and provide adequate conveyance for high-flow events. **Alternative 2** limits dredging to 400 linear feet downstream from Sammamish High School, and proposes the construction of a berm to protect flood-prone areas and increase flood storage in the wetlands. In **Alternative 2**, conveyance would be increased through Wetland #2-A by clearing logs and debris from the wetland drainage course. The fourth component of the project is the installation of a 100-foot-long concrete box culvert under the roadway and the dredging of a channel 30 feet wide and 3 feet deep from 148th Avenue S.E. to Kelsey Creek.

Topographic surveys, geotechnical analyses, and detailed drainage studies are required prior to final project design. Rights-of-way, storm drainage easements, and temporary construction easements also will be required.

This project will alleviate local flooding problems and reduce property damage throughout the drainage system of this Kelsey Creek tributary. Improving the connection between Wetland #2-A and Larsen Lake also should result in increased regional detention effectiveness at the Larsen Lake facility.

Estimated costs:

The estimated total project costs for Alternatives 1 and 2 are \$1,709,000 and \$1,543,000, respectively, in 1993 dollars (ENR-CCI: 5630). These costs include allowances for right-of-way acquisitions, permitting, and engineering design. Annual operation and maintenance costs for the new storm drain and channel are estimated to be approximately \$9,600.

PROJECT SUMMARIES

Reference Numbers: CDP 232; SSWDMP 232; DMP RM-4-3, 17, 18

Basin: Rosemont/Sammamish Slope

Date: May 1994

Project Title: Northup Way Pipeline

Location: Along Northup Way between 170th Avenue N.E. and N.E. 8th Street

Description:

This project is intended to improve the existing conveyance by increasing flow capacity, reducing maintenance, and eliminating a potential hazard to pedestrians and bicyclists. The location of the proposed project is between 170th Avenue N.E. and N.E. 8th Street, where the existing drainage system consists of half-round corrugated metal pipe ditch drainage. An area of the ditch has been removed and paved, portions of the ditch are corroding, and considerable maintenance problems associated with debris clogging exist, particularly around driveway crossings. Water seeps under the pipe, eroding and undermining the trench.

The project consists of replacing the half-round pipe with approximately 2,200 linear feet of 21-inch storm drain and appurtenant manholes, catch basins, and extruded curbing. Riprap will be placed around the outfall to dissipate energy, reducing potential erosion in a ravine that continues to Lake Sammamish. The project follows the alignment of the existing ditch, which is within public right-of-way. An easement will be required at the outfall in the ravine.

Estimated costs:

Total project costs are \$320,000 in 1993 dollars (ENR-CCI: 5630), including the cost of easement administration. A project by the Transportation Department to widen Northup Way to provide walkways and bike lanes will be responsible for a majority of the replacement cost. The Utility's share is estimated to be \$148,000. Annual operation and maintenance costs are estimated to be \$10,600.

PROJECT SUMMARIES

Reference Number: CDP 233; SSWDMP 233

Basin: Kelsey Creek

Date: May 1994

Project Title: 136th Place N.E. Storm Drain Improvements

Location: Between N.E. 20th Street and Kelsey Creek at 136th Place N.E.

Description:

Properties along 136th Place N.E. have experienced frequent flooding as a result of inadequate conveyance in the existing drainage system. It is likely that obstructions in the unmaintained channels further restrict the flow from the upper portion of the basin and cause high water levels upstream, even in the absence of storm events.

The project includes 1) upgrading the existing drainage system by replacing 13 pipes and regrading several reaches of the storm system and 2) improving 12 open channel reaches between Kelsey Creek and N.E. 20th Street along 136th Place N.E. There are two slightly different channel alignments, and the project may be constructed in three phases, proceeding from Kelsey Creek upstream. The three phases are: 1) upgrade the system from Kelsey Creek to N.E. 16th Street; 2) upgrade the system from N.E. 16th Street to 136th Place N.E.; and 3) upgrade the system throughout the remaining area. Phase 3 includes two alternatives: **Alternative 1** consists of upgrades along an existing channel alignment and **Alternative 2** would make the upgrades along an alternative alignment. A portion of the Phase 3 construction can be undertaken as part of the 136th Place N.E. roadway project. It may also be possible to establish a Local Improvement District to develop funding, especially for those portions of the project that occur on or significantly benefit private properties.

The project would increase conveyance in this drainage area and reduce local flooding and damage to adjacent properties. The proposed improvements would allow the system to convey flows up to the 100-year peak without flooding. Before the project is implemented, the following tasks will need to be completed: 1) obtain additional right-of-way and easements; 2) obtain the necessary permits; 3) prepare plans and specifications; and 4) conduct a survey to locate utilities and determine limits of the project.

Estimated Costs:

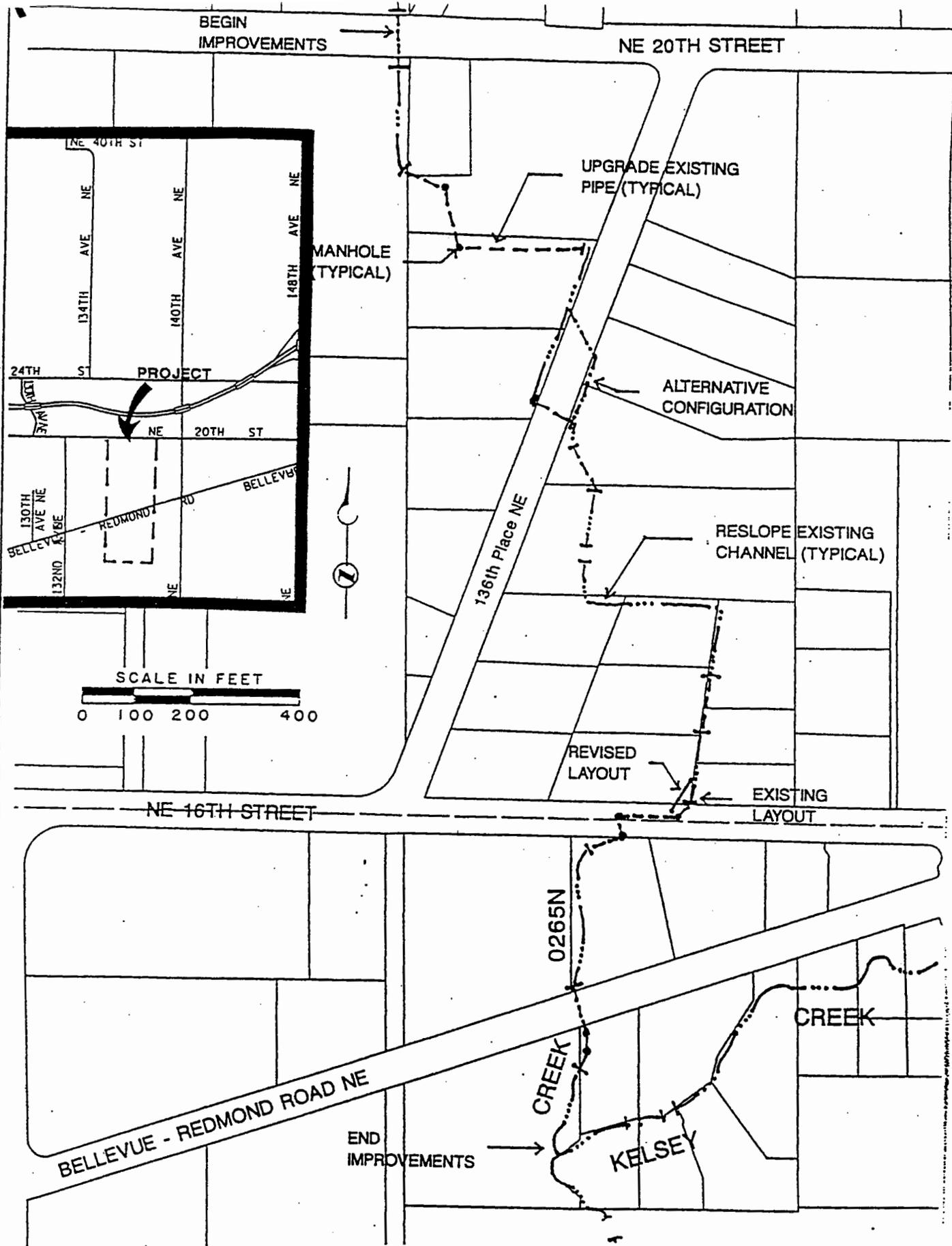
Alternative 1 is estimated to cost \$1,021,000 in 1993 dollars (ENR-CCI: 5630), and Alternative 2 is estimated to cost \$995,000. The costs of the phases are:

Phase 1: \$393,000

Phase 2: \$392,000

Phase 3: \$235,500 (Alternative 1) or \$210,200 (Alternative 2)

Operation and maintenance costs for the new conveyance system should not change from current costs.



136TH PLACE NE STORM DRAIN IMPROVEMENTS
 Project No. 233

PROJECT SUMMARIES

Reference Numbers: CDP 304

Basin: Goff Creek

Date: May 1994

Project Title: Bellevue-Redmond Road Manhole Replacement

Location: Immediately north of Bellevue-Redmond Road, 100 feet east of N.E. 132nd Street

Description:

A buried, previously unknown manhole was located when the overlying sidewalk failed due to subsidence. This subsidence was caused by flows in the manhole that, over time, eroded the manhole and some of the soil surrounding it. The sidewalk was rebuilt, and a rectangular catch basin cover was placed over the structure; however, the erosive conditions that caused the original failure have not yet been addressed.

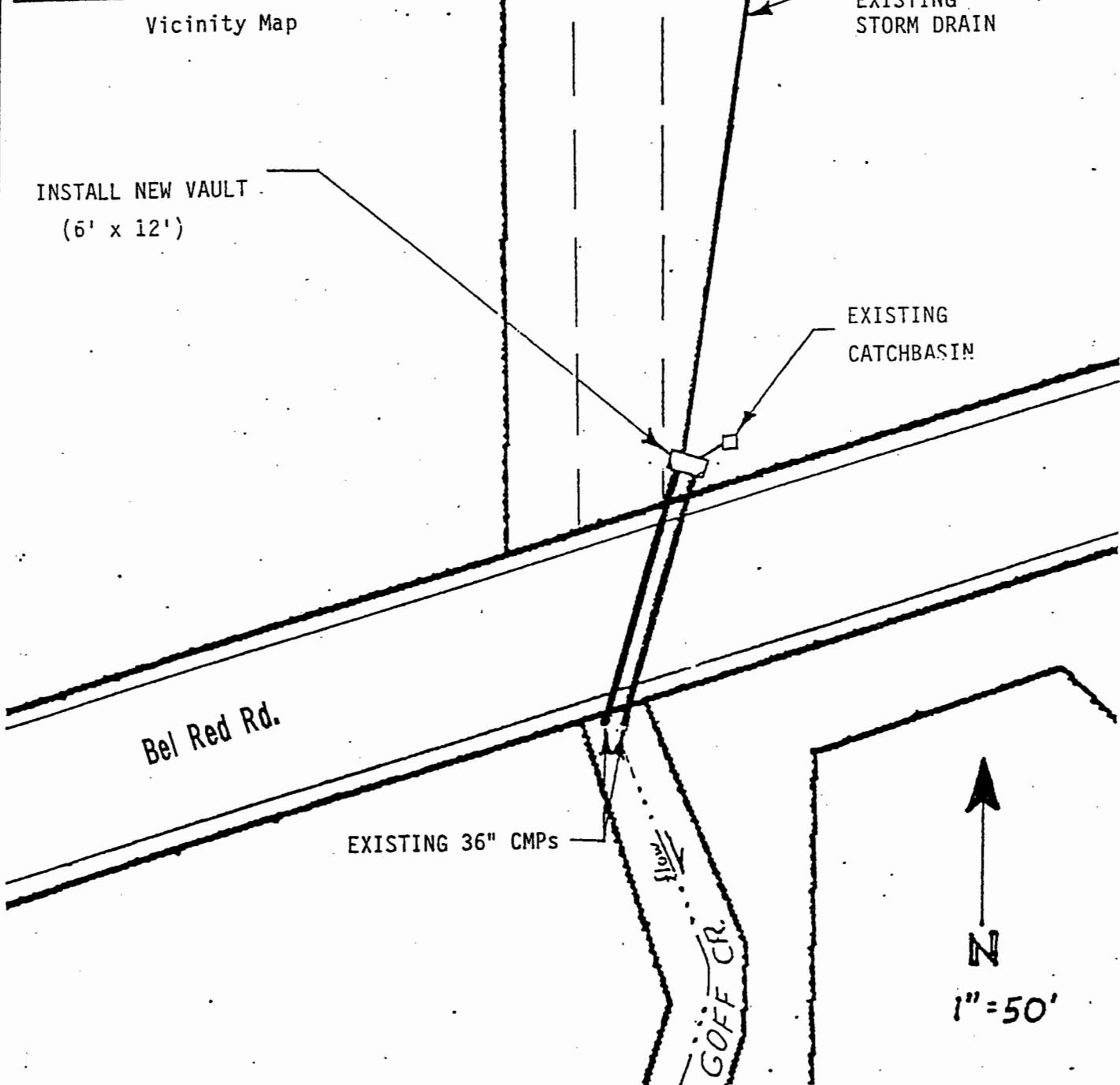
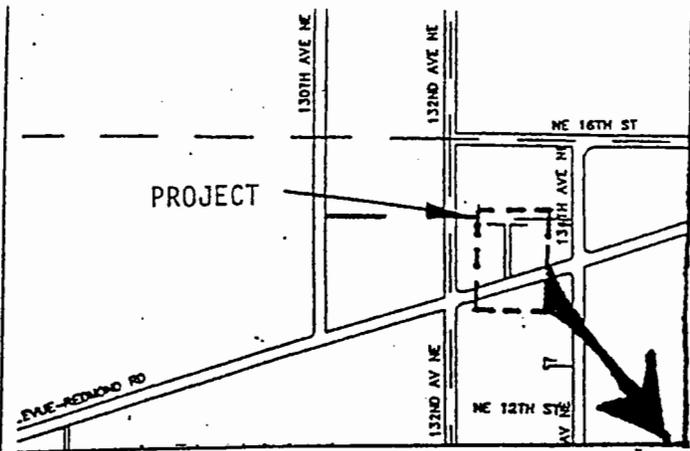
This manhole carries the flows of Goff Creek, which daylights into a channel on the south side of Bellevue-Redmond Road. Most of the Goff Creek basin is upstream of this point, so even in the absence of storm events a steady baseflow passes through the manhole. The creek does not flow straight through the manhole; it is apparently forced to turn into two 36-inch CMP outlet pipes. Several other pipes also tie into the manhole, some apparently at odd angles, and this further disrupts the flow. Much of the manhole structure, if it ever existed, has been washed away, and there is much exposed soil in the manhole. Because of the entrance conditions, the outlet pipes probably operate under entrance control, so it is likely that flows would rise during future storm events and continue to erode the materials of the manhole.

It appears that the manhole will have to be replaced with a more stable structure to prevent further erosion and degradation of the existing structure and to improve access for maintenance. A structural inspection and analysis will be required to determine the type of replacement structure. Given that the creek undergoes a turn at this point, and that there are several smaller pipes to tie into the structure at various locations, a small vault will probably be required, although a large manhole may be adequate. It does not appear that the situation can be remedied without installing a new structure.

The replacement project would also include measures to streamline the flows through the structure (such as inserting baffles or realigning pipes entering the structure), improve the entrance conditions for the two outlet pipes, and provide better access for maintenance.

Estimated costs:

The estimated project cost is \$69,000 in 1993 dollars (ENR-CCI: 5630). The cost assumes that a standard 6 x 12 foot vault will be installed, wingwalls will be added to the entrance of the outlet pipes, and that 200 feet of 18-inch pipe will be realigned. A predesign report has not been prepared for this project. Costs should be considered approximate.



BELLEVUE - REDMOND ROAD MANHOLE REPLACEMENT
Project No. 304

PROJECT SUMMARIES

Reference Number: CDP 306; SSWDMP 306
Basin: Kelsey Creek
Date: May 1994
Project Title: Bock Gabion Wall Repair
Location: At a bend in Kelsey Creek east of 1202-134th Avenue N.E.
(behind residence)

Description:

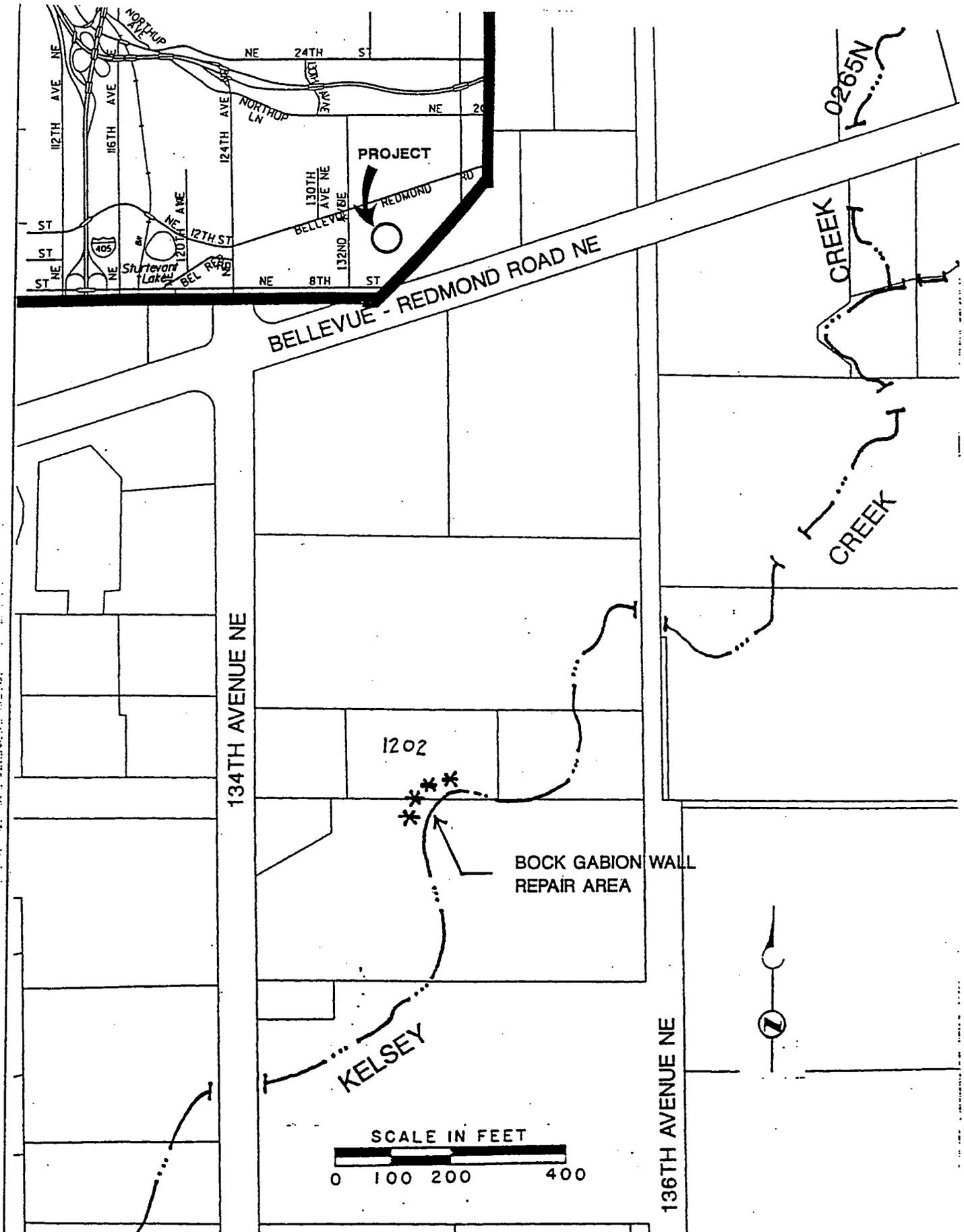
A gabion wall constructed along the outside of a sharp bend on Kelsey Creek is being undercut by the creek, and the scoured-out void is causing the wall to settle and rotate away from the adjacent slope. Soil pressure and erosion from the steep slope above the wall are causing the toe of the slope to follow the wall as it moves toward the stream. A single-family residence at the top of the slope is at serious risk from potential slope failure.

The project will repair and prevent stream erosion and undercutting at the base of the existing gabion wall and will eliminate risk of loss or damage to the residence at the top of the slope. Two alternative solutions are proposed to either stabilize (**Alternative 1**) or replace (**Alternative 2**) a section of the gabion retaining wall. In either case, the following improvements would be made: 1) armoring the channel at the base of the wall; 2) bioengineering and replanting the disturbed areas of the steep slope above the wall and stream bank; 3) constructing low-bank protection, such as toe logs and root wads; and 4) redirecting the existing roof drains from the house to a lower discharge point on the bank upstream of the wall.

A temporary construction easement will be required from the property owner at 1202-134th Avenue N.E. to allow access to the project site, and the necessary permits will have to be obtained before the project can begin. The construction of either alternative would require temporarily diverting the creek around the construction zone.

Estimated Costs:

The estimated project costs in 1993 dollars (ENR-CCI: 5630) are \$80,000 for Alternative 1 and \$150,000 for Alternative 2. Costs are based only on field estimates and preliminary layout and should be revised during preliminary and/or final design. Alternative 1 will require monitoring of the existing gabion wall after construction to detect any signs of movement or overturning. Both alternatives will require some maintenance for the first three years (approximately \$500 per year) to establish the bioengineering on the banks and remove unwanted plants.



BOCK GABION WALL REPAIR
 Project No. 306

PROJECT SUMMARIES

Reference Numbers: CDP 312; SSWDMP 312

Basin: Kelsey Creek

Date: May 1994

Project Title: Kelsey Creek Fishway Reconstruction

Location: Kelsey Creek at N.E. 8th Street, just east of 132nd Avenue
N.E.

Description:

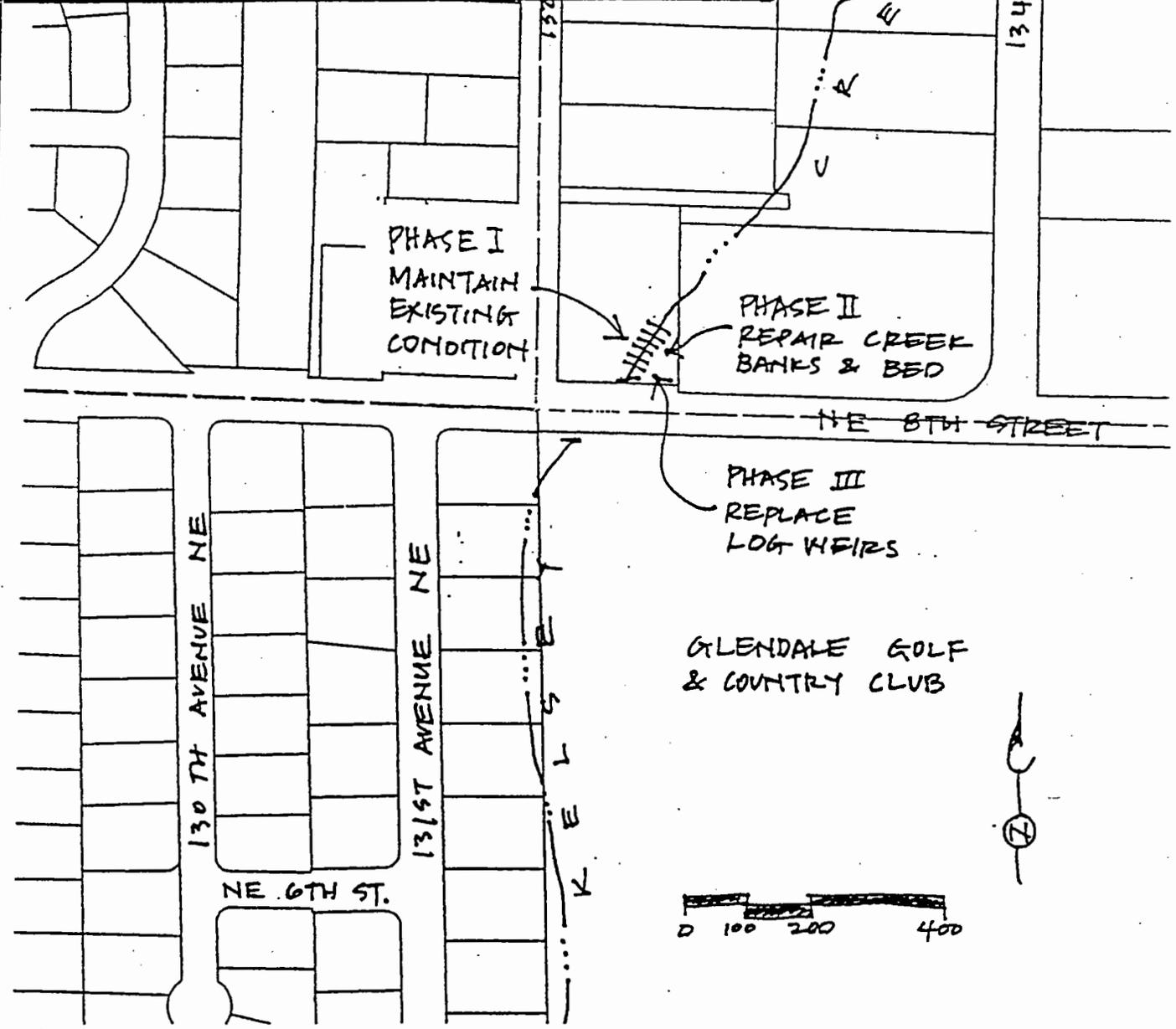
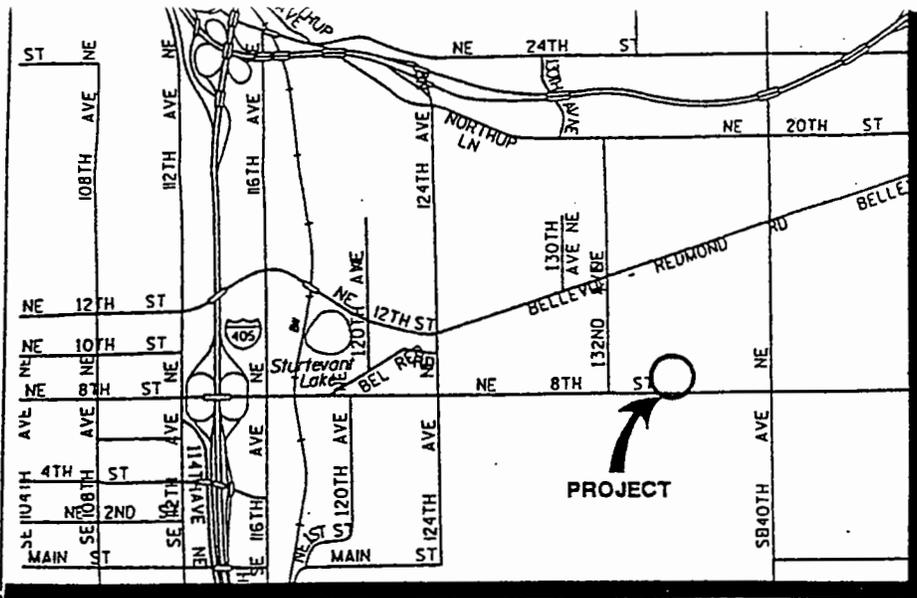
This project involves the restoration of a 70-foot-long fishway in Kelsey Creek that is exhibiting signs of imminent failure and requires repeated maintenance and repair. If the existing structure failed, adjacent properties could be significantly eroded, downstream spawning areas could be damaged, and the culvert at N.E. 8th Street could be obstructed, resulting in flooding and street closure. The fishway as constructed does not meet current design standards; the bank angle of the existing rockery is too steep, the toe of the slope is inadequately protected against scour, and the rocks are undersized to resist the high flows typical within the channel. The channel is also undersized.

The project consists of three phases intended to 1) temporarily armor the existing rockeries and redirect flows contributing to the rockery erosion; 2) replace the existing rockeries with new bank protection, which would include biostabilization; and 3) replace log weirs near the end of their design life with concrete logs. The proposed project will repair a failing system that has the potential to cause significant property and water quality damage, and will provide a benefit to the fisheries by introducing trees to shade an exposed stream reach.

The site will be surveyed prior to final design to verify channel size and capacity. Hydrologic and hydraulic modeling, geotechnical evaluation of soil stability, and an analysis of the fishway alternatives are necessary to determine the most appropriate design. Construction easements, and possibly drainage easements, will be required from adjacent property owners.

Estimated costs:

The estimated project costs are \$115,000 in 1993 dollars (ENR-CCI: 5630) if all three phases are constructed simultaneously, or \$149,000 if the project is constructed in phases. Annual maintenance costs to establish the vegetation are estimated to be about \$500 for each of the first three years.



KELSEY CREEK FISHWAY RECONSTRUCTION
 Project No. 312

PROJECT SUMMARIES

Project Number: CDP 313
Basin: Newport
Project Title: Lake Heights Catchbasin Replacement
Location: 116th Ave. SE - SE 45th to SE 48th Sts.
119th Ave. SE - SE 45th to SE 48th Sts.

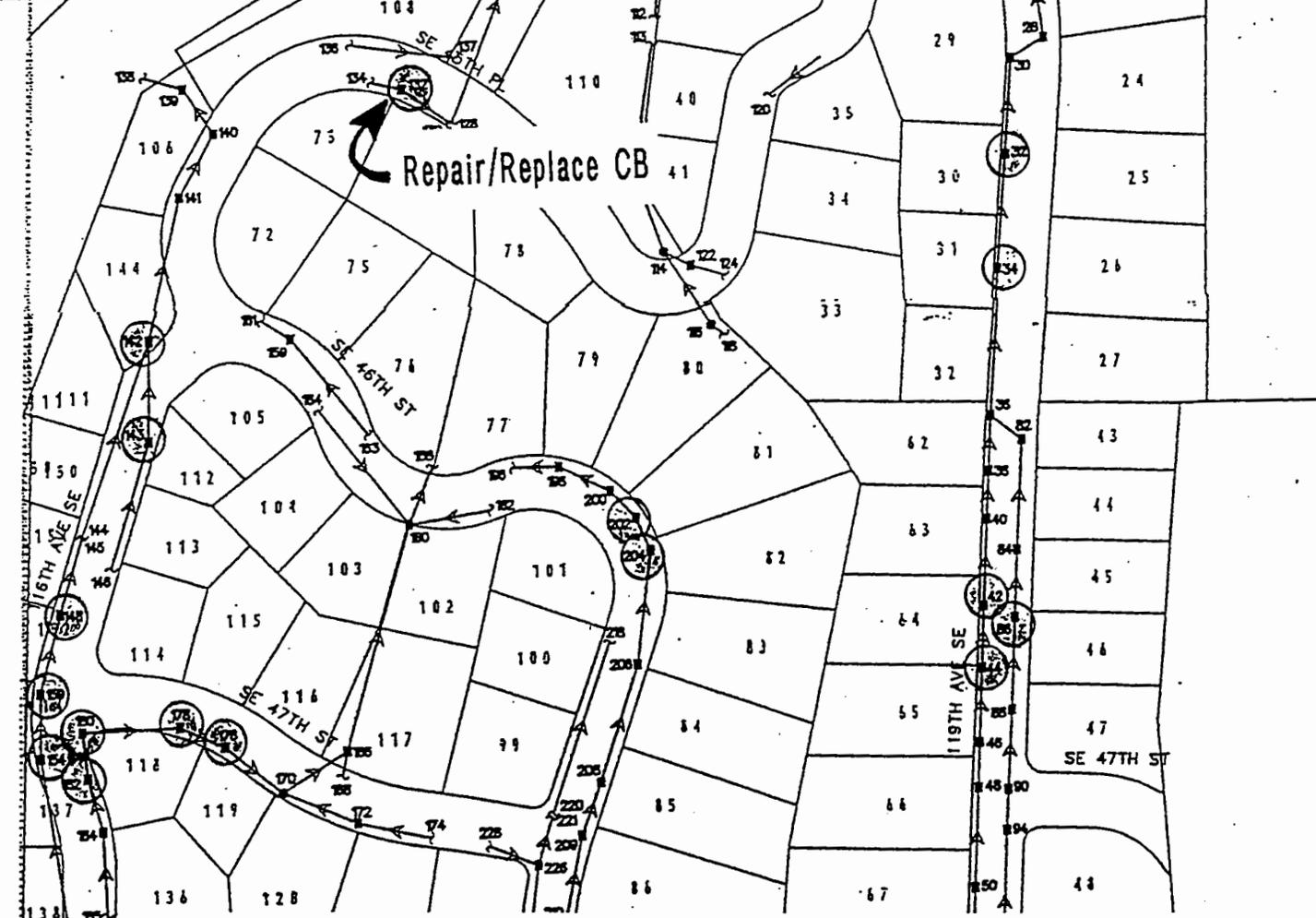
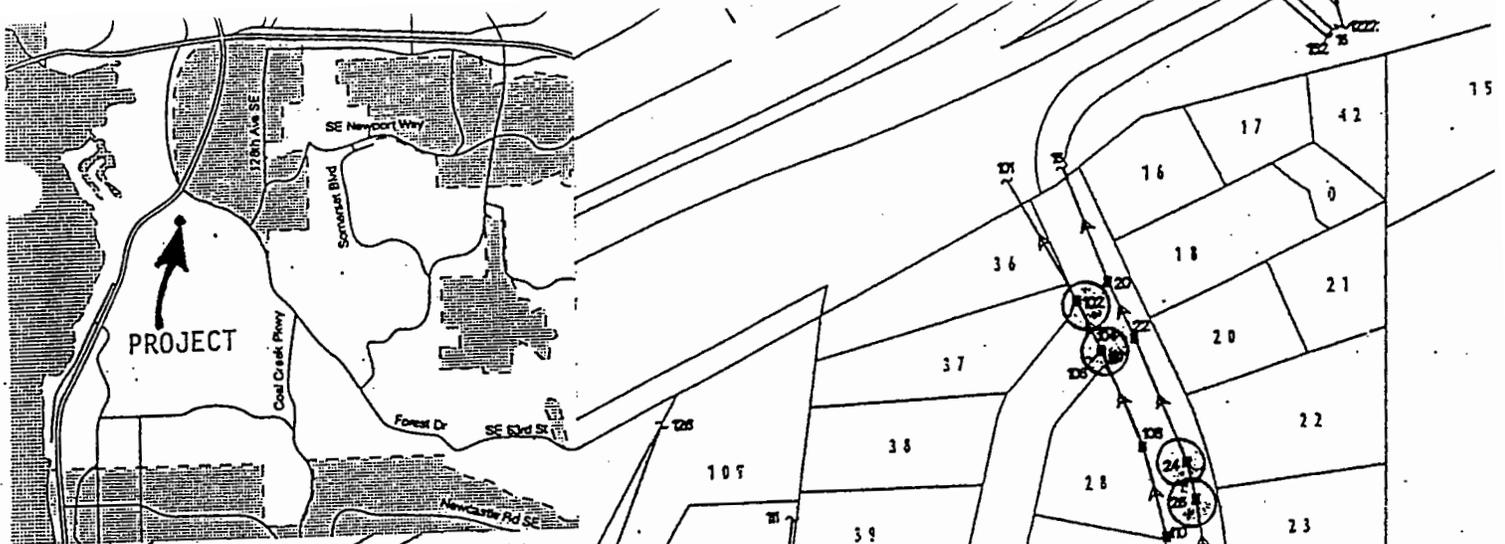
Description:

The area known as Lake Heights was annexed to the City of Bellevue in 1993. During the preliminary annexation investigation of the storm drainage system, it was noted that many of the catchbasins are constructed of brick and mortar with gravel bottoms. These hand-built catchbasins are in need of repair or replacement. Should a basin collapse, there is a possibility of plugging the storm drain pipe resulting in flooding, erosion, and property damage. Since many of these basins are in or directly adjacent to the roadway, safety is also a concern. The preliminary investigation also noted that portions of the existing storm drainage conveyance system may also be in need of repair or replacement, given its age (about 30 years old).

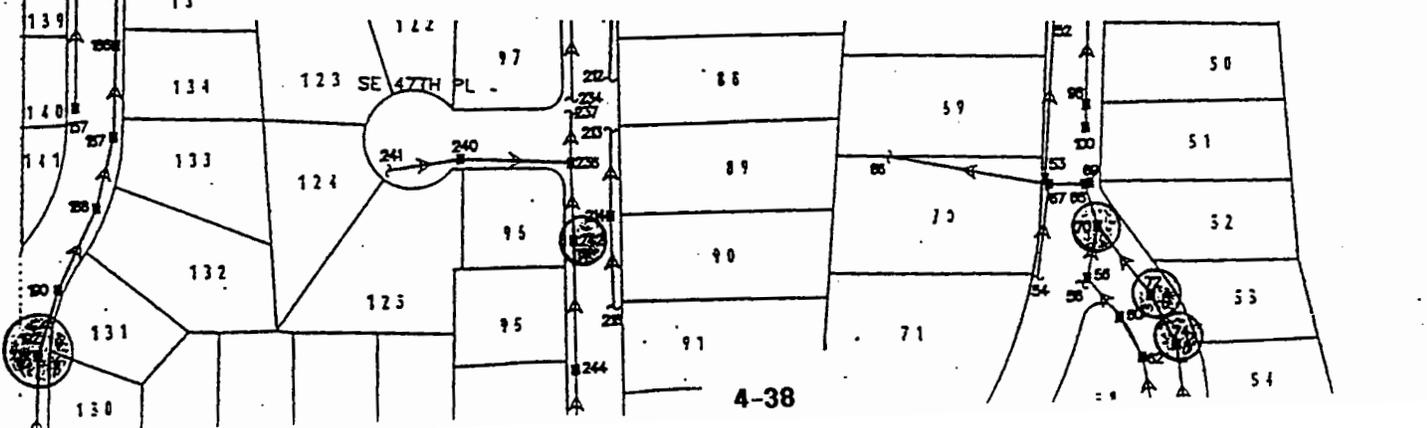
A more in-depth infrastructure needs assessment is required to identify the full scope of drainage system improvements which are needed. At this point, approximately 31 hand-built Type 1 catchbasins should be repaired or replaced. Replacement would be with precast concrete Type 1 catchbasins. The opportunity of retrofitting some of the new catchbasins with water quality BMPs should be investigated.

Estimated Cost:

The estimated cost of this project is \$102,000 (ENR-CCI: 5630) assuming that all catchbasins are replaced. Project costs can be reduced if some catchbasins can be repaired. This cost does not include any storm drain pipe replacement, additional system investigation or inspection, or water quality BMPs. A design report was not prepared for this project and costs should be considered approximate.



LAKE HEIGHTS CATCHBASIN REPLACEMENT



PROJECT SUMMARIES

Reference Numbers: CDP 318
Basin: Meydenbauer
Date: May 1994
Project Title: Meydenbauer Basin Nonpoint Plan
Location: Various throughout Central Business District

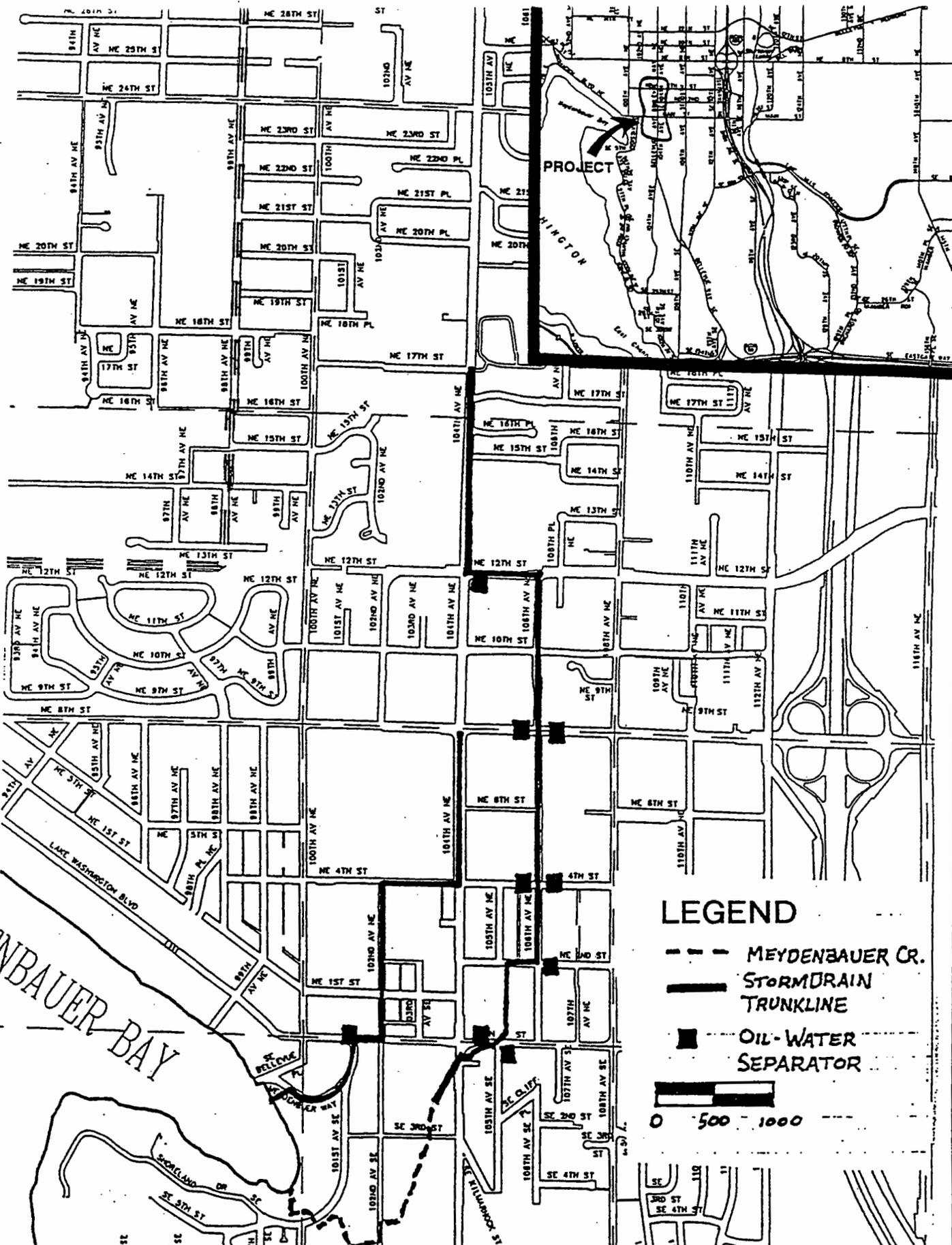
Description:

This work is required to reduce stormwater pollutant loads and sedimentation in Meydenbauer Bay. It is assumed that suspended solids and hydrocarbons are the main pollutants of concern. The project focuses on two pipe systems carrying stormwater through the Central Business District (CBD), providing drainage for an area of about 820 acres. The first phase of the project is to conduct a synoptic survey. This survey would include 1) verification of drainage maps; 2) identification of major contributors to pollutant loadings ("hot spots"); and 3) assessment of the on-site stormwater management practices used within the CBD, including current levels of runoff treatment, and identification of tie-ins to the storm drain system. The results of this survey are vital to determining the most cost-effective design alternatives. The second phase of the project consists of installing water quality treatment facilities. The selection of the treatment methods will depend on the survey results and applicable regulatory requirements.

To estimate the costs of the second phase, it is assumed that parallel-plate separators (PPS) will be installed at seven locations where lateral drainage lines join the trunkline in the CBD, with an additional unit for the drain line serving the western part of the CBD and one unit for the residential area north of the CBD. The nine units would be sized to treat the 6-month, 24-hour storm event, with high-flow diversions to prevent sediment from being flushed downstream. Areas identified by the survey as "hot spots" may require additional treatment. Diffuse sources that are not served by one of the PPS units (such as streets in the CBD that drain directly to the trunk line) would be treated separately, possibly by water quality inlets on existing catch basins (estimated at 200 units). The proposed treatment facilities are expected to remove between 80 and 90 percent of the annual sediment and hydrocarbon loads.

Estimated Costs:

The estimated cost for this project, including the synoptic survey and design costs, is \$3,260,000 in 1993 dollars (ENR-CCI: 5630). Phase 1 (\$2,000,000) includes synoptic study and construction of one-half of the pollution control facilities. Annual operation and maintenance costs are estimated to be \$130,000. A predesign report has not been completed for this project. Costs should be considered approximate.



MEYDENBAUER BASIN NONPOINT PLAN
Project No. 318

PROJECT SUMMARIES

Reference Numbers: CDP 319; SSWDMP 319

Basin: Meydenbauer Creek

Date: May 1994

Project Title: Meydenbauer Creek Erosion Control

Location: Upstream reach of Meydenbauer Creek along the east side of 101st Avenue S.E. before the creek enters two 60-inch culverts under 101st Avenue S.E.

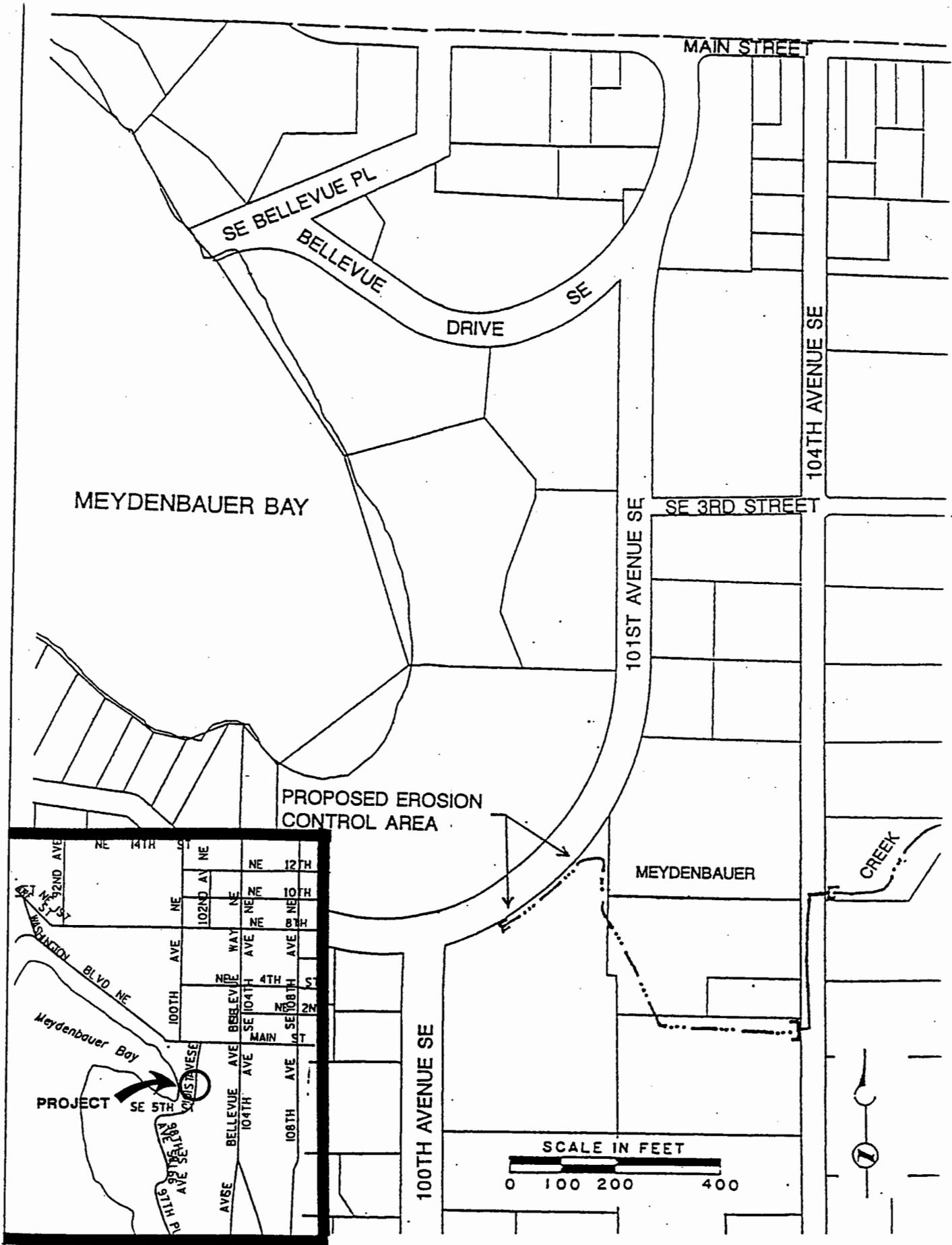
Description:

This work is required to prevent erosion and sedimentation in Meydenbauer Creek and to protect the road and utilities located alongside the stream. The project site is the west bank of the stream reach beginning where the creek enters two 60-inch culverts under 101st Avenue S.E. and extending about 120 feet upstream. Currently, high flows are contributing to erosion of the streambank, which results in downstream sedimentation and encroachment of the stream to within 3 feet of the sidewalk, which in turn threatens the stability of the road and utilities along the stream.

There are two project alternatives. **Alternative 1** is the installation of a mortarless, pin-jointed retaining wall system along the eroding bank. Riparian vegetation would be re-established along the base of the wall. The sidewalk would be replaced, and a pedestrian guardrail would be installed as a safety measure. **Alternative 2** consists of expanding the creek corridor by cutting into the east bank and filling the west side of the creek to create more stable side slopes. Bioengineering practices would provide bank stabilization and establish riparian vegetation. Both alternatives would act to prevent future costly repairs to 101st Avenue S.E. and utilities and to improve fish habitat and water quality. Portions of the project site may be within the 60-foot-road right-of-way, but permanent drainage easements, right-of-way purchases, or temporary rights-of-entry may be required depending on the chosen course of action. Some of the work may be accommodated within the existing 50-foot buffer zone. Hydraulic and geotechnical studies may be required prior to the final design.

Estimated costs:

The estimated costs for Alternatives 1 and 2 are \$136,000 and \$195,000, respectively, in 1993 dollars (ENR-CCI: 5630). These costs include allowances for right-of-way acquisitions and engineering design. Maintenance costs to establish riparian vegetation in Alternative 2 are estimated to be \$500 per year for each of three years following construction.



MEYDENBAUER CREEK EROSION CONTROL
 Project No. 319

PROJECT SUMMARIES

Reference Number: CDP 320; SWDMP 320

Basin: Meydenbauer

Date: May 1994

Project Title: Meydenbauer Outfall Dredging

Location: 9927 Meydenbauer Way S.E. (Meydenbauer Bay Yacht Club)

Description:

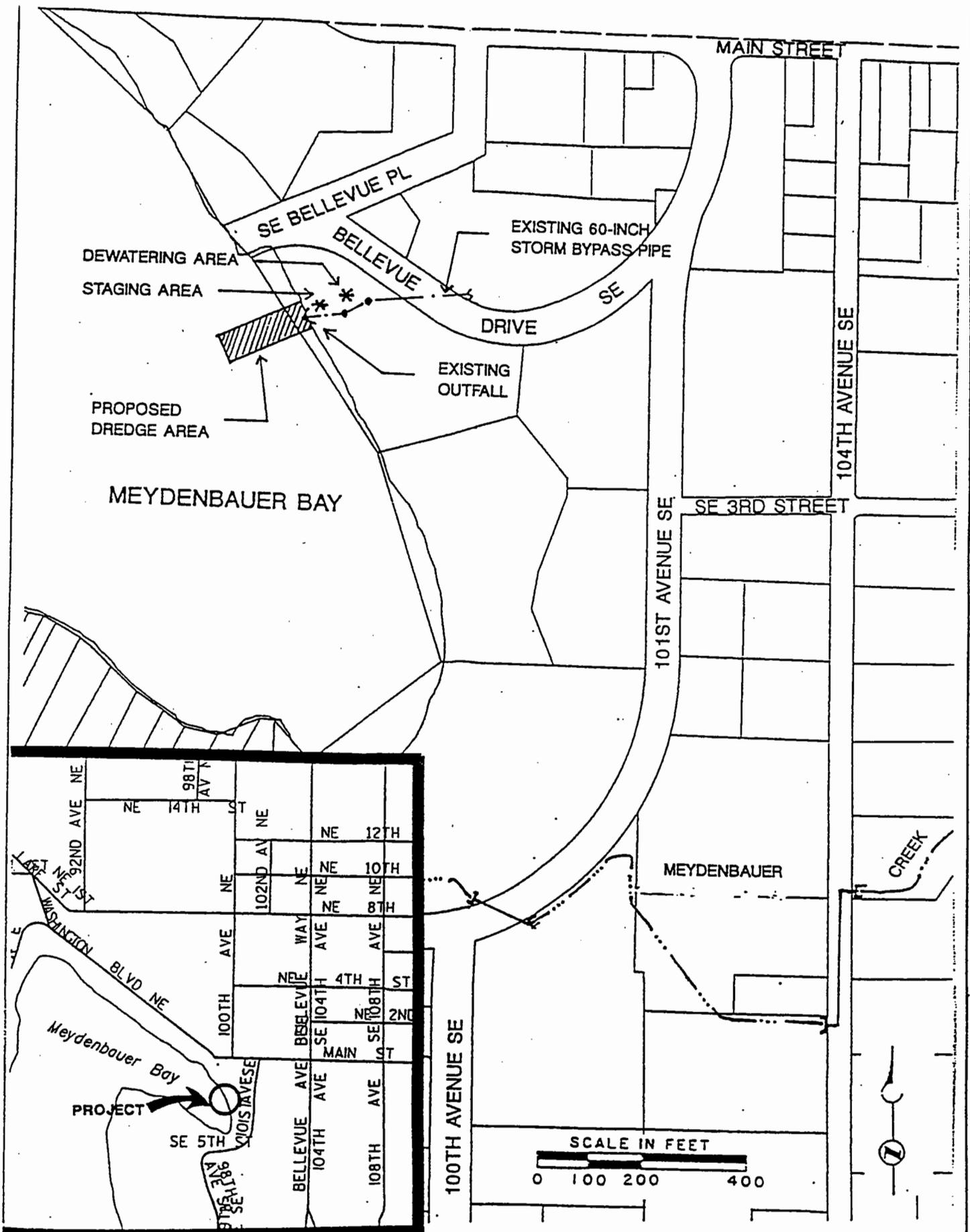
In 1982, the City of Bellevue constructed a 60-inch storm pipeline, which bypasses high flows from the Central Business District of Bellevue to Lake Washington at the Meydenbauer Bay Yacht Club. The easement agreement with the Yacht Club requires the City to periodically dredge the accumulated sediments in the vicinity of the outfall so that access to moorage is not impaired. A survey done in 1990 indicated that sediment had accumulated to a greater depth than that allowed by the City's easement agreement with the Meydenbauer Bay Yacht Club. The proposed project would remove about 1,400 cubic yards of sediment from the vicinity of the 60-inch stormwater outfall at the Meydenbauer Bay Yacht Club.

The following issues have to be addressed before the project is implemented:

1. A pilot test should be conducted prior to dredging to determine a) the amount of time required to dewater the dredged material and to conduct the dredging; b) the need for a flocculant; and c) the size of the dewatering facility.
2. The sediment is contaminated with metals and petroleum hydrocarbons. The dredged sediment will need to be dewatered and disposed of at a lined landfill facility. The decant liquid can be discharged to the sanitary sewer lines, but may require pretreatment if contaminant levels exceed specific requirements.
3. Best management practices (BMPs) in the watershed should be used to reduce erosion and to increase the design life of this project.
4. Several permits that generally take a considerable time to process will be required.

Estimated Costs:

This project is estimated to cost \$428,000 in 1993 dollars (ENR-CCI: 5630). The primary cost is for disposal of the dredge material. The cost for possible pretreatment is not included, but would be significant if pretreatment of decant water is necessary. Redredging will be required within about 20 years.



MEYDENBAUER OUTFALL DREDGING
 Project No. 320

PROJECT SUMMARIES

Reference Numbers: CDP 329; SSWDMP 329
Basin: Rosemont Area
Date: May 1994
Project Title: Rosemont Beach Storm Drain Improvement
Location: 1020 West Lake Sammamish Parkway N.E. along a private driveway, downslope of the parkway

Description:

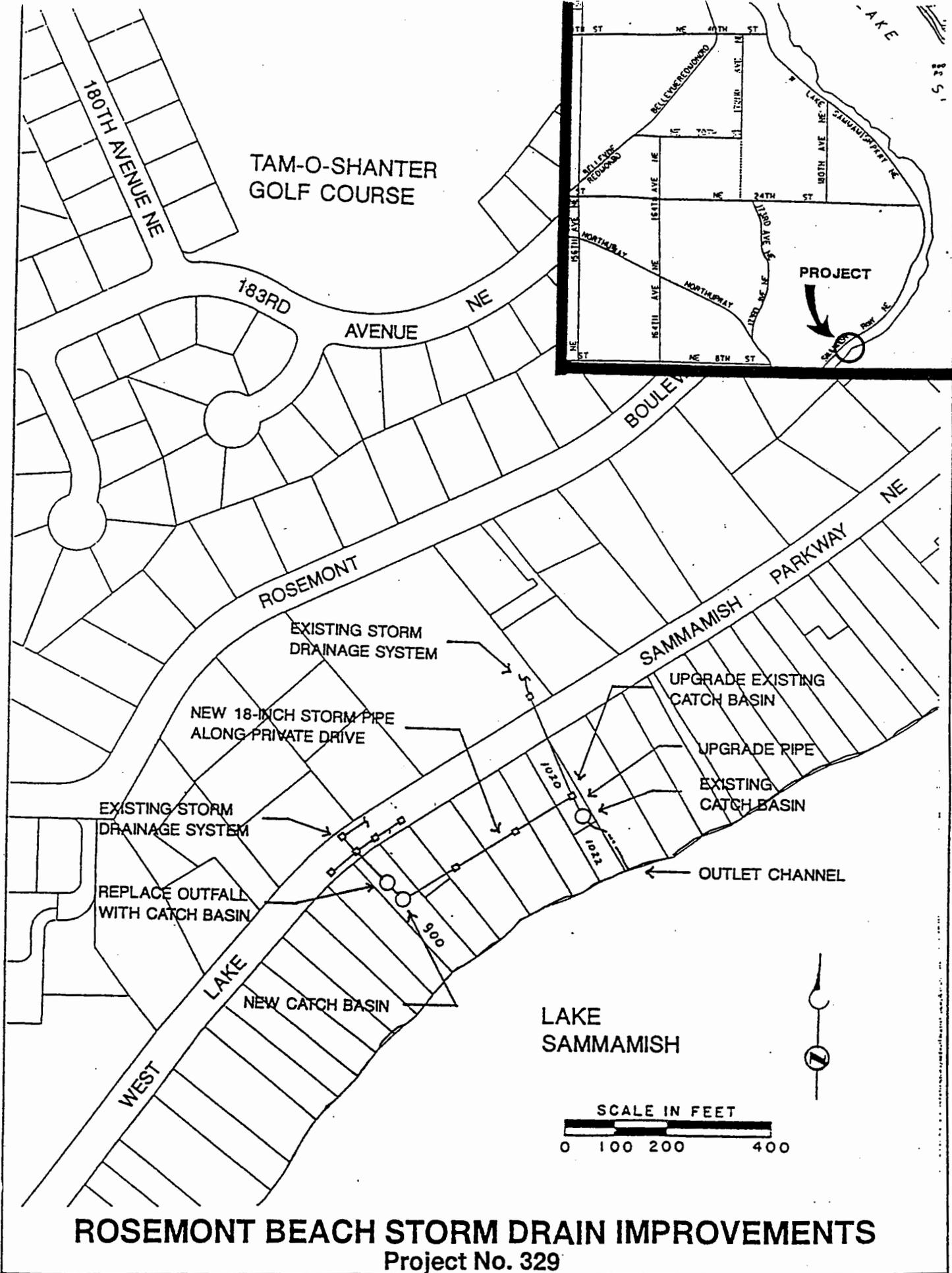
A short section of West Lake Sammamish Parkway N.E. in the area known as Rosemont Beach drains to existing catch basins located along the east edge of the roadway. This drainage system collects storm runoff from the roadway and may also collect some runoff from private developments above the roadway. This drainage is then conveyed to an outfall, over the top of an existing rock wall, and across a private driveway. Bank erosion is occurring at and below the outfall, which could reduce the stability of the rock wall in the future. Subsurface drainage, combined with surface drainage from the driveway itself, contributes to runoff and flooding problems along the driveway. The existing storm drains and inlets along the driveway are in poor condition and may not be functioning effectively.

The purpose of the project is to prevent further slope erosion and control flooding and ponding along the private driveway downslope of the outfall. The project involves connecting the existing 18-inch-diameter outfall to the downstream storm drainage system and installing catch basins along a new trunkline to collect surface and subsurface drainage from the roadway and steep slope above. In addition, two intermediate catch basin inlets will be installed over the new 18-inch-diameter trunkline along the driveway to catch surface runoff from the paved driveway and subsurface runoff from above. Existing drainage systems encountered along the driveway during construction should be tied into the new 18-inch-diameter trunkline.

Several tasks need to be completed before the project can begin, including surveying the property boundaries and elevations; characterizing the existing outfall; conducting detailed hydrologic analyses of on-site and off-site contributing areas to determine capacity; investigating groundwater conditions; obtaining the necessary permits; and obtaining a permanent 15-foot-wide drainage easement across each of the properties involved.

Estimated Costs:

Costs for the proposed improvements are estimated to be \$141,000 in 1993 dollars (ENR-CCI: 5630). Quantities and costs are based only on field estimates and preliminary layout, and should be revised during preliminary and/or final design.



PROJECT SUMMARIES

Reference Numbers: CDP 330; SWDMP 330; DMP R-4-38 and R-4-29

Basin: Richards Creek

Date: May 1994

Project Title: Sunset Creek Flood Hazard Reduction

Location: Sunset Creek at S.E. Allen Road and S.E. Newport Way

Description:

Sunset Creek originates on the steep slopes of the Somerset area south of Eastgate and flows generally northwest under I-90 to the Richards Creek drainage. The upstream culvert is undersized, resulting in downstream channel erosion and frequent flooding of the adjacent properties and roadway. The flooding has led to temporary closure of the roadway into Tye Middle School. Sections of the existing channel have been armored with stream bank revetments, but erosion continues in areas that have not been protected.

The proposed project involves replacing the existing 24-inch culvert with a 60-foot-long, 54-inch reinforced concrete pipe culvert. A larger, redesigned trash rack and drop structure would also be constructed. The project includes construction of up to 700 feet of stream bank revetments, such as bioengineered slope stabilization, where possible, and rockeries where necessary. Channel cross-sections will be designed to carry the 100-year flows from the upstream basin.

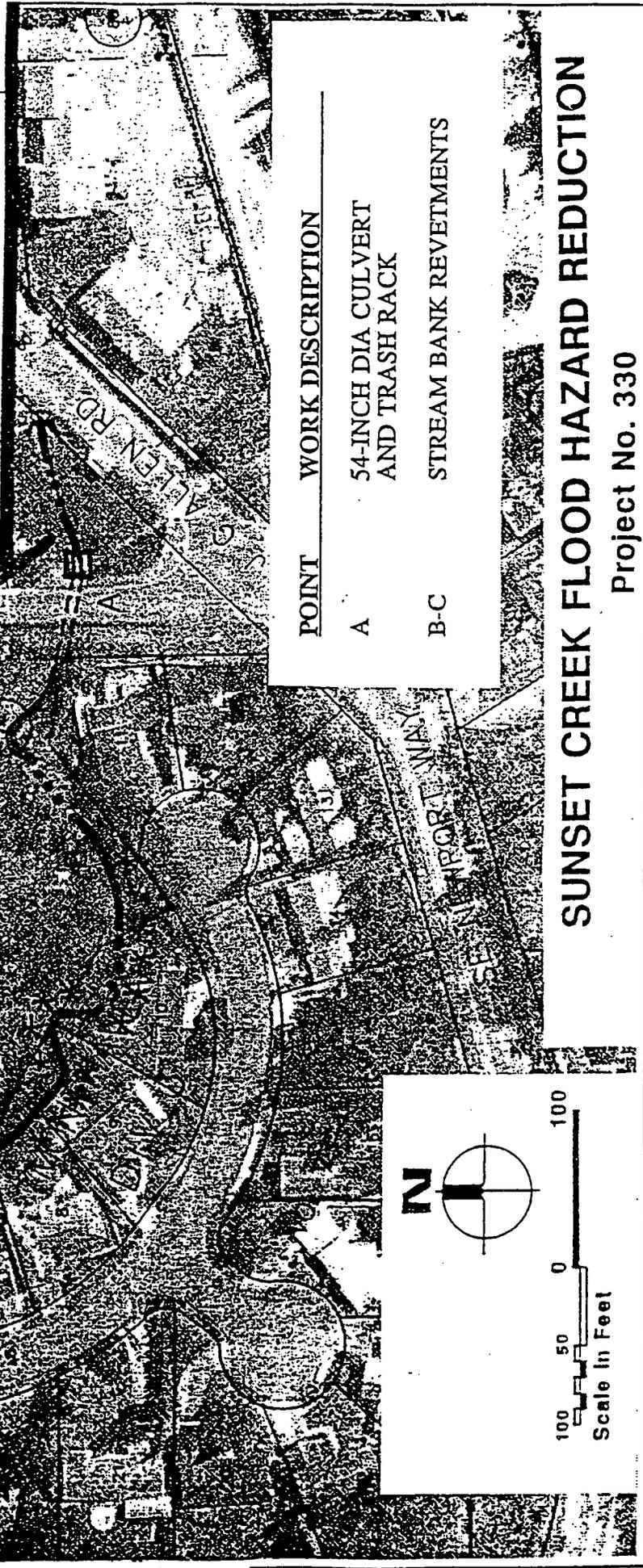
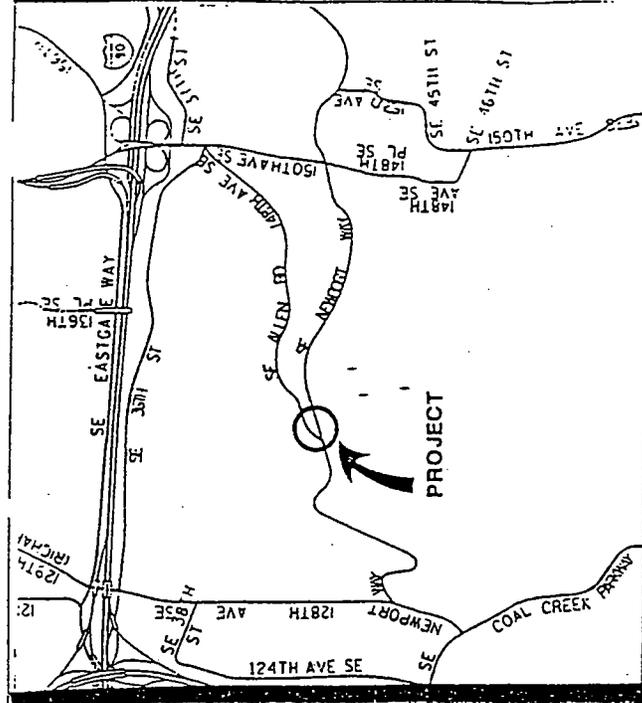
The project would 1) alleviate the existing out-of-channel flooding and the resulting damage to adjacent properties; 2) reduce erosion in the project area; and 3) improve water quality in this reach and in downstream Sunset Creek during high flows.

The following tasks need to be performed before the project is initiated:

1. Conduct a survey to confirm key elevations along the proposed project alignment from S.E. Allen Road to the pipe at the soccer field.
2. Prepare a downstream analysis to verify that erosion will not increase as a result of this project.
3. Prepare plans and specifications.
4. Obtain rights-of-way or temporary construction easements.
5. Obtain the necessary permits.

Estimated Costs:

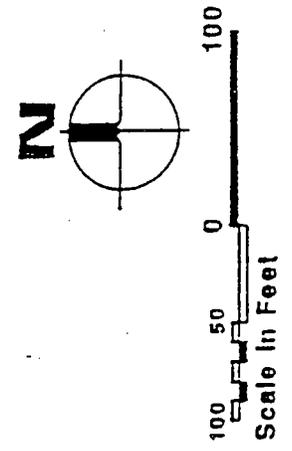
The estimated project cost is \$369,000 in 1993 dollars (ENR-CCI: 5630). Quantities are based on the conceptual plan and are subject to change following the field survey during design. There are several alternatives for financing the project. The Utility could finance the project costs from capital improvement funds. An application has been made for Department of Ecology FCAAP grant funding, as well.



POINT	WORK DESCRIPTION
A	54-INCH DIA CULVERT AND TRASH RACK
B-C	STREAM BANK REVETMENTS

SUNSET CREEK FLOOD HAZARD REDUCTION

Project No. 330



PROJECT SUMMARIES

Reference Number: CDP 355
Basin: Coal Creek
Project Title: Coal Creek Parkway Outfall #2
Location: 4700 Block of Coal Creek Parkway SE

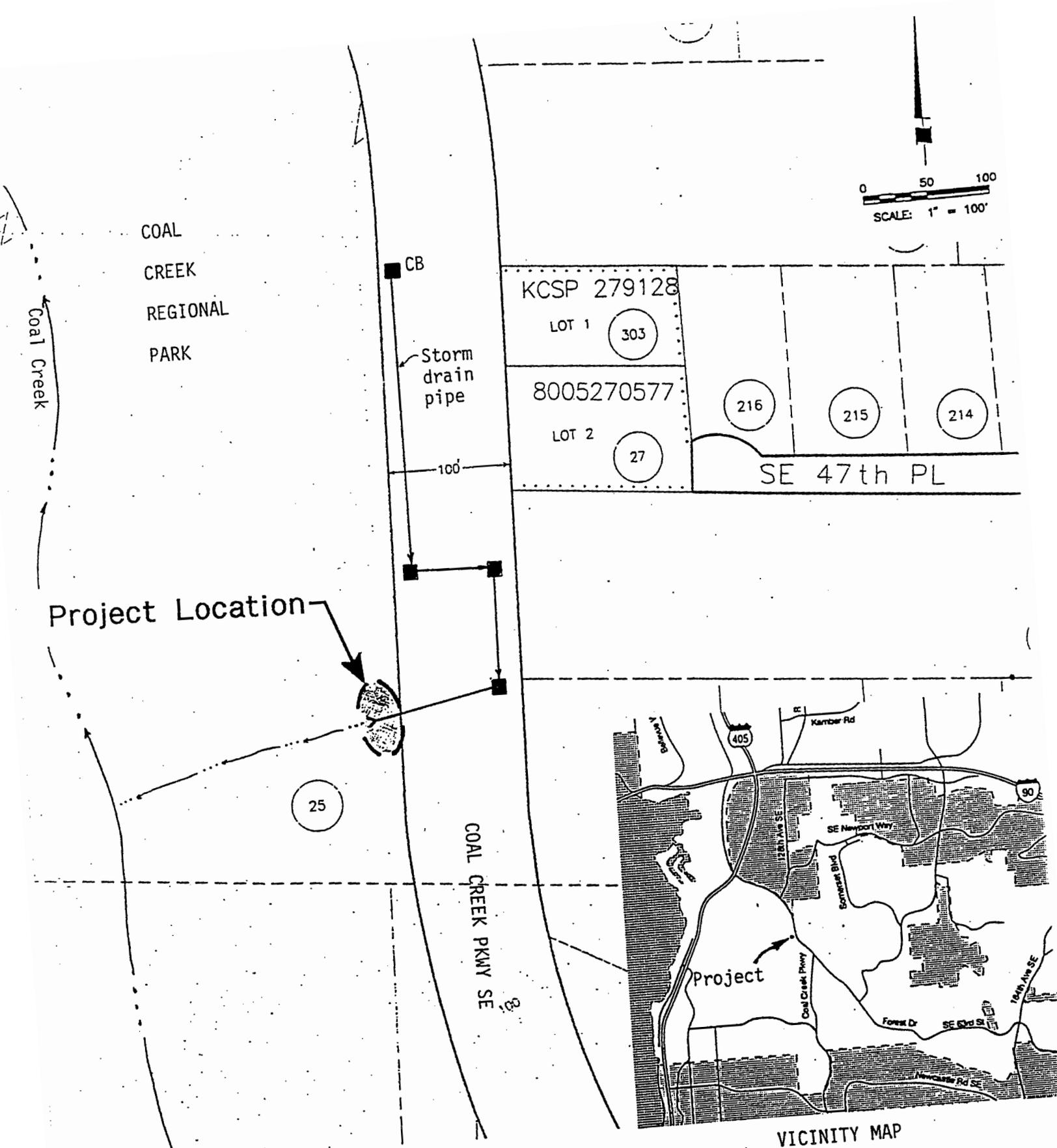
Description:

This is a project to repair an overbank CMP pipeline which collects stormwater runoff from Coal Creek Parkway SE in the vicinity of SE 47th Street and discharges to the wood area adjacent to Coal Creek. The 18-inch diameter CMP has separated at the upper coupling bank, allowing runoff to erode the steep roadway embankment. The remainder of the pipeline has collapsed into the gully that has formed. Left unchecked, continued erosion will threaten Coal Creek Parkway SE and the buried utilities in the roadway. In addition, the eroding bank contributes sediments to Coal Creek.

To alleviate this potential hazard and sediment source, the overbank pipeline must be reconnected and an energy dissipator constructed at the outfall. Portions of the existing CMP may be salvaged and reused in the repair. The gully should be filled and revegetated to provide for a stable slope.

Estimated Cost:

The cost for the proposed repair is \$30,000 (ENR-CCI: 5630). Since CMP is prone to corrosion, the useful life of the repair should be evaluated against replacing the overbank pipeline with longer lasting materials such as PVC or HDPE. If the existing CMP proves not to be salvageable or alternate pipe materials are used instead, the cost of this project will increase. A predesign report has not been prepared for this project and costs should be considered approximate.



COAL CREEK PKWY OUTFALL #2

Project No. 355

PROJECT SUMMARIES

Reference Numbers: CDP 370
Basin: Sturtevant Creek
Date: May 1994
Project Title: N.E. 8th Street Drainage System Improvements at Midlakes
Location: N.E. 8th Street from 120th Avenue N.E. to 116th Avenue N.E.

Description:

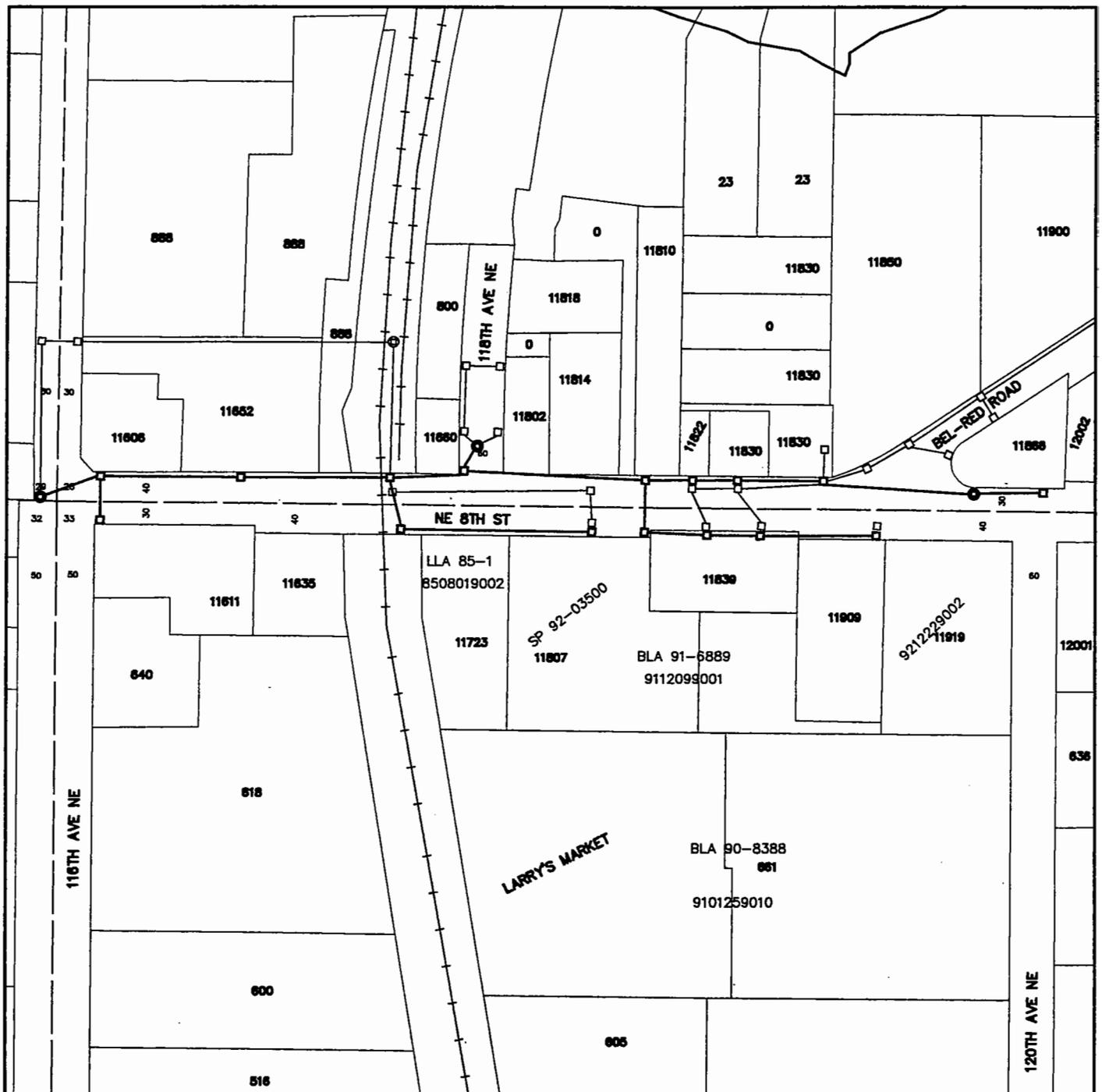
This project will upgrade the storm drain along N.E. 8th Street from 120th Avenue N.E. to 116th Avenue N.E. The existing storm drain system along N.E. 8th Street consists of 12-inch and 15-inch pipes that drain to a private pipe system, which in turn drains to the storm system along 116th Avenue N.E. Although the existing trunk line functions well, most of the curb inlets and all of the crossovers are nonfunctional. Additionally, the current layout of the system requires that at least two lanes of traffic be closed whenever the system is maintained, and the high traffic loads on N.E. 8th Street cause the existing structures to deteriorate, creating both maintenance and liability issues.

The proposed system would have several benefits. First, it would more effectively drain stormflows from the surface of N.E. 8th Street. Second, the new system would be completely within public right-of-way, and the entire system would be maintained by Utility maintenance staff. Third, maintenance of the new alignment would require closure of only one lane of traffic at a time. Fourth, the overall liability of the City would be reduced, both by eliminating the flows into a private system and by reducing the risks posed by the deteriorating storm drain structures within the roadway.

The new system would consist of approximately 1,250 feet of 18-inch concrete storm drain pipe along the curblines on the north side of N.E. 8th Street. Approximately 800 feet of 12-inch concrete storm drain pipe would connect catch basins from the south side of the roadway to the 18-inch pipe at three locations. There are likely to be conflicts with water, high pressure gas, electrical, sanitary, and telephone utilities, as well as with a railroad crossing and traffic detectors. East of the railroad crossing (780 linear feet of the project), the 18-inch pipe may have to be set at 6 feet or more below grade to avoid severe utility conflicts, and the railroad crossing will require boring at 5 feet or more of depth. Part of the 12-inch system may also have a severe conflict with electrical utility lines and may, therefore, require careful construction procedures.

Estimated costs:

The estimated project cost in 1993 dollars (ENR-CCI: 5630) is \$565,000. A predesign report has not been prepared for this project. Costs should be considered approximate. The Utility's share of the storm drainage costs when the road is widened is estimated to be \$185,000.



VICINITY MAP

SCALE: 1" = 200'

N.E. 8TH STREET MIDLAKES DRAINAGE IMPROVEMENTS Project No. 370

- EXISTING SYSTEM
- PROPOSED SYSTEM

PROJECT SUMMARIES

Reference Numbers: CDP 371

Basin: Meydenbauer

Date: May 1994

Project Title: Meydenbauer Creek Channel Improvement

Location: S.E. 3rd Street to downstream of 102nd Avenue S.E.

Description:

This project will alleviate chronic flooding of a residence and apartments upstream of 102nd Avenue S.E. Meydenbauer Creek enters a dual reinforced concrete box (RCB) culvert system (two 5' x 2.5' culverts) on the east side of 102nd Avenue S.E.

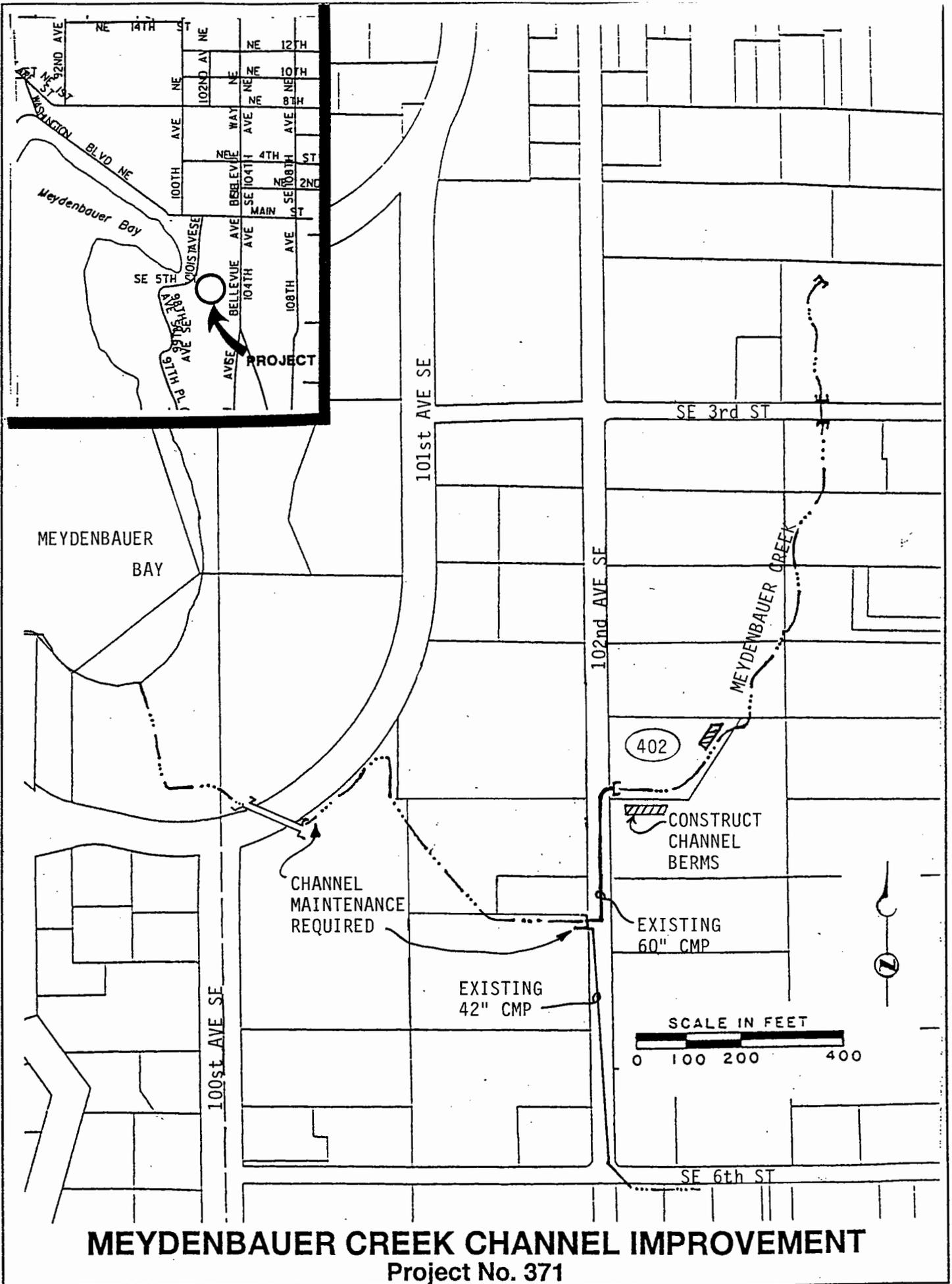
To alleviate the flooding problem, the upstream channel needs to be widened and the low stream bank needs to be raised in order to make full use of the RCB's capacity. A low spot on the channel bank near the north property line of 402 - 102nd Avenue S.E. needs to be bermed to control overtopping. The upstream channel also needs maintenance.

Downstream of 102nd Avenue S.E., the channel needs to be cleared of debris and a positive channel slope re-established. The City has a 15-foot-wide easement for the existing channel. The channel capacity downstream from 102nd Avenue S.E. needs to be increased to accommodate ultimate flows (310 cfs). It is anticipated that this channel work will be accomplished when the downstream properties develop.

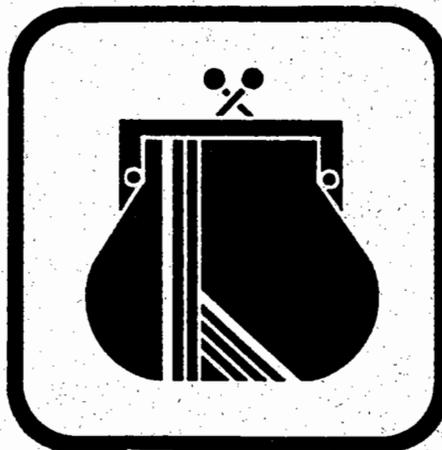
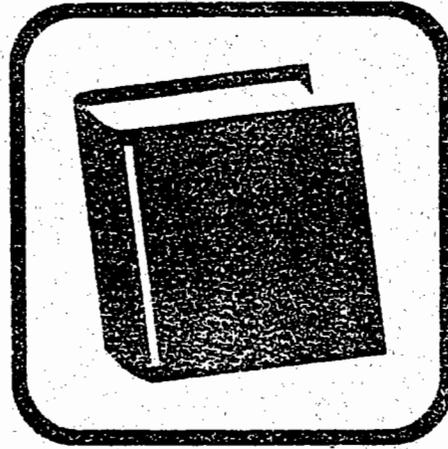
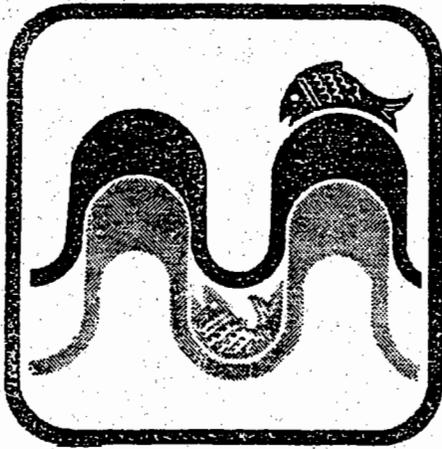
This project should be coordinated with the other CIP projects in the Meydenbauer Basin (CDP numbers 318, 319, and 320) and with developing properties in the area to best achieve stormwater management goals for the basin and to maximize cost-effectiveness.

Estimated Costs:

The estimated costs for this project are \$320,000 in 1993 dollars (ENR-CCI: 5630) for channel maintenance and berming. A predesign report has not been completed for this project. Costs should be considered approximate.



CHAPTER 5



FINANCIAL INFORMATION

FINANCIAL INFORMATION

This chapter summarizes the current financial status of the utility and presents the financial outlook for the upcoming five year period. The funding needs for implementing capital project recommendations, current debt status and credit worthiness are also discussed.

CURRENT FINANCIAL STATUS

Exhibit F2 summarizes actual cash-basis revenues, expenses, and reserve balances for the Surface Water Utility for the most recent five year period. Over this period, the Utility reserve balance which represents total unexpended resources carried forward to future years decreased from \$1.9 million at the beginning of 1989 to a balance of \$1.5 million at the end of 1993. During those years, a total of \$2.7 million was transferred to the Utility Capital Investment Fund (CIP) to finance capital project expenses. An additional \$8.2 million was spent to pay annual principal and interest for debt obligations that were previously issued to finance historical capital improvements. In total, CIP and debt service payments supporting historical and current capital spending represented 36% of total Utility expenditures for the five year period.

As outlined in the Reserve Policies, a formula has been established to compute a target annual reserve value for the Utility based on a percentage of annual operating and maintenance expenses for the year, and other defined reserve components. Using this formula, the Utility's target reserve balance for 1993 was approximately \$1.4 million, compared to the \$1.5 million actual balance accumulated through year end. Utility management is committed to maintaining reserves at close to target levels.

FUNDING FOR CAPITAL IMPROVEMENT PROJECTS

Exhibit F3 shows the current fiscal outlook for the capital program. Based on the revenue and rate structure derived from the previous rate model, \$3.6 million is allocated to the CIP through 1999 for projects. If the Utility continues to allocate \$1.25 million for the Neighborhood Enhancement, Infrastructure Rehabilitation, and Minor Capital programs, the balance of the forecasted revenue, \$2.3 million, would not even fund one half of the current list of the highest ranked twenty projects over the next five years. This leaves a revenue shortfall of \$6.6 million for the highest priority projects which total approximately \$8.9 million. The current CIP funding (\$3.6M) may require a rate increase depending on the 1994 revenues and the priority of other Utility needs and programs.

CURRENT DEBT STATUS

As listed below, the Utility currently has five outstanding revenue bond issues and five outstanding State Public Works Trust Fund loans (Exhibit F1). All related debt was issued by the Utility to finance historical capital project activity. As shown in Exhibit F2, annual debt service payments for these obligations totaled \$2.3 million in 1993.

EXHIBIT F1

**SURFACE WATER UTILITY
DEBT OUTSTANDING AS OF 12-31-93**

	<u>Issue Date</u>	<u>Original Debt Issued</u>	<u>Debt Outstanding 12-31-93</u>	<u>Final Maturity Date</u>
Revenue Bond Issues:				
1984 Drainage Bonds	6-01-84	\$ 340,000	\$ 50,000	06-01-1994
1986 Drainage Bonds	12-30-86	2,000,000	1,610,034	12-01-2006
1987 Refunding Bonds	4-01-87	11,225,000	10,815,000	05-01-2010
1987 Drainage Bonds	7-01-87	2,060,000	1,705,000	07-01-2007
1991 Drainage Bonds	10-01-91	2,600,000	2,525,000	10-01-2011
State Public Works Trust Fund Loans:				
DCD P/W Trust Fund Loan	7-01-87	\$ 400,750	\$ 299,391	07-01-2007
DCD P/W Trust Fund Loan	2-07-89	273,000	233,068	02-07-2009
DCD P/W Trust Fund Loan ⁽¹⁾	7-17-90	874,530	782,474	07-17-2010
DCD P/W Trust Fund Loan	8-06-91	377,100	359,237	08-06-2011
DCD P/W Trust Fund Loan ⁽²⁾	7-01-93	65,172	65,172	07-01-2013
			<u>\$18,444,376</u>	

(1) Total loan of \$1,166,040 approved in 1990; 75% of approved amount received to date.

(2) Total loan of \$434,480 approved in 1993; 15% of approved amount received to date.

CREDIT WORTHINESS

While operated independently until 1993, the City's water, sewer and surface water utilities officially merged in 1980 into one combined "Waterworks Utility" for financial reporting purposes. This action has allowed the individual utilities to issue bonds at more favorable interest rates by presenting their combined financial resources and revenue generating capability as related debt security. Bonds issued by the Waterworks Utility have historically

FINANCIAL INFORMATION

earned very positive evaluations of credit worthiness by bond rating agencies. Contributing factors include the financial position, reserve levels, and ratio of net annual operating revenues to annual debt service payments, i.e., debt coverage, for the three Utilities as a whole. The last Waterworks Utility bond issue of \$2,600,000, sold in October 1991 to support Surface Water capital project activity, received a rating of "AA-" from Standard and Poors and "AA" from Moody's Investor Service. Ratings at this level indicate a strong degree of confidence by the rating agencies in the ability of city utilities to repay their debt obligations. While no immediate plans exist to issue additional Utility debt, if that action becomes necessary, the Waterworks Utility can expect to receive a similarly favorable credit rating and therefore to sell those bonds at lower interest rates than would otherwise be possible.

Debt coverage levels are a key factor used by rating agencies to determine utility credit ratings. Under existing bond ordinances, the combined Waterworks Utility is legally required to maintain a minimum 1.25 debt coverage level. Internal financial policies additionally require the individual utilities to independently maintain this minimum coverage level, based on their separate operating revenues, expenses and annual debt service payments. While debt coverage levels for the Utilities have historically been much higher than the required minimum level, a resolution was formally adopted in 1994 which commits Council to taking any necessary future actions, in the form of rate increases or annual operating expense reductions, to maintain minimum utility debt coverage at 2.0 or above. While the Council will have flexibility to meet its commitment under this policy in various ways, the formal coverage policy gives further assurance to rating agencies or bond potential buyers regarding the ability of the City utilities to meet their debt service commitments and therefore can help minimize related interest costs, if future debt financing is required.

A combined balance sheet and combined operating statement for the Waterworks Utility for 1989 through 1993 are provided as Exhibits F4 and F5. As of December 31, 1993, the Surface Water Utility represented about 31% of total assets and 77% of total liabilities, shown on the combined Waterworks Utility balance sheet.

FINANCIAL INFORMATION

SURFACE WATER UTILITY

Revenues, Expenses & Reserve Balances by Year
1989 Through 1993

	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
BEGINNING RESERVE BALANCE	\$1,877,656	\$2,159,648	\$2,380,489	\$1,920,217	\$1,753,744
ANNUAL REVENUES:					
Drainage Service	4,405,732	4,468,373	4,902,513	5,265,368	5,722,036
Investment Interest	211,888	250,495	168,446	85,104	85,808
Other Revenues	<u>550,865</u>	<u>1,052,874</u>	<u>697,177</u>	<u>1,246,545</u>	<u>807,209</u>
Subtotal	\$5,168,485	\$5,771,742	5,768,136	6,597,017	6,615,053
ANNUAL EXPENDITURES:					
Utility Tax Expense	287,640	264,486	277,561	273,706	312,926
Transfers to CIP	24	400,084	830,219	950,000	493,000
Debt Service	1,380,092	1,425,547	1,423,236	1,724,804	2,286,367
Other M&O Expense	<u>3,218,737</u>	<u>3,460,784</u>	<u>3,697,392</u>	<u>3,814,980</u>	<u>3,766,440</u>
Subtotal	<u>4,886,493</u>	<u>5,550,901</u>	<u>6,228,408</u>	<u>6,763,490</u>	<u>6,858,733</u>
ENDING RESERVE BALANCE	<u>\$2,159,648</u>	<u>\$2,380,489</u>	<u>\$1,920,217</u>	<u>\$1,753,744</u>	<u>\$1,510,064</u>

SURFACE WATER UTILITY CIP FUNDING STATUS

	CURRENT FUTURE STATUS					1995-1999
	1994	1995	1996	1997	1998	1999
BEGINNING CASH BALANCE (Resources Fwd)	\$2,627,452	\$1,275,372				\$1,275,372
Transfers from SSWU Oper. Budget	323,000	323,000	\$454,000	\$477,000	\$501,000	\$526,000
TOTAL RESOURCES	2,950,452	1,598,372	454,000	477,000	501,000	526,000
SCHEDULED PROJECT FUNDING:						
I-405 Detention Pond	465,061					
Kelsey Creek Channel Improv.	23,120					
Erosion Control Project	169,899					
Coal Creek Parkway Sedim. Basin	50,000	25,649				
Major Maint. Program (MMP)	461,000					
Lk. Heights Slope Stabilization	256,000					
SUB-TOTAL COMMITTED EXPENSES	1,425,080	25,649				25,649
BUDGETED SET ASIDES: (1)						
Neighborhood Enhancement	50,000	50,000	50,000	50,000	50,000	50,000
Infrastructure Rehabilitation (2)	150,000	150,000	150,000	150,000	150,000	150,000
Minor Capital (Unanticipated)	50,000	50,000	50,000	50,000	50,000	50,000
SUBTOTAL BUDGETED SET ASIDES	250,000	250,000	250,000	250,000	250,000	250,000
AVAILABLE FOR NEW CAPITAL INVESTMENT	\$1,275,372	\$1,322,723	\$204,000	\$227,000	\$251,000	\$276,000
						\$2,280,723

(1) A CIP amendment will be needed to add these projects to the Adopted 1993-1999 CIP Plan

(2) Including estimates for:

- (a) Transportation-driven Drainage Rehab. Needs
- (b) Development-driven Drainage Rehab. Needs
- (c) Surface Water System Rehab. Projects

FINANCIAL INFORMATION

WATER WORKS UTILITY

Comparative Balance Sheet
1989 Through 1993

	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
ASSETS					
Current Assets	\$ 14,154,430	\$ 14,636,393	\$ 13,460,493	\$ 11,517,210	\$ 10,839,785
Restricted Assets	8,689,266	6,732,214	11,137,901	9,674,215	10,512,814
Deferred Debits	5,042,987	4,795,096	2,449,128	2,199,510	1,988,528
Net Property, Plat & Equity	<u>105,071,283</u>	<u>112,495,404</u>	<u>116,884,012</u>	<u>120,793,369</u>	<u>123,965,002</u>
Total Assets	<u>132,957,966</u>	<u>138,659,107</u>	<u>143,931,534</u>	<u>144,184,304</u>	<u>147,306,129</u>
LIABILITIES					
Current Liabilities (Payable from Current Assets)	1,381,953	1,852,090	2,622,135	1,580,406	1,922,835
Current Liabilities (Payable from Restricted Assets)	1,091,019	1,154,574	1,201,196	1,165,859	788,450
Long-Term Liabilities	<u>22,248,945</u>	<u>21,707,224</u>	<u>23,835,913</u>	<u>22,820,459</u>	<u>21,961,669</u>
Total Liabilities & Deferred Assets	<u>24,721,917</u>	<u>24,713,888</u>	<u>27,659,244</u>	<u>25,566,724</u>	<u>24,672,954</u>
FUND EQUITY					
Contributed Capital	76,870,470	80,212,323	81,974,195	83,616,996	85,930,846
Retained Earnings	<u>31,365,579</u>	<u>33,732,896</u>	<u>34,298,095</u>	<u>35,000,584</u>	<u>36,702,329</u>
Total Fund Equity	<u>108,236,049</u>	<u>113,945,219</u>	<u>116,272,290</u>	<u>118,617,580</u>	<u>122,633,175</u>
TOTAL LIABILITIES & FUND EQUITY	<u>\$132,957,966</u>	<u>\$138,659,107</u>	<u>\$143,931,534</u>	<u>\$144,184,304</u>	<u>\$147,306,129</u>

FINANCIAL INFORMATION

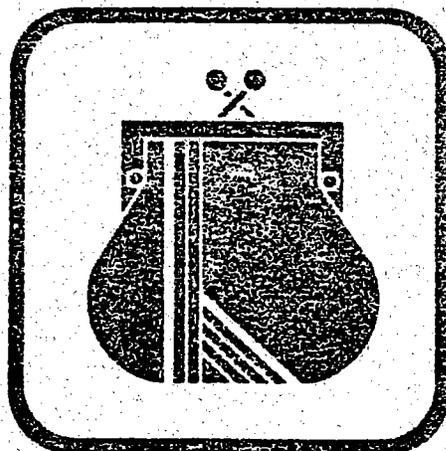
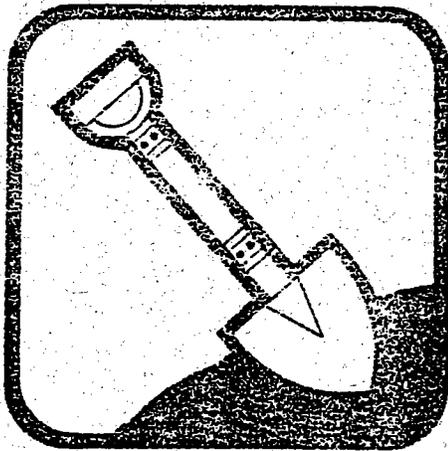
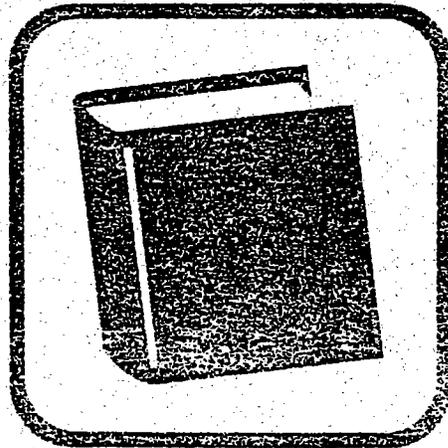
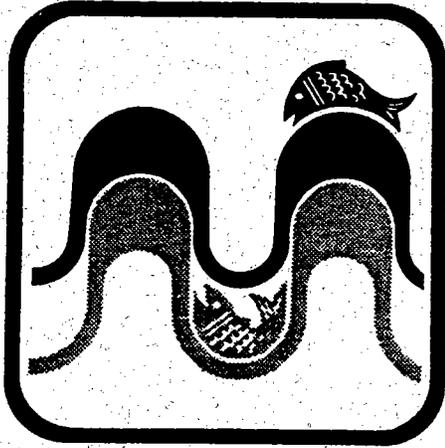
WATER WORKS UTILITY

Combined Operating Statement
(Years Ending December 31)

	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
OPERATING REVENUE					
Service Charges & Fees	\$21,314,180	\$22,765,392	\$25,199,100	\$25,181,902	\$28,057,048
Other Revenue	<u>764,303</u>	<u>898,962</u>	<u>792,465</u>	<u>1,266,414</u>	<u>696,487</u>
Total Operating Revenue	22,078,483	23,664,354	25,991,565	26,448,316	28,753,535
Non-Operating Revenue	<u>2,028,924</u>	<u>1,895,446</u>	<u>1,044,768</u>	<u>886,590</u>	<u>909,314</u>
total Revenue & Income	24,107,407	25,559,800	27,036,333	27,334,906	29,662,849
OPERATING EXPENSES					
Administrative & General	3,749,376	4,149,390	4,332,843	4,581,545	5,498,667
Maintenance & Operations	12,293,025	13,796,923	16,094,330	16,425,363	16,548,619
Miscellaneous	<u>13,393</u>	<u>17,256</u>	<u>19,840</u>	<u>18,459</u>	<u>24,656</u>
Total Operating Expenses	16,055,794	17,963,569	20,447,013	21,025,367	22,071,942
AVAILABLE FOR DEBT SERVICE	\$ 8,051,613	\$ 7,596,231	\$ 6,589,320	\$ 6,309,539	\$ 7,590,907
ACTUAL DEBT SERVICE	\$ 2,470,773	\$ 2,464,468	\$2,461,634	\$2,814,514	\$ 2,666,245
DEBT SERVICE COVERAGE	<u>3.26</u>	<u>3.08</u>	<u>2.68</u>	<u>2.24</u>	<u>2.85</u>

CHAPTER 6

APPENDICES



Utilities Element

Goal 1: To facilitate the development and maintenance of all utilities at the appropriate levels of service to accommodate the City of Bellevue's projected growth.

Goal 2: To facilitate the provision of reliable utility service in a way that balances the public's concerns about safety and health impacts of utility infrastructures, consumers' interest in paying no more than a fair and reasonable price for the utility's product, Bellevue's natural environment and the impacts that utility infrastructures may have on it, and the community's desire that utility projects be aesthetically compatible with surrounding land uses.

Goal 3: To process permits and approvals for utility facilities in a fair and timely manner and in accord with development regulations which encourage predictability.

OVERVIEW

The Utilities Element contains policies and maps that guide the siting of utility facilities in the City. The main purpose of this element is to ensure that Bellevue will have utility capacity to adequately serve the Land Use Plan. Adequacy, however, is but one issue addressed in this element. Policies also address the quality, reliability, and safety of the services provided. Other policies concern the importance of considering environmental impacts in planning, as well as constructing facilities and aesthetics in design and landscaping.

The 1990 State Growth Management Act requires all comprehensive plans to contain a Utilities Element that "includes the general location, proposed location, and capacity of all existing and proposed utilities, including but not limited to electrical lines, telecommunication lines, and natural gas lines" (RCW 36.a.070-4)).

In Bellevue, as in many cities, utilities are provided by a combination of city-managed, state-regulated, federally-licensed and

municipally-franchised providers. City-managed Utilities are sewer, water, storm and surface water, and solid waste. Non-city-managed Utilities are Puget Sound Power & Light Company, Washington Natural Gas (WNG), US WEST Communications, and GTE Northwest Incorporated. These utilities are regulated by the Washington Utilities and Transportation Commission (WUTC). Federally-licensed cellular telephone communication companies serving Bellevue include McCaw Cellular and US West Cellular. Cable TV services are provided under municipal franchise by VIACOM Cablevision.

As the City considers requests for new utility facilities, particularly electric and communications, a wide variety of factors are taken into consideration. These factors, which range from health and safety issues to aesthetics, to environmental impacts, to basic economics, are at stake in the consideration of any proposed utility project. The following guideline should be considered as future projects are reviewed:

Ordinarily, the elimination or mitigation of known health or safety risks associated with a project should be given first priority. In particular cases, however, a severely negative impact of mitigation measures on the reliability of the service network, on the cost of service, or on environmental or aesthetic values may dictate the choice of a different option. In every case, cost is a factor that is to be considered, with particular attention to maintaining Bellevue's viability as a regional employment center. However, costs should be weighed against a full consideration of benefits, both tangible and intangible, that may be derived from more "costly" options. In no case should it be automatically assumed that the "cheapest" option is the least costly on a "net" or long-term basis or is the most desirable under these policies. Individual implementation issues arising under these policies should be resolved on a case-by-case basis in light of the considerations above.

City-managed Utilities

The City of Bellevue manages the Sewer, Water, and Storm and Surface Water Utilities, as well as the Solid Waste Management activities. The sewer and water utilities serve the City and several jurisdictions outside the City limits. They are enterprise operations which are self-supporting and separate from the City General Fund.

The Sewer Utility operates, maintains, and extends the sewage collection system to respond to the needs of residents and commercial establishments. The collection system discharges into interceptors owned and operated by Metro which transport the sewage to the Renton Treatment Plant for treatment and eventual discharge into Puget Sound.

The Water Utility purchases water from the City of Seattle water supply system. Water is distributed through mains constructed, operated, and maintained by the water utility to residential, commercial, and industrial users.

The Storm and Surface Water Utility's operations include flood control, maintenance and enhancement of surface water quality, protection of sensitive areas, and public education.

Solid Waste Management activities include solid waste planning, promotion, and monitoring the performance of private contractors who carry out collection of solid waste, recyclables, yard-waste, and litter pick-up. These services are financed through garbage rates which are set by the City Council. Unlike the other city-managed utilities, Solid Waste Management is not an enterprise organization. This function is funded from the Public Works General Fund and from a surcharge on collection rates.

POLICIES

General Utility System

POLICY UT-1. Utilize design and construction standards which are environmentally sensitive, safe, cost-effective, and appropriate.

POLICY UT-2. Manage utility systems effectively in order to provide reliable quality service.

POLICY UT-3. Ensure that the location, type, and size of all public facilities is determined and/or approved by the City.

POLICY UT-4. Defer to the serving utility the right to determine the implementation sequence of utility plan components.

POLICY UT-5. Base the extension and sizing of system components on the land use plan of the area. System capacity will not determine land use.

POLICY UT-6. Design, construct, and maintain facilities to minimize their impact on surrounding neighborhoods.

POLICY UT-7. Encourage the joint use of public facilities.

Discussion: The development of a storm and surface water detention area as passive recreation in a public park is an example of such joint use.

Intergovernmental Relations and Coordination

POLICY UT-8. Own and operate all publicly-owned utility services within the City's boundaries and the utility service area.

Discussion: The City should develop and implement a plan to own and operate all publicly-owned utility systems within the potential annexation areas, unless circumstances otherwise dictate.

POLICY UT-9. Extend water and sewer utility service to unserved areas of the utility service area, including extensions into potential annexation areas, if the City's costs are reimbursed and provided that service will be extended only upon annexation to the City, or if extensions are consistent with local and regional land use and utility comprehensive plans.

POLICY UT-10. Recover all costs, including overhead costs, related to the extension of services, as well as the costs to maintain and operate these systems.

POLICY UT-11. Coordinate with other jurisdictions and governmental entities in the planning and implementation of multi-jurisdictional utility facility additions and improvements.

POLICY UT-12. Coordinate with the appropriate jurisdictions to ensure that utility facilities that are to be constructed in potential annexation areas are designed and built in accord with City of Bellevue standards.

Hazardous Waste

POLICY UT-13. Cooperate with other private and public agencies in the region to manage and control hazardous waste and moderate risk waste, including hazardous household substances.

POLICY UT-14. Educate the public in the proper handling and disposal of hazardous household waste and on the use of alternative products or practices which result in reducing the use and storage of hazardous materials in homes and businesses.

Discussion: Hazardous wastes should be properly disposed of according to procedures and standards set by federal, state, or regional agencies, such as those set forth in the King County-Seattle Local Hazardous Waste Management Plan.

POLICY UT-15. Provide for the safe and convenient disposal of hazardous household waste through a permanent and conveniently-located collection facility for Bellevue residents, to be located in cooperation with King County.

POLICY UT-16. Replace the City's old underground storage tanks with new tanks that reduce the potential for groundwater degradation, as soon as practicable.

Solid Waste

POLICY UT-17. Promote the recycling of solid waste materials by providing opportunities for convenient recycling and by developing educational materials on recycling, composting, and other waste reduction methods.

Discussion: Waste reduction and source separation are the City's preferred strategies for managing solid waste. Materials remaining after effective waste reduction and source separation should be handled in accordance with the King County Solid Waste Plan.

POLICY UT-18. Encourage and actively participate in a uniform, regional approach to solid waste management.

POLICY UT-19. Utilize the public review process in the selection and approval of sites for any disposal facility.

Discussion: In this review, sensitivity to aesthetics, health effects, and environmental conditions should be studied and fully considered.

POLICY UT-20. Maintain a cost-effective and responsive solid waste collection system.

Discussion: In selecting the elements of a solid waste collection system, all the costs and long-term factors such as disposal options, should be considered.

POLICY UT-21. Manage solid waste collection to minimize litter and neighborhood disruption.

POLICY UT-22. Provide uniform collection service to areas annexed to the City as soon as practicable.

Sewer Utility

POLICY UT-23. Require sewer connections for all new development, including single-family plats, unless otherwise approved by a variance process adopted by the Council.

POLICY UT-24. Allow existing single-family homes with septic systems to continue to utilize septic systems, providing there are no health or environmental problems.

Discussion: Homeowners are encouraged to connect to sewer systems where available. If existing septic systems pose health or environmental problems, homeowners should be required to connect to the sewer system if practicable.

POLICY UT-25. Provide a septic system management program to protect the ground water quality.

POLICY UT-26. Educate owners of septic systems on the proper care and use of septic systems.

POLICY UT-27. Work with Metro and adjoining jurisdictions to manage, regulate, and maintain the regional sewer system.

Storm and Surface Water Utility

POLICY UT-28. Manage the storm and surface water system in Bellevue to maintain a hydrologic balance in order to prevent property damage, protect water quality, provide for the safety and enjoyment of citizens, and preserve and enhance habitat and sensitive areas.

POLICY UT-29. Enforce surface water controls to protect surface and ground water quality.

POLICY UT-30. Educate the public on water quality issues.

Water Utility

POLICY UT-31. Provide reliable water service for domestic use, fire flow protection, and emergencies.

POLICY UT-32. Promote conservation and encourage development of conservation devices and programs.

POLICY UT-33. Improve the quality and quantity of the water supply of well-water users by allowing access to the City water system, provided that the fair share costs are paid by the benefitting parties.

POLICY UT-34. Ensure a cost-effective water supply that meets the needs of the City of Bellevue.

Discussion: To accomplish this, the City should participate in and facilitate the development of a regional water supply system that effectively balances regional water resources and regional water supply needs and provides equitable participation in ownership and management.

POLICY UT-35. Serve as a role model for the community in the efficient use of water.

Environmental Element

Goal: To integrate the natural and built environments to create a sustainable urban habitat with clean air and water, habitat for wildlife, and comfortable and secure places for people to live and work.

OVERVIEW

The quality of life in the Pacific Northwest is often equated with the quality of the environment. Preserving the quality of the environment depends on government, corporate, and individual decisions, and coordinated actions to minimize adverse environmental impacts.

As Bellevue grows in size and political importance, urban environmental concerns assume a high priority in public policy. The City leads and supports efforts to protect and improve the environment. Public investment in the urban environment promotes a high quality of life and encourages private investment in the community.

Environmental protection is integrated into the City's philosophy. Bellevue is a leader in the development and implementation of natural determinants legislation, thereby demonstrating that the City's environmental responsibilities are compatible with the other goals and policies of the *Comprehensive Plan*. Through policy and regulation, the City seeks a sustainable urban environment, one in which the community meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainability implies that limitations on the use of the environment are necessary to buffer the effects of human activities. A sustainable urban environment develops in harmony with the ecosystem. A community that embraces the concept of sustainability continually evaluates the relationship between the built and natural environment including: the susceptibility to contamination of its air, water, and soil; the rate at which it consumes resources; the amounts of noise, waste, and emissions it generates; the

open space, wildlife habitat, and recreation opportunities it provides; and its dependency on the automobile.

The Environmental Element provides a policy framework for the protection and improvement of Bellevue's environment, an important element for the development of a sustainable city. The concepts discussed in this element include: **Environmental Stewardship, Water Resources, Earth Resources and Geologic Hazards, Fish and Wildlife Habitat, Air Quality, and Noise.**

Bellevue evaluates the relationships of the many elements of the urban environment in its decision-making processes. The City is committed to the concept of a sustainable urban environment and weighs the merits and costs of its environmental actions with other important demands, such as public safety and recreation, public infrastructure, housing, and economic development. City policies and regulations guide development in environmentally sensitive natural areas such as waterways, floodplains, wetlands, shorelines, and steep slopes. City-owned open space is managed for multiple purposes including air and water quality, fish and wildlife habitat, and recreation. Public information and involvement programs assist residents and businesses in their personal commitment to enhance the quality of the environment.

Bellevue's environmental policies promote the management of water resources within the City such that they remain clean, prevent public health and safety hazards, mitigate property damage, and provide beneficial uses. They also support protecting steep, forested slopes and highly erodible or unstable soils. It is the intent

of these policies to achieve land use and development practices that are compatible with the environment. In essence, development practices should protect rather than destroy the significant natural features of the land.

Bellevue thus prohibits development in waterways, floodplains, wetlands, and in unstable or potentially hazardous areas except where development can be accomplished in a manner which:

- Assures the protection and safety of people and property, public and private;
- Is compatible with the existing natural environment;
- Will not result in significant erosion, sedimentation or siltation, or degradation of waterways, floodplains, and wetlands on site or in downslope or downstream areas;
- Assures long-term slope and soil stability with minimum maintenance; and
- Provides reasonable assurance that future repairs and maintenance will be performed;

Provided that essential public services and infrastructure will be permitted where no feasible alternative exists, in which event the development shall be accomplished with minimum environmental degradation and in a manner that assures the protection and safety of persons and property.

The City does not intend to deny all economic use of any property, however the City is not obligated to guarantee the maximum economic use of any property.

Good air quality and quiet neighborhoods help make Bellevue a liveable city. Air pollution and noise are both local and regional concerns. Automobile traffic is the single, most pervasive threat to good urban air quality and peace and quiet. Yet automobiles are vital to the economy and culture of the region. Air quality implications are significant in transportation planning that involves improving mobility within the City and Region, not by accommodating

more vehicles, but by creating less polluting transportation options. Bellevue's comprehensive noise control ordinance protects neighborhoods from excessive noise and provides multiple enforcement tools. The City supports regional legislation, participates in regional discussions, and enacts local ordinances to ensure that air and noise pollution do not significantly degrade the environment. ♦

Environmental Stewardship

GOAL: To promote a sustainable urban environment by weighing environmental concerns in all decision-making processes.

Of the many roles the City of Bellevue must fulfill, one of its most demanding is that of chief steward of the City's environment. This demand is unique to the City because it has the authority to regulate land use and the responsibility to implement federal and state statutes. Therefore, the City must endeavor, at all times, to ensure that its environment is managed wisely. Through regulations and incentives, the City encourages the preservation, restoration, and improvement of the natural environment.

Bellevue is a leader in its commitment to environmental stewardship. The City encourages all residents and businesses to explore ways to contribute to protecting the environment. The concept of "environment" is as diverse as the members of the community, and the opportunities to protect and enhance the environment are equally diverse. As part of the ongoing effort to minimize its impact on the environment, the City uses energy and other natural resources efficiently and wisely, substitutes more benign substances in place of chemicals damaging to the atmosphere, purchases recycled products, and has adopted a growth management strategy that promotes development within the urban center and encourages nonmotorized transportation and an efficient mass transit system. Businesses can eliminate unnecessary packaging, utilize recycled materials, install energy efficient lighting, or ensure that their operations do not contaminate surface water. Individual commitments to protecting the local

environment include carpooling or taking the bus to work, recycling, and conserving water. Each person has the ability to make a difference.

POLICIES

POLICY EN-1. Consider the immediate and long-range environmental impacts of policy and regulatory decisions and evaluate those impacts in the context of the City's commitment to provide for public safety, infrastructure, economic development, and a compact Urban Center in a sustainable environment.

POLICY EN-2. Conduct City operations in a manner that provides quality municipal services to the community while ensuring resource conservation, promoting an environmentally safe workplace for its employees, and minimizing adverse environmental impacts.

POLICY EN-3. Minimize, and where practicable, eliminate the release of substances into the air, water, and soil that may degrade the quality of these resources or contribute to global atmospheric changes.

POLICY EN-4. Encourage the wise use of renewable natural resources and conserve nonrenewable natural resources.

POLICY EN-5. Reduce waste, reuse and recycle materials, and dispose of all wastes in a safe and responsible manner.

POLICY EN-6. Promote the use of products manufactured from recycled materials.

POLICY EN-7. Promote growth management strategies that protect air, water, land, and energy resources consistent with Bellevue's role in the regional plan to contain an Urban Center.

POLICY EN-8. Provide regional leadership on environmental issues that extend beyond Bellevue's boundaries and require regional cooperation.

POLICY EN-9. Promote and lead education and involvement programs to raise the public awareness about environmental issues, advocate respect for the environment, and demonstrate how individual actions and the cumulative

effects of a community's actions can have significant effects on the environment. ♦

Water Resources

GOAL: To preserve and enhance water resources.

Bellevue's lakes, streams, wetlands, intermittent waterways, and groundwater aquifers are all important natural resources and compose elements of the local hydrologic cycle. Bellevue's surface water is not, however, used as a drinking water source. Open surface water's beneficial uses are, in order of priority:

- a. Habitat and water quality,
- b. Storm water conveyance,
- c. Resource preservation,
- d. Recreation, and
- e. Aesthetics.

Groundwater

Groundwater aquifers are used for supplying water to lakes, wetlands, and streams during the dry season and for a few private wells that supply drinking water.

Rainfall contributes to surface water and the groundwater table. Since Bellevue's climatic pattern includes more rainfall in fall, winter, and spring than in summer, surface waters are naturally lower in summer and higher during the rest of the year.

Land development by its nature cannot avoid changes to this natural hydrologic cycle. The land surface is transformed through clearing, grading, filling, excavation, compaction, covering with impervious surface, construction of conventional pipe drainage systems, and planting ornamental landscaping. All of these activities decrease the land's capacity to absorb and retain water and the groundwater recharge

potential. When this capacity is reduced, surface water runoff increases, causing flooding and erosion. Replacing natural overland and subsurface drainage with conventional pipe systems can cause flooding by hastening the delivery of rainfall into surface waters and can decrease groundwater recharge by limiting the amount of water seeping into the soil. To maintain our aquifers and reduce flooding, groundwater resources should be conserved to the maximum extent possible using the best available technology, except where groundwater creates public safety problems.

The Utilities Element of the *Comprehensive Plan* describes the City's role in protecting ground water resources. Groundwater-related policies in the Utilities Element are related to managing household hazardous waste, replacing underground storage tanks, managing the use of septic systems, and requiring sewer connections for new development.

Flooding

Flooding is also caused when eroded soil from cleared land or unstable slopes reduces the waterway's natural capacity to carry runoff water.

Construction and development activity within the floodplain is particularly damaging. By a combination of reducing the floodway capacity and creating more runoff from development, the floodplain is no longer able to handle water flows. Flooding results, creating property damage, public safety hazards, and destroying aquatic and riparian habitat. However, some land uses such as open space, recreation, and uses of similar intensity may not cause flooding problems when located within the floodplain. Other land uses such as agriculture, horticulture, and activities of similar intensity may cause minor flooding and some water quality problems.

In recognition of this situation, the Federal Flood Insurance Program was created which guarantees protection for lands in flood hazard areas if certain eligibility requirements are met. The standard set by this program is for preservation of the 100-year floodplain. The 100-year floodplain is the area of land flooded by a storm

which has a 1 percent probability of occurring in any year. Numerous small floodplains exist in areas of Bellevue, such as: along Coal Creek west of I-405; Kelsey Creek through the Lake Hills Greenbelt, Glendale Golf Course, and Kelsey Creek Park; Valley Creek near Highland Park; and Richards Valley.

Under this program some floodplain development is allowed such as streets, parking lots, buildings on piling, some filling of the floodplain, and channelization of streams. These practices have resulted in public hazards due to flooded streets, parking lots, and buildings located in the floodplain; increases in stream velocities causing erosion, scouring and sedimentation; property damage and the destruction of aquatic and riparian habitat. Predicted changes to the floodplain and its ramifications as a result of floodplain development are imperfect and there may be substantial public risk in approving such developments. The public cost of correcting problems resulting from these uses is demonstrated in the City's Comprehensive Drainage Plan and Capital Investment Program Plan. Some land uses such as open space, recreational, agricultural, or horticultural activities may not cause problems to such a high degree. Given Bellevue's numerous storms and floodplains, the City needs to regulate land uses and land alteration activities to minimize this potential for flooding and to protect water quality.

Water Quality

Water quality also changes as a result of land activities. Good water quality deteriorates when pollutants, such as sediment, nutrients, organic material, and toxicants, are either dumped or discharged directly into the surface water or washed in by runoff. Direct dumping or discharge is caused by improper disposal of waste materials. Contaminants from land use activities and traffic are washed off impervious surfaces. In addition, rainfall carries pollutants from the air. Groundwater can become contaminated when polluted surface water percolates through the soil.

Polluted water reduces the number of uses of the resource, causes public health hazards,

destroys aquatic and riparian habitat, and detracts from its aesthetic appeal.

Control of pollutants at their source is the first and best method of prevention of water quality problems. Other water pollution control measures may be needed when source controls fail or cannot achieve the desired water quality. Reducing nonpoint source pollution, the contaminated runoff from land surfaces, remains a major goal that involves the entire community. Each individual and business is a potential contributor of small amounts of pollution including: herbicides, pesticides and fertilizers; oil and grease; and hazardous materials like paints and solvents. Because of the diverse and diffuse sources of pollutants, the public must be involved in efforts to reduce non-point source pollution.

Regulations

Limitations and conditions on land activities can minimize the effect of development on Bellevue's lakes, streams, wetlands, intermittent waterways, and groundwater resources.

Land use regulations could include measures which identify areas not suitable for development and controls on development such as lot coverage, density, location of uses, vegetation preservation, and replanting with appropriate vegetation. During construction, preventative measures to reduce erosion, flooding, and sedimentation should be considered such as erosion and runoff control techniques, water treatment, and revegetation.

All of these measures are of a mitigative and preventive nature. The best available technology should be utilized to mitigate or control drainage or water quality problems.

Engineered designs should improve the effectiveness of natural systems rather than negate, replace, or ignore them. Technological solutions should emphasize the use of nonstructural or natural engineering approaches. These approaches should be consistent with natural resources and processes and preserve and enhance the natural features of Bellevue.

POLICIES

POLICY EN-10. Retain existing open surface water systems in a natural state and rehabilitate degraded conditions.

POLICY EN-11. Maintain good surface water quality as defined by federal and state standards and rehabilitate degraded surface water.

POLICY EN-12. Restore and protect the biological health and diversity of the Puget Sound Basin including the Lake Washington and Lake Sammamish watersheds in Bellevue's jurisdiction.

POLICY EN-13. Restrict the runoff rate, volume, and quality to predevelopment levels for all new development and redevelopment.

POLICY EN-14. Preserve and maintain the 100-year floodplain in a natural state.

POLICY EN-15. Preserve and maintain wetlands in a natural state.

POLICY EN-16. Preserve aquatic and riparian habitats in a natural state and rehabilitate similar areas that have been degraded.

POLICY EN-17. Conserve groundwater resources.

POLICY EN-18. Allow farming and agriculture in wetlands and in the 100-year floodplain so long as water quality is not substantially impacted.

Earth Resources and Geologic Hazards

GOAL: To preserve and enhance vegetation and earth resources.

Bellevue's natural environment is composed of a wide variety of land forms, soils, water courses, and vegetation. The City's terrain ranges from steep hills and ridgelines to flat valleys and floodplains. Soil types vary from peat and loam

in the lowlands to sand, gravel, and till in the uplands. Some unstable soils are located in wetlands and on steep slopes. Numerous lakes, streams, and wetlands, are found throughout the City.

Native vegetation ranges from that associated with wetlands to that associated with uplands. This diverse vegetative habitat supports a wide range of wildlife which is compatible with our urban and suburban character. These topographical, geological, hydrological, and vegetational characteristics combine to produce an environment that in some areas of the city is compatible with development of varying intensities and, in other areas of the city, is not compatible with development.

Construction and development activities alter the natural environment. The impact of construction is less in areas where the environment is compatible with development. Land use and development activities need to be regulated to protect in order of priority:

- a. Public health, safety, and welfare; and
- b. Natural features such as soil, steep slopes, and existing vegetation.

The preservation of many of Bellevue's steep slopes, forest-covered hillsides and ravines, open meadows, and other unique and scenic natural features should be assured through the appropriate management of development. It is the intent of these policies to achieve land use and development practices that are compatible with Bellevue's variety of environments. These development practices should protect, rather than overcome, natural features of the land.

A second intent of these policies is to identify both unstable and potentially hazardous areas in which development should be restricted and, in appropriate cases, development may be prohibited. Consideration should be given to creative solutions such as on-site density credit for sensitive areas where development may be prohibited and in other appropriate circumstances.

Soils and Slopes

Bellevue can be divided into various land management categories based on slopes, geological materials, and soils.

The first category includes land that is suitable for most types of development. Slopes are generally less than 15 percent. These slopes are stable, although slides may occasionally occur under special conditions such as prolonged periods of intense rainfall. Common underlying geologic materials are till and outwash. Alderwood, Everett, Ragnau, and Indianola soils are found throughout the area. Development in this area poses the lowest risk of public health and safety problems, environmental destruction, and property damage. Development regulations should concentrate on preventing soil erosion, unnecessary removal of vegetation, and preserving natural features and visual amenities. Important exceptions to this category are areas with less than 15 percent slope underlain by fine to medium grain materials. These areas do not generally support foundations or heavy loads and become unstable when saturated or subjected to earthquake. Development in these areas should be severely restricted or, in some cases, prohibited.

The second category includes land that may have certain hazards associated with it if developed. Slopes vary from less than 15 percent to 40 percent. The degree of development hazard depends upon the type of underlying geologic material. Areas underlain by sand, gravel, and till are relatively more stable than areas underlain by silt and clay. Alderwood, Kitsap, Norma, Seattle, and Snohomish are some of the soils located in this area. Localized areas of high water tables are also found here. Development in this area may need to be limited or, in some cases, prohibited because of risk to public safety and health, the environment, and property. Development regulations should include special engineering studies detailing the problems of developing the site and surrounding area, site design requirements, and erosion control measures.

The third management category includes land where natural disruptions are highly probable under most circumstances. Slopes are generally

greater than 40 percent and may be unstable. Many of the slopes are associated with special underlying geologic materials such as permeable materials overlying less permeable materials. Springs and seepages from groundwater tables located near the slope surface are common. Alderwood and Everett soils predominate. Development in this area is generally prohibited because of high risks of landslides, uneven settlement, and property damage.

Engineering solutions to environmental constraints in this land management category may be extremely costly and are not always effective. Engineering solutions cannot predict with 100 percent accuracy the long-range problems caused by developing the land. Therefore, the burden to establish adequate long-term safety measures must be on the property owner rather than the public.

Clearing and Grading

Land alterations for other than approved development proposals are prohibited within the City. When land is cleared without being tied to a specific development proposal, several problems can occur. Soil is lost from the site by erosion, landslides and slumps can occur, and vegetation and wildlife habitat are destroyed. Property surrounding the cleared land can be adversely affected by these problems. The costs, both on-site and off-site, to clean up this environmental damage can be quite large and are generally borne by the public. Additionally, more indirect adverse impacts can occur due to the inability to review or limit clearing in conjunction with a specific site design. With a definite proposal, grading can be restricted to the minimum required. Construction and development activities alter the natural environment, destroy wildlife habitat, decrease natural amenities, and expose soil to erosion. Wildlife habitat is destroyed by removing vegetation, compacting soil, and filling in waterways. When wildlife habitat is destroyed, the number of species living in the area declines.

Vegetation in Bellevue is an important element of soil stability and the natural drainage system, as well as a visual amenity. The removal of vegetation emphasizes the effect of urban development. Vegetation removal may also lead

to erosion. Erosion causes property damage on-site through loss of topsoil and by depositing sediment on downstream properties and in waterways. This reduction in the natural capacity of waterways may cause flooding. Seasonally heavy rainfall in winter accelerates the erosion process. Delta formations due to sediment-laden stormwater have become a serious and costly problem in Lake Sammamish and Lake Washington.

Limitations and conditions on land use activities can limit adverse effects on the environment. Land use regulations which control development can reduce erosion, settlement, landslides, and property damage and preserve important natural features and amenities. Such regulations include limiting lot coverage and density, requiring special engineering attention on steep slopes, limiting the amount of vegetation removed, and restricting construction activities based on weather or site conditions.

During construction measures such as erosion control techniques and revegetation are also needed to reduce erosion, settlement, landslides, and property damage and to preserve wildlife habitat. All of these measures are of a mitigative and preventive nature. The best available technology should be used for construction and for control of erosion.

Coal Mine Hazards

Some areas of the City in the Newcastle Subarea are potentially impacted by past coal mining practices. Abandoned coal mines consist of underground voids which can cause the ground surface to subside. Mine openings, waste dumps, fire hazards, and underground gases pose other risks. The hazards can be categorized as either catastrophic or generally noncatastrophic. Catastrophic risks could include ground openings and very localized subsidence. Subsidence that occurs over a large area can cause usually non-catastrophic problems such as foundation cracks, roadway failures, and separation of utility pipes.

POLICIES

POLICY EN-19. Regulate land use and development in a manner which protects natural topographic, geologic, vegetational, and hydrological features.

POLICY EN-20. Promote soil stability and the use of the natural drainage system by retaining critical native areas of existing native vegetation.

POLICY EN-21. Preserve existing vegetation or provide or enhance vegetation that is compatible with the natural character of Bellevue.

POLICY EN-22. Prohibit development on unstable land and restrict development on potentially unstable land to ensure public safety and conformity with natural constraints.

POLICY EN-23. Minimize and control soil erosion during and after construction through the use of the best available technology and other development restrictions.

POLICY EN-24. Allow land alteration only for approved development proposals.

POLICY EN-25. Regulate development in coal mine hazard areas by requiring that a project proponent (with review, oversight, and approval by the City):

- Conservatively evaluate risks,
- Eliminate the potential for catastrophic effects and keep development out of catastrophic risk areas,
- Mitigate any noncatastrophic impacts,
- Protect ratepayers from costs associated with development in areas potentially impacted by mining, and
- Provide disclosure mechanisms to inform property purchasers of past mining activities.

Fish and Wildlife Habitat

GOAL: To provide fish and wildlife habitat of sufficient diversity and abundance to sustain existing indigenous wildlife populations.

This section provides the guidelines for preserving fish and wildlife habitat, on both public and private lands.

Bellevue's fish and wildlife habitat exists primarily in the open space and surface water network managed by the City. The Parks, Open Space, and Recreation Element of the *Comprehensive Plan* and the Park and Open Space System Plan discuss the City's policies and strategies for preserving open space for wildlife habitat.

Significant habitat also exists in aquatic, wetland, and riparian areas and on steep slopes that are privately owned but protected by development regulations. Linking public and private natural areas can provide food, shelter, and migration corridors for a healthy and sustainable population of salmon, songbirds, and other species that are compatible with the urban environment.

Urban landscapes are valuable supplements to natural areas in providing habitat for a wide variety of wildlife. The loss of natural wildlife habitat to urban development can be partially offset by landscaping that includes a variety of native plants that provide food and shelter for wildlife. Native plants are generally well adapted to the soils and climate of the area and many species can flourish without much watering or fertilization.

POLICIES

POLICY EN-26. Manage aquatic and riparian (streamside) habitats to preserve and enhance their natural functions of providing fish and wildlife habitat and protecting water quality.

POLICY EN-27. Preserve and enhance native vegetation in riparian habitats and integrate suitable native plants in urban landscape development.

POLICY EN-28. Encourage residents and professional landscaping firms to utilize native plants in residential and commercial landscapes.

POLICY EN-29. Protect wildlife corridors in subdivisions, plats, and City projects.

GLOSSARY

Acre-feet: A unit for measuring the volume of water, equal to the quantity of water required to cover 1 acre to a depth of 1 foot and equal to 43,560 cubic feet or 325,851 gallons.

Algae: Primitive plants, many microscopic, containing chlorophyll. Some species may create a nuisance when environmental conditions are suitable for prolific growth.

Aerator: An apparatus to supply or impregnate with air. In water treatment, this is used to foster biological and chemical purification.

APWA: American Public Works Association.

Basin Plan: A plan and all implementing regulations and procedures including but not limited to land use management adopted by ordinance for managing surface and storm water quality and quantity facilities and features within individual subbasins.

BAT: Best Available Technology.

BCC: Bellevue City Code.

Biofiltration: The process of reducing pollutant concentrations in water by filtering the polluted water through biological materials.

BMP: Best Management Practice. Physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution of water.

BPT: Best Practicable Technology.

BURP: Bellevue Urban Runoff Program.

Bypass-pipe system: A piping system that is used to divert the peak stormwater runoff around an existing facility which has limited capacity. Normal flows will remain in the existing channel or pipe.

CAR: Customer Action Request.

Catch basin: A basin combined with a storm-drain inlet to trap solids.

CDP: Comprehensive Drainage Plan.

cfs: Cubic feet per second.

GLOSSARY

Channel: (1) a natural or artificial watercourse of perceptible extent which periodically or continuously contains moving water or which forms a connecting link between two bodies of water. It has a definite bed and banks which serve to confine the water. (2) The deep portion of a river or waterway which is used by watercraft.

CIP: Capital Investment Program.

Class AA: A general water use and criteria class specified in WAC 173-201A-030.

Clean Water Act: Federal legislation with the objective of restoring and maintaining the chemical, physical and biological integrity of the Nation's Waters.

CMP: Corrugated metal pipe.

Computer modeling: The use of a computer to determine the effect of a particular rainfall storm on a particular drainage system.

Constructed wetlands: Those wetlands intentionally created on sites that are not wetlands, for the primary purpose of wastewater or stormwater treatment and managed as such. Constructed wetlands are normally considered as part of the stormwater collection and treatment system.

Conveyance system: A system of drainage elements, ditches, gutters, pipes, culverts, drains, channels and lakes which, in combination, carry water from headwaters to receiving waters.

Culverts: A man-made system that allows water to go under a road or landfill.

cy: Cubic yard(s).

Delta: Sediments deposited at the mouth of a stream or drainage system when the flow velocity is checked by a larger river, lake, or ocean.

Design storm: A prescribed hyetograph and total precipitation amount (for a specific duration recurrence frequency) used to estimate runoff for a hypothetical storm of interest or concern for the purpose of analyzing existing drainage, designing new drainage facilities or assessing other impacts of a proposed project on the flow of surface water. (A hyetograph is a graph of percentages of total precipitation for a series of time steps representing the total time during which the precipitation occurs.)

Detention: The release of stormwater runoff from a site at a slower rate than it is collected by the stormwater facility system, the difference being held in temporary storage.

GLOSSARY

Direct runoff: Surface runoff and a substantial portion of interflow entering the storm drainage system during and/or immediately after a rainfall.

Discharge: Outflow; the flow of a stream, canal, pipeline, culvert or aquifer. One may also speak of the discharge of a canal or stream into a lake, river, or ocean. (Hydraulics) Rate of flow, specifically fluid flow; a volume of fluid passing a point per unit of time, commonly expressed as cubic feet per second, cubic meters per second, gallons per minute, gallons per day, or millions of gallons per day.

DMP: Drainage Master Plan, prepared in 1976 by KCM.

DOE: Washington State Department of Ecology.

Drainage: Refers to the collection, conveyance, containment, and/or discharge of surface and storm water runoff.

Drainage area: (1) The contributing area of a single drainage basin, expressed in acres, square miles or other unit of area, Also called watershed or basin. (2) The area served by a drainage system receiving storm and surface water or by a watercourse.

Easement: The legal right to use a parcel of land for a particular purpose. It does not include fee ownership, but may restrict the owners use of the land.

EPA: Environmental Protection Agency. A federal agency which administers many federal environmental laws. Region X, which includes Puget Sound, is headquartered in Seattle.

Erosion: The wearing away of the land surface by running water, wind, ice, or other geologic agents.

Flood: Water from a river, stream, watercourse, lake or other body of standing water that temporarily overflows or inundates adjacent lands and which may affect other lands and activities through stage elevation, backwater and/or increased groundwater levels.

Flood control: The elimination or reduction of flood losses by the construction of flood storage reservoirs, channel improvements, dikes and levees, bypass channels, or other engineering works.

Flood fringe: That portion of the floodplain outside of the floodway which is covered by floodwaters during the base flood; it is generally associated with standing water rather than rapidly flowing water.

Floodplain: The total area subject to inundation by the base flood including the flood fringe and the floodway.

Floodplain regulations: A general term applied to the full range of codes, ordinances and other regulations relating to the use of land and construction as influenced by water. The term also encompasses zoning ordinances, subdivision regulations, building and housing codes, encroachment line statutes, open-area regulations, and other similar methods of control affecting the use and development of the area.

Floodway: That portion of the regulatory area required for the reasonable passage or conveyance of the design flood. This is the area of significant depths and velocities, and due consideration should be given to effects of fill, loss of cross-sectional flow areas, and resulting increased water-surface elevations.

Frequency: The number of repetitions of a periodic process in a unit period of time.

Groundwater: Water in the ground that is within a saturated zone.

Habitat: The specific area or environment in which a particular type of plant or animal lives. An organism's habitat must provide all of the basic requirements for life and should be free of harmful contaminants. Puget Sound habitats includes streams, lakes, beaches, marshes, shorelines, mudflats, the water itself, etc.

Heavy metals: Metals of high specific gravity, present in municipal and industrial wastes, that pose long-term environmental hazards. Such metals include cadmium, chromium, cobalt, copper, lead, mercury, nickel, and zinc.

Hydraulics: A branch of science that deals with practical applications of the mechanics of water movement.

Hydrograph: A curve obtained by plotting discharge verses time that results from a particular rain storm.

Hydrologic cycle: The circuit of water movement from the atmosphere to the earth and return to the atmosphere through various stages or processes as precipitation, interception, runoff, infiltration, percolation, storage, evaporation, and transpiration.

Illicit discharge: All non-stormwater discharges to stormwater drainage systems that cause or contribute to a violation of state water quality, sediment quality or groundwater quality standards, including but not limited to sanitary sewer connections, industrial process water, interior floor drains, car washing and greywater systems.

Impervious surfaces: Man-made or natural surface conditions that do not permit rainfall to soak into the ground.

GLOSSARY

Infiltration: The entering of water through the interstices or pores of a soil or other porous medium.

In-Stream storage: Storage ponds which are physically built in the channel area. This is in contrast to storage which is not physically in the main channel of a drainage system.

Invert: The bottom or lowest portion of the internal cross section of a conduit. Used particularly with reference to sewers and drains.

LID: Local Improvement District

Metals: See heavy metals.

METRO: Municipality of Metropolitan Seattle.

MMP: Major Maintenance Program.

NEP: Neighborhood Enhancement Program.

Non-Structural control: Includes runoff control, land-use measures, modifications, and flood-plain zoning.

NPDES: National Pollutant Discharge Elimination System. Part of the Federal Clean Water Act, which requires point source dischargers to obtain permits. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington State Department of Ecology.

NURP: National Urban Runoff Program.

Nutrients: Essential chemicals (e.g. nitrogen, phosphorus) needed by plants or animals for growth. Excessive amounts of nutrients can lead to degradation of water quality and the growth of excessive numbers of algae. Some nutrients can be toxic at high concentrations.

O&M: Operations and Maintenance.

Pervious surfaces: Surface conditions that permit rainfall to soak onto the ground.

Plat: A map or representation of a subdivision showing the division of a tract or parcel of land into lots, blocks, streets, or other divisions and dedications.

PMI: Private Maintenance and Inspection program.

GLOSSARY

Puget Sound Water Quality Authority: Body created in 1985 by the Washington State legislature to adopt and oversee implementation of a comprehensive strategy to protect Puget Sound.

Rate of runoff: Runoff volume and rate expressed in cubic feet per second, gallons per minute, etc.

RCP: Reinforced concrete pipe.

Receiving water: Main body of water receiving flow from tributary creeks and streams; for example, Lake Sammamish, Lake Washington and Puget Sound.

Recurrence: To occur again after an interval.

Regional detention facility: A stormwater quantity control structure designed to correct existing excess surface water runoff problems of a basin or subbasin. The area downstream has been previously identified as having existing or predicted significant and regional flooding and/or erosion problems.

Release rate: The computed peak rate of surface and stormwater runoff for a particular design storm event and drainage area conditions.

Riparian corridor: A perennial or intermittent water body its lower banks and upper banks, and the vegetation that stabilizes the slopes, protects the waterway from erosion and sedimentation, provides cover and shade, and maintains the fish and wildlife habitat.

Riprap: Armor-plating materials consisting of either rock or sand bags filled with sand and cement that are used to prevent erosion.

Runoff: That part of precipitation which reaches a stream, drain, sewer, etc. directly or indirectly.

Runoff control: Physical devices which are used to limit runoff from an area.

Scour: Erosion of channel banks and bed due to excessive velocity of the flow of surface water and stormwater runoff.

Sediment: Fragmented material that originates from weathering and erosion of rocks or unconsolidated deposits, and is transported by, suspended in, or deposited by water. Certain contaminants tend to collect on and adhere to sediment particles.

Sedimentation: The depositing or formation of sediment.

GLOSSARY

SEPA: State Environmental Policy Act. The Washington State law intended to minimize environmental impacts.

Siltation: The process by which a river, lake or other water body becomes clogged with sediment. Silt can clog gravel beds and prevent successful salmon spawning.

Source control: Refers to control of runoff waters before they enter the public storm water conveyance system.

Source control BMP: A BMP that is intended to prevent pollutants from entering stormwater. A few examples of source control BMPs are erosion control practices, maintenance of stormwater facilities, constructing roofs over storage and working areas, and directing wash water and similar discharges to the sanitary sewer or a dead end sump.

Sphere of influence: The sphere of influence line is based on an agreement between the cities of Bellevue, Renton, and Issaquah; the area between the Bellevue City limits and its sphere of influence boundary is known as the potential annexation area.

Storage: Water artificially impounded in surface or underground reservoirs for future release.

Storm: A disturbance of the ordinary average conditions of the atmosphere, which may include any or all disturbances such as wind, rain, snow, hail, or thunder.

Storm, 10-year: A rainfall storm that has a probability of occurrence on an average of once every 10 years.

Storm, 100-year: A rainfall storm that has a probability of occurrence on an average of once every 100 years.

Storm drain: A closed conduit for conducting stormwater that has been collected by inlets or collected by other means. The various parts of a drainage system are defined as follows:

1. **Lateral (Collection) Storm Drain.** A drain that has inlets connected to it but has no other storm drain connected.
2. **Trunk (Main) Storm Drain.** A drain which receives the discharge from several laterals and generally serves a relatively large area, and may or may not have inlet connections.
3. **Outfall Storm Drain:** A drain which receives the runoff from a collecting system—such system being lateral or trunk storm drains, as are required—and carries such runoff to a point of final discharge.

GLOSSARY

Stormwater: That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, channels or pipes into a defined surface water channel, or constructed infiltration facility.

Structural control measures: Includes placement of pipes, channel resizing, streambank protection and detention ponds to control runoff later.

Surface runoff: That part of the runoff which travels over the soil surface to the nearest stream channel or conveyance system element.

Surface water: Water on the surface of the earth.

Suspended solids: Particles of organic and inorganic matter suspended in water. Toxicants may adhere to solid particles which can intensify chemical pollution problems.

Topography: General term to include characteristics of the ground surface such as plains, hills, mountains; degree of relief, steepness of slopes, and other physical features.

TMDLs: Total Maximum Daily Loads; a tool for implementing State water quality standards, based on the relationship between pollution sources and in-stream water quality conditions.

Treatment: Chemical, biological, or mechanical procedures applied to an industrial or municipal discharge or to other sources of contamination to remove, reduce or neutralize contaminants.

Turbidity: Dispersion or scattering of light in a liquid, caused by suspended solids and other factors; commonly used as a measure of suspended solids in a liquid. High levels of turbidity over extended periods are harmful to aquatic life.

Type A stream: Stream within a Type A riparian corridor as defined in the City of Bellevue Land Use Code.

Type B stream: Stream contained within a Type B riparian corridor as defined in the City of Bellevue Land Use Code.

ULID: Utility Sponsored Local Improvement District.

Watercourse: A channel in which a flow of water occurs either continuously or intermittently, and if the latter, with some degree of regularity. Such flow must be in a definite direction. Watercourses may be either natural or artificial, and the former may occur either on the surface or underground.

GLOSSARY

1. **Artificial:** A surface watercourse constructed or modified by human agencies, usually referred to as a channel or ditch.
2. **Natural:** A surface watercourse created by natural agencies and conditions.

Water Quality: A term used to describe the chemical, physical and biological characteristics of water, usually in respect to its suitability for a particular purpose.

Watershed: The geographic region in which all the surface water flows toward a particular river or other body of water.

Wetlands: Those sensitive areas transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered with water. As defined in the City of Bellevue Sensitive Area Notebook a wetland must have one or more of the following attributes:

1. At least periodically, the land supports predominantly hydrophytes.
2. The substrate is predominantly undrained hydric soil.
3. The substrate is non-soil and is saturated by water or covered shallow water at some time during the growing season each year.

Wetponds: Drainage facilities for water quality treatment that contain permanent pools of water that are filled during the initial runoff from a storm event. They are designed to optimize water quality by providing retention time in order to settle out particles of fine sediment to which pollutants such as heavy metals absorb, and to allow biologic activity to occur that metabolizes nutrients and organic pollutants.

REFERENCES

Bellevue Urban Runoff Program - Summary Report, Pam Bissonnette and Robert Pitt, 1984.

City of Bellevue Drainage Master Plan, KCM-WRE/YTO, 1976.

City of Bellevue Draft Environmental Impact Statement for the Storm and Surface Water Drainage Master Plan, 1979.

Coal Creek Basin Plan and Final Environmental Impact Statement, City of Bellevue and King County, Washington, April 6, 1987.

Meydenbauer Basin Drainage Study, Bellevue, Washington, Kramer, Chin & Mayo, Inc., 1980.

Stormwater Management Manual for the Puget Sound Basin, Washington State Department of Ecology, February, 1992

Stream Ecology Study: An Interdisciplinary Watershed Study of Kelsey and Coal Creeks, King County, Washington, 1971.

Data Collected by the U.S. Geological Survey During a Study of Urban Runoff in Bellevue, Washington, 1979-82, U.S. Geological Survey, Open-File Report 84-064, 1985.

City of Bellevue Comprehensive Plan

1988 Comprehensive Drainage Plan

CITY-WIDE PROJECT LIST

Score	CDP#	Project Title	Basin	Problem	Est. Cost
190	320	Meydenbauer Outfal Maint.	MEY	3	\$428,000
130	232	Northup Way Pipeline	WIL	1	148,000
125	330	Sunset Cr. Flood Hazard Reduct.	SUN	1	369,000
110	018	Sammamish Pipeline #1	ROS	4	66,000
110	306	Bock Gabion Wall Repair	KEL	2	80,000
105	017	Sammamish Pipeline #2	ROS	4	52,000
105	233	136th Ave. NE Channel Impr.	KEL	1	995,000
95	355	Coal Creek Pkwy Outfall #2	COA	2	30,000
90	136	Espana Pipeline Improvements	KEL	1	1,543,000
90	304	Bel-Red Rd. Manhole Repl.	WES	2	69,000
85	104	SE 32nd St. Detention Fac.	RIC	1	958,000
85	318	Meydenbauer Basin NP Pollution	MEY	3	2,000,000
85	319	Meydenbauer Cr. Erosion Contrl.	MEY	4	136,000
80	026	Northup Detention Facility	YAR	1	750,000
80	101	Kamber Rd. Detention Fac.	RIC	1	370,000
80	312	Kelsey Cr. Fishway Reconstr.	KEL	5	115,000
80	313	Lake Heights Catchbasin Repl.	NEW	2	102,000
80	329	Rosemont Beach SD Improvement	ROS	1	141,000
80	370	NE 8th St. SD Impr. @ Midlakes	STU	2	185,000
80	371	Meydenbauer Cr. Channel Impr.	MEY	1	320,000
75	203	NE 46th St. Detention Site	VAL	1	260,000
75	349	118th Ave. SE Culvert Repl. #2	MER	1	30,000
70	028	Lower Yarrow Detention Site	YAR	1	400,000
70	029	Middle Yarrow Detention Site	YAR	1	300,000
70	308	Coal Cr. Pkwy Outfall #1	COA	1	251,000
70	310	Highland Drive RLC	COA	6	108,000
70	311	Whispering Heights RLC	VAS	6	82,000
70	314	Lake Heights RLC	COA	6	56,000
70	315	Lake Heights Street SD Impr.	NEW	2	80,000
70	325	Richards Cr. - E Trib Ero Cntrl.	ERIC	4	80,000
70	328	SE 48th St. Culvert Modificat.	NEW	2	30,000
70	331	Middle Sunset Cr. Erosion Cntrl.	SUN	4	100,000
70	332	Upper Vasa Cr. Erosion Control	VAS	4	372,000
70	347	Upper Richards Cr. Erosion Control	RIC	1	314,000
70	348	Lower Sunset Cr. Channel Impr.	SUN	1	200,000
70	364	107th Ave. NE SD Improvements	MEY	1	120,000
65	215	Sears Cr. Culvert Repl.	SEA	1	65,000
65	220	Spring Hills Ravine	YAR	4	53,000
65	316	Aero Pipeline Replacement	STU	2	30,000
65	342	NE 28th St. Pipeline Repl.	WES	2	50,000
65	363	Main St. SD Repairs	MEY	6	195,000
60	149	Larsen Lk. Stream Open Channel	KEL	5	955,000
60	228	Larsen Lk. Outfall Cnnl. Dredg.	KEL	1	350,000

60	247	Bellevue Way NE Pipeline Ext.	MEY	1	400,000
60	301	110th Place SE SD Improvements	MER	1	95,000
60	302	149th Ave. SE SD Improvements	KEL	1	50,000
60	317	Lower Coal Cr. Bank Stabiliz.	COA	4	570,000
60	335	NE 16th St. SD Improvements	KEL	1	60,000
60	336	108th Ave. NE Pipeline Repl.	YAR	2	65,000
60	337	SE 46th Way Pipeline Repl.	LEW	2	30,000
60	338	156th Ave. NE Pipeline Repl.	KEL	2	25,000
60	339	NE 9th St. Pipeline Repl.	ROS	2	10,000
60	340	132nd Ave. NE Pipeline Repl.	WES	2	200,000
60	341	130th Ave. NE Pipeline Repl.	WES	2	165,000
60	343	NE 2nd St. Pipeline Repl.	STU	2	20,000
60	353	100th Ave. NE SD Impr.	MEY	1	260,000
55	303	Bel-Red Rd. Pipeline Repl.	SEA	2	200,000
55	321	NE 27th St. Pipeline Repl.	ROS	2	100,000
55	333	Parkridge Rd. SD Improvement	BEA	4	50,000
50	045	South of Main Pipeline	MEY	1	600,000
50	217	Upper Valley Cr. Channel Impr.	VAL	1	16,000
50	300	123rd Ave. SE SD Improvements	COA	1	60,000
50	322	NE 33rd St. SD Improvements	YAR	1	72,000
50	326	SE 17th Pl. Culvert Repl.	PHA	1	30,000
50	334	Lakehurst Creek Bank Stabiliz.	LAK	4	150,000
45	305	Bellevue Realty Add. SD Impr.	MEY	2	45,000
45	345	Main St. Regional Detent. Fac.	KEL	1	400,000
40	307	Coal Cr. Habitat Improvements	COA	5	75,000
40	324	NE 8th Street SD Impr.	MEY	1	300,000
40	327	SE 45th Pl. SD Repair	LAK	4	30,000
40	356	SE 30th Street SD Impr.	VAL	1	34,000
35	213	Chelsea Park SD Impr.	VAL	1	300,000
35	309	156th Ave. SE Pipeline	KEL	1	625,000
35	350	Ne 17th St. Pipeline	MEY	1	260,000
35	351	Bellevue Wy SE Pipeline	MEY	1	100,000
35	352	NE 1st St. SD Impr.	MEY	1	50,000
35	359	100th Ave. NE SD Impr. #2	MEY	1	100,000
35	360	NE 20th Pl. SD Impr.	MEY	1	50,000
35	365	NE 12th St. SD Impr.	MEY	1	100,000
30	344	148th Ave. SE Channel Impr.	KEL	1	80,000
30	346	Main St. Channel Improvements	KEL	1	508,000
30	358	1-2nd Ave. NE SD Improvements	MEY	1	200,000
30	361	NE 19th Pl. SD Impr.	MEY	1	33,000
30	362	NE 23rd Street SD Impr.	MEY	1	195,000
10	214	Parkshire/Kapella SD Impr.	VAL	1	125,000

CITY-WIDE TOTALS

85 projects @ \$20,175,000

LEGEND

No.	Category
1	Flood Hazard
2	Drainage System Rehab/Repair
3	Non-point Source Pollution
4	Erosion/Sedimentation
5	Resource/Habitat Management

Printed on Recycled Paper

