

MOTION NO. 8473

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A MOTION authorizing an interlocal agreement between King County and the City of Normandy Park to cooperate in the development of a flood control management plan for the Normandy Creek area of Normandy Park and unincorporated King County.

WHEREAS, the City of Normandy Park and King County share jurisdiction in the area of the Miller Creek drainage basin known as the Normandy Creek drainage sub-basin, and

WHEREAS, King County and Normandy Park have a mutual interest in improving the drainage conditions in the Normandy Creek area,

WHEREAS, Normandy Park has received a Washington State Department of Ecology Flood Control Assistance Account Program Grant to conduct a study of the area of Normandy Creek within the city limits, and

WHEREAS, by participating in the study, King County can gain valuable information about drainage problems and proposed solutions in the unincorporated area of the basin, and

WHEREAS, study results will be a timely addition to the Miller, Salmon and Seola Creek basin plans that King County plans to begin in 1992, and

WHEREAS, the parties recognize that by cooperating in the development of solutions to drainage and flooding problems, they can achieve better results and more effectively serve the public,

NOW THEREFORE, BE IT MOVED by the Council of King County:

The county executive is hereby authorized to enter into an interlocal agreement in substantially the same form as the attached with the City of Normandy Park for the development of a flood control management plan in the Normandy Creek drainage sub-basin located in the City and unincorporated King County.

PASSED this 23rd day of December, 1991.

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

Lois North
Chair

ATTEST:

Donald A. Peterson
Clerk of the Council

AGREEMENT BETWEEN KING COUNTY AND THE CITY OF NORMANDY PARK
FOR PREPARATION OF A FLOOD CONTROL MANAGEMENT PLAN
FOR THE MILLER AND WALKER CREEK BASINS

8473

1 This agreement is entered into between the City of Normandy Park, a
2 municipal corporation of the State of Washington, hereinafter called
3 "Normandy Park", and King County, also a municipal corporation of the State
4 of Washington, hereinafter called "King County" for the purpose of
5 preparing a flood control management plan for Normandy Park and selected
6 areas of the upper Normandy Creek, Walker Creek and Miller Creek basins
7 within King County, hereinafter called "the Basins."

8 WHEREAS, Normandy Park has experienced local flooding, erosion,
9 degradation of water quality and other drainage problems, and

10 WHEREAS, Normandy Park applied for and received a grant from the
11 Washington State Department of Ecology to prepare a Comprehensive Flood
12 Control Management Plan for the Basins; and

13 WHEREAS, King County has a long standing interest in the stream basins
14 in the Normandy Park area; and

15 WHEREAS, King County plans to prepare a comprehensive basin plan in
16 the Miller Creek area; and

17 WHEREAS, completion of the Normandy Park flood control management plan
18 offers an opportunity for King County to participate and gain valuable
19 information for addition to the future basin plan; and

20 WHEREAS, opportunity for cooperative planning allows the development
21 of coordinated solutions for the drainage problems in the area; and

22 WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, the
23 parties are each authorized to enter into an agreement for cooperative
24 action;

25 NOW THEREFORE, in exchange for mutual promises, the parties hereto
26 agree as follows:

27 I. Purpose of the Agreement:

28 The purpose of this agreement is to provide a means for King County to
29 cooperate in the preparation of a comprehensive flood control management
30 plan in the Basins located in the City of Normandy Park and unincorporated
31 King County, according to the Scope of Work attached to this agreement as
32

1 Exhibit A and incorporated herein. Through participation in the plan
2 research and development, King County will receive work products and
3 information needed for the Miller Creek basin plan which will be developed
4 in cooperation with Normandy Park and other jurisdictions within the Miller
5 Creek basin.

6 II. Responsibilities of the Parties:

7 A. Normandy Park

- 8 1. Normandy Park will provide King County with an inventory of
9 the storm drainage system for the portions of the Basins
10 included in the study area which lie within in unincorporated
11 King County and Normandy Park.
- 12 2. Normandy Park will provide existing and future flow
13 predictions for the primary conveyance system, as defined in
14 the attached Scope of Work, located in the portion of the
15 Normandy Creek basin which lies in unincorporated King County.
16 The HSPF computer model will be used to predict the flows.
- 17 3. Normandy Park will provide King County with information
18 regarding the existing and anticipated future drainage prob-
19 lems occurring in the portion of the Normandy Creek basin in
20 unincorporated King County.
- 21 4. Normandy Park will provide King County with the structural and
22 non-structural solutions to existing and anticipated drainage
23 problems in the area of the Normandy Creek basin within unin-
24 corporated King County.
- 25 5. Normandy Park will evaluate alternative solutions to drainage
26 problems in the Normandy Creek basin area within unincorpo-
27 rated King County. The most preferred solution to each iden-
28 tified problem will be presented in the Study, along with the
29 estimated construction cost, operations and maintenance
30 considerations, and implementation constraints.

- 1 6. Normandy Park will provide opportunities to King County to
2 review and comment on both structural and non-structural
3 problem solutions before finalizing the solutions for the
4 report.
- 5 7. Normandy Park will include proposed solutions to King County
6 problems in a prioritized list of corrective actions recom-
7 mended to be taken in the study area.
- 8 8. Normandy Park will provide King County with three (3) copies
9 of a draft Flood Control Management Plan (Draft Plan) for
10 review, comment, and approval of the King County
11 recommendations.
- 12 9. Normandy Park will provide King County with eight (8) copies
13 of the final Flood Control Management Plan (Final Plan) for
14 the Study Area.
- 15 B. King County
- 16 1. King County will provide the following reports to Normandy
17 Park for use in producing the proposed Flood Control
18 Management Plan:
- 19 a. The 1990 Miller Creek Feasibility Study on the
20 Miller/Walker Creek Basin.
- 21 b. The 1990 HSPF model for the Miller Creek Basin, including
22 flow estimates for existing conditions and future condi-
23 tions with the proposed detention pond to be constructed in
24 the Miller Creek Basin area.
- 25 c. Comprehensive land use/zoning maps for the King County
26 portion of the Normandy Creek Basin.
- 27 d. The South 202nd Street and Fourth Avenue South Study.
- 28 e. Any available data in King County's possession on water
29 quality in the study area.
- 30
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- 1 2. King County will review the Draft Plan and the Final Plan in a
- 2 timely manner, meeting deadlines as requested by, or negoti-
- 3 ated with, Normandy Park and will provide comments and
- 4 approval as requested.
- 5 3. King County will participate in meetings related to the
- 6 development of the Flood Control Management Plan as requested
- 7 by, or negotiated with, Normandy Park.
- 8 4. King County will contact specified property owners in the
- 9 unincorporated area to obtain permission for personnel
- 10 involved in the study to enter the property to conduct tests.

11 III. Financial Arrangements:

12 A. Cost of Services:

- 13 1. King County will contribute \$11,850 to the cost of the Study.

14 B. Bills and Payments:

- 15 1. Normandy Park will prepare and present to King County an
- 16 itemized invoice when the study is completed and all work
- 17 products have been delivered to King County.
- 18 2. King County will pay the invoiced amount to Normandy Park
- 19 within thirty (30) days of receipt of invoice.

20 IV. Administration:

- 21 A. The Manager of the King County Surface Water Management Division
- 22 and the Normandy Park Director of Planning and Public Works or
- 23 their respective designees shall compose the administration and
- 24 management of this cooperative project.
- 25 B. In the event the Division Manager and the Planning and Public
- 26 Works Director are unable to reach agreement on any issue related
- 27 to the services or activities covered by this agreement, issues
- 28 will be resolved by the Director of the King County Department of
- 29 Public Works and the Normandy Park City Manager.

1 V. Effectiveness and Duration:

2 A. This agreement shall become effective upon signature by all
3 parties and will remain in effect until the project activities are
4 complete or until December 31, 1993, whichever comes first.

5 VI. Amendments, Extension or Termination:

6 A. This agreement may be amended, altered, clarified or extended only
7 by written agreement signed by the parties hereto.

8 B. Either party may terminate this agreement upon provision of sixty
9 (60) days written notice. In the event of termination, the par-
10 ties are responsible for the costs incurred to the date of
11 termination.

12 VII. Indemnification:

13 Both parties agree that as to all claims, actions, or causes of
14 actions of whatever kind or nature including those by any person directly
15 or indirectly employed by either party made or asserted against either or
16 both parties and relating in any way to the subject matter of this
17 Agreement each will be liable to the other only to the extent of each
18 party's fault or causation and shall indemnify the other for such amount.
19 As to all such claims, actions, or causes of action which are a consequence
20 of the sole fault, negligence, or causation of a party to this Agreement,
21 such party shall have the duty to defend, save, and hold the other
22 harmless, and upon failure to do so shall pay reasonable fees, costs, and
23 expenses incurred by the other party to this Agreement in defense of any
24 such third party claims or actions or in asserting its rights pursuant to
25 this paragraph.

26
27 IN WITNESS WHEREOF, the parties hereto have executed this agreement as of
28 the _____ day of _____, 19__.

29 By _____
30 Deputy Prosecuting Attorney
31 King County

King County Executive

32 By _____
Legal Counsel
Normandy Park

City Manager
Normandy Park

8473

NORMANDY PARK AREA
FLOOD CONTROL MANAGEMENT PLAN

EXHIBIT A
SCOPE OF SERVICES

R. W. BECK AND ASSOCIATES

Revised May 14, 1991

R. W. BECK
AND ASSOCIATES

NORMANDY PARK AREA
FLOOD CONTROL MANAGEMENT PLAN

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NORMANDY PARK AREA
FLOOD CONTROL MANAGEMENT PLAN

PART A

PROJECT BACKGROUND

1. GENERAL

The Consultant will conduct an investigation entitled Normandy Park Area Flood Control Management Plan. The purpose of the study is to create a management plan that can be used to solve problems within the study area for the City of Normandy Park, King County Surface Water Management Division, and Washington State Department of Transportation. These entities are called the Interested Parties.

2. GOALS

Each of the interested parties has different goals. These are presented here so that all parties understand the multi-purpose nature of the project.

A. Normandy Park

- Completion of a management plan for the city in accordance with their FCAAP grant.
- Operation plan for Arrow Lake/1st Avenue South detention pond.

B. King County Surface Water Management Division

- Schematic design to solve flooding problems in the Upper Normandy Creek Basin.

C. WSDOT

- Solutions for flooding problems at the 1st Avenue South Detention Pond.

3. STUDY AREA

The study area covers three basins. The three basins include the Miller Creek Basin, Walker Creek Basin, and the Normandy Creek Basin. The study area covers two jurisdictions: the City of Normandy Park, and King County. The areas and percentages of each jurisdiction in each basin are shown below:

BASIN Name	NORMANDY PARK Acres	KING COUNTY Acres	TOTAL Acres
Miller	180	0	180
Walker	380	0	380
Normandy	400 (55%)	330 (45%)	730
TOTAL STUDY	960	330	1,290

4. STUDY APPROACH

The study approach in the three basins will be different. The following paragraphs discuss the level of effort for each of the basins. More specific details of the work to be performed is provided under the Task descriptions.

A. Miller and Walker Creek Basins

The Miller and Walker Creek Basins have been studied several times previously. In June 1987 King County issued Reconnaissance Report No. 12 which described flooding problems and recommendations for improvements. This included a prioritized list of capital improvements.

In 1989 a brief report was issued by King County regarding the peak flow reduction and the probable water quality improvements that would be created by the construction of the Ambaum detention pond. In 1990 King County issued an internal memo regarding water quality measurements and findings relating to Miller Creek and the Ambaum detention pond.

Finally, the Federal Emergency Management Agency (FEMA) has contracted Northwest Hydraulic Consultants to conduct a new flood study on the main stem of Miller Creek from the mouth up to Tub Lake.

Work in the Miller and Walker Basins within the City will consist of an inventory of the storm drainage system for use in upcoming King county investigations.

B. Normandy Creek

A HSPF computer model will be developed for both the portion of this basin in Normandy Park and in King County. The model will be used to predict existing and future flows for the primary conveyance system. The study will identify existing and future drainage problems occurring both in Normandy Park and in the County portions of the basin. This includes depression areas in Upper Normandy Creek basin. Problem solutions will also be presented.

PART B
SCOPE OF WORK

TASK 1 PLAN DEVELOPMENT

Subtask 1.1 - Develop Goals and Objectives

The final report will reflect the goals and objectives identified. The Consultant will prepare draft goals and objectives for the project. The draft goals and objectives will be reviewed by Normandy Park, the County, WSDOT and the CAC. Because of the complex physical and governmental relationships, the consultant will attempt to develop detailed goals and objectives.

Work Product

A detailed list of goals and objectives created for review and acceptance by all jurisdictions and the CAC.

Subtask 1.2 - Public Involvement

A Citizen Advisory Committee (CAC) will be formed by Normandy Park. The CAC will consist of residents of Normandy Park who attend public meetings, as well as a City Council person, a Planning Commission person and a Park Board person. The number of members will be determined by Normandy Park. The CAC will assist in formulating the history of problems in the basins, make recommendations to the final goals and objectives, and assist as the Consultant deems necessary. The approximate dates for these meetings are shown on the schedule. The Consultant will meet four times with the CAC in a public forum.

The topic of discussion for these meetings are as follows:

- Meeting 1:* Project introduction/background, problem identification, and finalize goals and objectives
- Meeting 2:* Review results of analyses and review typical structural and nonstructural solutions.
- Meeting 3:* Discussion and selection of recommended alternatives. Review funding alternatives
- Meeting 4:* Discuss recommended plan, financial analysis, and operation and maintenance.

Work Product

Four public CAC meetings

Subtask 1.3 - Review Existing Data

A complete review will be made of existing design plans, studies, reports, land use maps, comprehensive land use plans, zoning, relevant City and County ordinances, and miscellaneous data. This will bring the project team up to the current state of knowledge about all portions of the study area.

This task will also include a review and summary of the following state and federal regulations which impact the surface water system:

- Draft storm water management rule, WSDOE
- Wetlands and Stormwater Management, WSDOE
- Stormwater requirements, WDF
- NPDES Permitting

Subtask 1.4 - Develop Criteria

The criteria for the technical analysis will be formulated. Rainfall/runoff relationships will be estimated for various classes of land use. Land use, build-out rates, and other criteria will be determined. The technical criteria will be based on the King County Surface Water Design Manual and on HSPF model requirements. Criteria required to analyze the range of structural and nonstructural options will be reviewed. Important decisions will be discussed with the interested parties to the project.

Work Product

A written set of study criteria for developing solutions to study-related problems.

Subtask 1.5 - Inventory Existing Systems

This task will include an inventory of the primary storm water conveyance system, erosion problems, wetlands and fisheries. Due to budget constraints, this is not intended to include all drainage features in the study area. The work will be approached differently in each basin.

Within the City of Normandy Park the City will develop and provide a map of the existing drainage conveyance system in Normandy, Miller and Walker Creek basins. The City, County and the Consultant will review this map and delineate the primary systems to be evaluated as a part of the study. The system to be inventoried shall be consistent with the surveying budget allowance identified herein. The information developed for the primary conveyance system inventory shall include: pipe size, material and invert elevations for pipes and culverts, and average cross-section and average slopes for streams. Flow direction will also be shown.

The primary conveyance system will be illustrated on the 1974 1" = 200', 5' contour King County maps. Not all pipes and culverts in the basins will be

shown. Non-drainage features will not be updated. The Consultant will collect additional data as needed.

The inventory of the main stem of Miller Creek is being prepared for the 1990 FEMA study currently being done. No additional inventory of the Miller Creek basin outside of the City is warranted for this study.

An erosion analysis shall also be made for Normandy Creek to determine where there are existing bank failure or downcutting problems. This analysis will focus on improvements to stabilize the stream banks without adverse impacts to existing aquatic resources.

For the wetland inventory, the Consultant will review and incorporate the King County Study done for Normandy Park.

Surveying will be performed to provide information necessary for performing the computer model of the primary conveyance systems. A majority of elevation data will be estimated from the existing 1974 5' contour map. This will be adequate for most locations. Survey data will also be available for Miller Creek from the FEMA study. At critical sites without data, specific points will be surveyed. Sufficient budget is shown herein for 5 days of a survey crew as well as required computation and organization time. The information will be shown on the inventory map. Other than storm water information, no other updates will be shown on the maps.

An assessment of the fish resources will be completed. The maximum reach to be evaluated includes Normandy Creek from the mouth to Normandy Park Drive. The assessment will consist of grading the habitat of Normandy Creek. Parameters such as width, depth, temperature and bed material will be collected. The assessment will also consist of evaluation of the existing fisheries. Existing and future problems, such as barriers to movement, will be discussed. Preliminary solutions to the identified problems will also be developed.

Work Products

1. Maps of the existing primary conveyance system, major storm drainage facilities, drainage basin boundaries, and year-round streams in the Study Area.
2. A set of computer spreadsheets tabulating available data on the primary conveyance system.
3. 11"x17" drawings of the Study Area showing wetlands.
4. 11"x17" drawings showing problem erosion areas on Normandy Creek.
5. A task report on fisheries to be included in the Appendix.
6. A task report on wetlands to be included in the Appendix.
7. Surveyed elevations of critical drainage features.

Subtask 1.6 - Identify Existing Flooding Problems

Specific problem areas in the Normandy Creek basin will be identified and documented based upon previous reports, public input, field investigations, and computer modeling. The City will mail questionnaires to all residents. The questionnaire will be prepared by the Consultant. The returned mailers will be graded and investigated first by City Staff. The Consultant will assist the City in developing grading criteria and investigation forms. The City Staff will then ask the consultant to evaluate and develop solutions to the worst 10 or 12 problems. All problems will be listed and graded in the report.

Work Products

1. Maps and a list showing existing flooding problem areas.
2. List of public-identified drainage problems graded from A to F for the report.
3. An evaluation and solution to the worst 10 or 12 problems to be included in the report.

Subtask 1.7 - Agency Coordination

Within the study area, there are three municipalities or authorities with jurisdiction over drainage issues. An important task is to meet and discuss the interests, needs and background information about the study area.

It is essential that all jurisdictions be a part of the study from the beginning of work. It is also essential that they be consulted during the completion of many of the project tasks. Successful incorporation of all jurisdictions is the key element in producing a successful project, and in successfully managing the basin. This coordination will include formal interaction such as meetings and review of the draft and final reports.

Several other agencies will be contacted:

Department of Fisheries
Puget Sound Water Quality Authority
Department of Game

Work Product

Coordination between all jurisdictions, approved scope of work and on-going communication.

TASK 2 ANALYSIS

Subtask 2.1 - Hydrologic and Hydraulic Analysis

Flows in the Normandy Creek basin will be modeled using the EPA's HSPF. HSPF is a continuous simulation model which will be run at a 15-minute or hourly time-step using recorded rainfall data from SeaTac Airport for the period 1963-1990 to produce a 28-year record of simulated flows at critical points in the basin. Flows will be generated using regional parameters determined by the USGS and with parameters used in the Miller Creek Model. Northwest Hydraulic Consultants will do this work.

For Normandy Creek, R. W. Beck will characterize drainage subbasins using the King County 1974 Contour Maps, 1984 1"-500' aerial topographic map, aerial photos, soil maps, and other field information. It will be the responsibility of Normandy Park to specify the projected future land use conditions with a map for the model analysis.

The HSPF model will be used to identify critical areas under existing and future conditions. The work tasks involved in the hydrologic modeling include:

- Calculate inflow hydrographs for existing subbasins and at key locations in the basin.
- Estimate future changes in hydrographs based on projected land use changes.
- Generate hydrographs at key locations resulting from structural and nonstructural alternatives.
- Determine flows at key locations based on the recommended structural and non-structural improvements.

Certain hydraulic evaluations such as detention ponds and Arrow Lake outflow can be built into the HSPF model. More intensive evaluation at the stream channel below Normandy Park Drive may require the use of a hydraulic backwater model such as HEC-2, although simpler normal depth determination using the Manning's equation may be adequate. Final selection of the methodology for hydraulic analysis will be done after the project is under way and after the requirements of the hydraulic analysis can be evaluated.

Work Products

1. HSPF computer model and runoff estimates for existing conditions, future conditions as well as structural and non-structural solutions for Normandy Creek
2. Flow velocity and water surface elevation at critical locations within the basin.

Subtask 2.2 - Water Quality Assessment

A brief water quality assessment will be done of Arrow Lake. Existing water quality data from prior studies and sources will be used to the maximum extent possible.

Water quality at Arrow Lake will be measured. Measurements of pH, temperature, and dissolved oxygen at various depths will be done at the center of the lake on two different dates. Limited depth soundings will also be made, as well as Secchi disc measurements of water clarity. One water sample will be collected and analyzed for each visit. Parameters to be measured include oil and grease, chlorophyll A, nitrate-nitrogen and orthophosphates. Rights of access will be obtained by the City of Normandy Park.

Work Product

The results of the sampling will be documented and compared to the standards for swimming beaches and for freshwater habitat. Any corrective measures are beyond the scope of work and will not be evaluated. Supplemental studies may be recommended.

Subtask 2.3 - Infiltration Analysis

Approximately three infiltration tests will be done in the Normandy Creek Basin. Tests will be done as outlined in Section 4.5.2 of the King County Surface Water Design Manual. This will quantify infiltration and allow a reasonable evaluation of the alternatives. Locations of the tests will be marked on King County Assessors or Kroll maps. The King County Surface Water Management Division will then be responsible for obtaining landowners' permission to conduct the tests. Water quality impacts to groundwater and related regulations will be reviewed and discussed briefly.

Work Product

Test values of infiltration for use in hydrologic modeling.

Subtask 2.4 - Identify Future Problems

Based upon basin modeling and analysis, specific future problems resulting from increased urbanization in the basins will be identified. This includes both the City and County. Results of this task also will be used to verify the existing problems identified earlier.

Work Product

Maps showing areas subject to flooding under future conditions.

Subtask 2.5 - Review Structural Versus Non-Structural Alternatives

Following the final development of goals and objectives, specific guidelines will be developed for dealing with drainage issues. Structural (capital improvements) and non-structural (regulatory) alternatives will be reviewed. Recommendations will be made concerning development standards as they relate to problems within the Study Area.

This task will identify the various alternatives and the impact each will have on solving current and future quality and quantity problems. Preliminary listing of measures to be evaluated is presented in Table 1.

Measures under consideration for improving water quantity will also be reviewed for effectiveness in improving the water quality of storm runoff. It is established that many pollutants (sediment, oil, toxic metals, and toxic organics) tend to be chemically or physically attached to sediment particles. A review of measures to reduce the amount of sediment entering the drainage system by detention/retention facilities, filtering through grass swales or enhanced wetlands, or by reducing soil or stream bank erosion will be provided.

Work Product

An evaluation of non-structural solutions in the Normandy Creek Basin. This will be section of report.

Subtask 2.6 - Evaluate Alternative Solutions and Environmental Checklist

Based on the existing and future problems, alternative solutions will be examined for feasibility and cost effectiveness based upon the computer model analysis, environmental assessment and cost estimate. Solutions to both City and County problems will be identified. Factors such as soil types, land use density, topography and economics, will affect the number of practical solutions developed.

- Identify schematic solutions to the problems. The advantages and disadvantages of alternative solutions (i.e., zoning, building and land use, restrictions, floodproofing, channel improvements, etc.) will be reviewed considering the specific problems.
- For the Normandy Creek basin, study of feasibility of construction of flow diversion, infiltration, and regional detention together with location, constructability and estimated construction cost.
- Consider the impacts to groundwater quality that would result from infiltration of storm water runoff. Evaluate methods to reduce these impacts. Review and report on DOE regulations regarding this issue.

- Identify potential wetlands or environmentally sensitive areas to be incorporated into the storm drainage system.
- Prepare SEPA checklist consistent with SEPA regulations and FCAAP guidelines.

Work Products

1. The best solution to each identified problem will be described in the Report along with its estimated construction cost, operational considerations, and implementation constraints. An 8-1/2"x11" schematic design will also be produced for some alternative.
2. A SEPA checklist for the plan and recommended improvements.

Subtask 2.7 - Identify Funding Alternatives

In conjunction with Normandy Park staff and the Citizen Advisory Committee, criteria will be established for objectively evaluating the various funding options available to Normandy Park. This will not be done for King County.

Examples of criteria to be used in evaluating funding options are:

- Fairness and equity
- Administrative workability
- Consistency with City policy
- Revenue capacity
- Legal defensibility
- Implementation timing
- Start-up costs
- Applicability to entire service area
- Effectiveness/ineffectiveness of economic incentives
- Public acceptance

Once appropriate evaluative criteria have been selected, funding options will be reviewed and evaluated. Funding options to be considered include:

- State/Federal Grants and Loans
- Debt Financing
- Drainage District/Flood Control Zone
- General Street Fund
- Special Assessments/Improvement Districts (LID)
- System Development Fees/Connection Charges
- Fee in Lieu of Construction
- Plan Review and Inspection Fees
- Service Charges

TABLE 1

A PRELIMINARY LIST OF OF STORM WATER
CONTROL MEASURES TO BE EVALUATED

	Reduce Flooding	Reduce Channel Erosion	Improve Water Quality
<u>STRUCTURAL</u>			
1. Detention facilities (local or regional)	X	X	X
2. Detention/sedimentation	X	X	X
3. Retention	X	X	X
4. Grass swales			X
5. Stormwater diversion	X	X	X
6. Oil separators			X
7. Check dams			X
8. Gabion weirs		X	
9. Infiltration	X		
<u>NON-STRUCTURAL</u>			
1. Public awareness	X	X	X
2. Management of basin, City vs. property owners	X	X	X
3. Improved drainage facility maintenance	X	X	X
4. Maintain stream vegetation and natural wetlands		X	X
5. Enforcement of regulations	X	X	X
6. Ordinances (clearing, grading, on-site requirements)	X	X	X
7. Revegetation		X	X
8. Improve bank slope stability		X	X

Work Product

A task report for the body of the text describing the criteria and options.

TASK 3 CONCLUSIONS

Subtask 3.1 - Recommendations for Corrective Action

The apparent best approach to each identified problem will be described along with its preliminary estimated cost, operational considerations, and implementation constraints. The County and City staff will be actively involved in this subtask ensuring practical approaches are developed for consideration. Both the structural and non-structural solutions will be considered. A meeting will take place including the City, County, CAC and the Consultant. The structural and non-structural solutions will be discussed.

Work Product

A set of problem solutions which have been reviewed by all the interested parties. This set of solutions will form the basis for plan or recommendations, other subtasks and the report.

Subtask 3.2 - Prepare Operation and Maintenance Plan

The operation and maintenance needs of Normandy Park will be evaluated. Based upon recommendations of Tasks 1 and 2, knowledge of the existing system, and an interview with the utility superintendent, recommendations will be made to maintain and operate the storm drainage/stream system. The City will provide the Consultant with all available data concerning their existing Operations and Maintenance Practices. The operations and maintenance of other jurisdictions will be reviewed. Recommendations will be made and compared with current practices. King County procedures will not be evaluated.

Work Product

A task report for the body of the text describing existing and recommended operation and maintenance practices.

Subtask 3.3 - Financial Analysis

Once the viable funding options have been identified and evaluated, the consultant team will develop an overall strategy for financing the recommended flood control improvements within the City of Normandy Park including both structural and non-structural solutions.

This task will also evaluate the types of services and improvements that can be provided based upon a combination of service charges for the City. This will not be done for County areas. The financing analysis will examine:

- Initial capital requirements
- Debt service and interest
- System improvements
- Repairs and replacements
- Complaint/emergency response
- Plan and permit review
- Regulation and enforcement
- Ongoing engineering/planning
- Administration and management

The costs associated with implementing, operating, and maintaining the proposed flood control plan will be established.

The financial analysis shall be based upon the recommended operations and maintenance needs and a Capital Improvements Program. A simple spreadsheet analysis reflecting variable service rates will be developed. This analysis will be based on different customer classes corresponding to equivalent residential units (ERU). The City will provide the Consultant with a breakdown of the different customer classes and number of services.

Work Product

A task report for the body of the text describing the criteria, options, and financial plan.

Subtask 3.4 - Prioritize Corrective Actions

Guided by the solutions selected in Subtask 3.1, the study goals and objectives, regulations and financial consideration, a prioritized list of corrective actions will be developed. This process will involve County and City Staff. Structural and non-structural solutions will be included. The list will be divided on the basis of jurisdiction, Normandy Park and King County.

It is recognized that the City of Normandy Park intends to incorporate the storm water CIP into the CIP for all City facilities. No schedule for storm water improvements will be provided.

Work Product

A plan of corrective actions to be implemented in the basin. This will be a section of the report.

Subtask 3.5 - Prepare Draft Flood Control Management Plan

Based on findings made during the analysis for financing, operations, drainage, capital improvements and management, the plan for the implementation of storm water management improvements will be developed. A draft report will be

prepared for review and concurrence. The Consultant shall provide 9 copies of the Draft Plan for distribution.

Work Products

- Normandy Park, 3 copies
- King County, 3 copies
- WSDOT, 1 copy
- DOE, 2 copies

Subtask 3.6 - Prepare Final Flood Control Management Plan

The final storm water drainage plan will be prepared after review by all interested parties. The Consultant will provide to the City 22 copies of the final report for distribution as shown below:

Work Products

- Normandy Park, 8 copies
- King County, 8 copies
- DOE, 4 copies
- WSDOT, 2 copies

PART C
PROJECT ADMINISTRATION

1. PROJECT MANAGEMENT

Project Management consists of necessary functions to complete this study. Elements include staff and client coordination, billing and invoicing, subconsultant management and quality control. The Project Engineer will also attend two Normandy Park City Council meetings to discuss the project, as well as 10 staff meetings. These items have not been specifically listed as a task but have been included in each subtask.

It is anticipated that the City of Normandy Park will prepare the required progress reports for DOE. Tasks required by FCAAP but not specifically spelled out in this scope remain the responsibility of the grantee, the City of Normandy Park.

2. WORK/RESPONSIBILITIES TO BE PROVIDED BY NORMANDY PARK

The following list of items shall be provided to the Consultant by Normandy Park to assist the Consultant. The project day numbers shown indicate number of days since the Notice to Proceed. Actual dates for major items are shown on the project schedule.

- 1) The City shall identify a lead person to be the City's daily contact and to provide assistance in coordinating the various tasks. The City shall make available all record drawings, maps, maintenance records and previous reports for the Consultant's use (Day 1).
- 2) The City shall prepare a map of the major conveyance system indicating pipe size and approximate locations (Day 15). The major conveyance system is defined as the trunk of the drainage network. It includes pipes and channels on a preliminary basis. Major conveyance system elements are defined:
 - a) Pipe - Either 18" diameter (min) or 100 feet long.
 - b) Channel - equivalent to pipe defined above.
- 3) Summary of the existing system including approximate number of the various lengths of storm pipe, length of roadside ditches, length of streams, number of catch basins, number of maintenance personnel, copy of the City's annual maintenance budget, inventory of maintenance equipment, as well as other information needed to evaluate the present operation and maintenance practices (Day 150).

- 4) Existing City ordinances which would affect drainage (sensitive areas, filling, grading, building, clearing, etc.) (Day 7).
- 5) Provide input and feedback on proposed corrective action developed by the Consultant.
- 6) The City shall supply the Consultant with a breakdown of the different customer classes and number of services for the financial analysis (Day 150).
- 7) Form a citizen advisory committee and mail information sheet, attend four CAC meetings and represent the City (form committee by Day 15, Meeting No. 1 by Day 30).
- 8) The City shall assign a person to accompany the R. W. Beck Fisheries Technician to permit access to properties, to provide local knowledge and to assist communication with residents. Approximately 3 field days are anticipated (Day 60).
- 9) The City shall obtain right of access to Arrow Lake so that water quality sampling can be done (Day 90).
- 10) The City shall provide plans of the existing 1st Avenue South detention pond and discharge pipe and plans of the 84-inch Arrow Lake outlet (Day 7).

3. WORK/RESPONSIBILITIES TO BE PROVIDED BY KING COUNTY

The following is a list of items to be done or provided by King County as a party on this study. The project day numbers shown indicate the number of days since the Notice to Proceed. Actual days on major items are shown on the project schedule:

- 1) Obtain permission from landowners for the consultant to conduct at least three infiltration tests in the Upper Normandy Creek Basin. A location on a King County Assessor's map will be provided to the County by R. W. Beck (Day 45).
- 2) The 1990 Miller Creek Feasibility Study on the Miller/Walker Basin (Day 7).
- 3) 1990 Report on HSPF modeling and the model itself for the Miller Creek basin including flow estimates for existing conditions, future conditions with proposed detention pond (Day 7).
- 4) Comprehensive land use/zoning maps for the King County portion of the Normandy Creek Basin (Day 7).

- 5) The South 202nd Street and 4th Avenue South Study (Day 7).
- 6) Other investigations relating to the study area (Day 7).
- 7) Provide input on the recommendations for corrective action.
- 8) Water quality data (Day 7).
- 9) The County shall contact FEMA regarding use of the HEC-2 model and data developed for the 1990 Miller Creek flood study (Day 30).

4. SCHEDULE

The attached figure shows the anticipated work schedule. The FCAAP grant also has some scheduling provisions which are incorporated into this schedule. If this schedule is significantly delayed by factors outside of the control of the Consultant, the contract fee may be renegotiated. This is due to normal cost increases caused by inflation and employee raises.

PART D
BUDGET

The budget for the project is shown on the attached spreadsheet. Detailed manhour estimates are shown for each subtask, as well as subconsultant and expense items. The budget has been subdivided into Phase I (July 1990 to June 30, 1991) and Phase II (July 1, 1991 to June 30, 1992). These phases correspond to DOE funding periods.

BUDGET SUMMARY
 NORMANDY PARK AREA
 COMPREHENSIVE FLOOD CONTROL PLAN
 May 14, 1991

TASK	DESCRIPTION	RW BECK	ADDITSON ENVIRON (MBE)	MATRIX	ETS DRAFT (MBE)	HORTON DENNIS SURVEYING (MBE)	NORTHWEST HYDRAULIC CONSULTANTS	1990	1992	TOTAL
								BIENNIAL TOTAL	BIENNIAL TOTAL	
1.1	GOALS AND DEJECTIVES	\$774						\$774		\$774
1.2	CITIZENS ADVISORY COMMITTEE	\$4,800						\$2,000	\$2,800	\$4,800
1.3	REVIEW DATA	\$3,273	\$1,581					\$4,854		\$4,854
1.4	DEVELOP CRITERIA	\$944						\$944		\$944
1.5	INVENTORY EXISTING SYSTEM	\$15,621			\$1,660	\$5,800		\$23,081		\$23,081
1.6	IDENTIFY EXISTING PROBLEMS	\$5,118						\$2,000	\$3,118	\$5,118
1.7	AGENCY COORDINATION	\$8,065						\$8,065		\$8,065
TASK 1 TOTAL								\$41,717	\$5,918	\$47,635
MAXIMUM STATE SHARE (75%)								\$31,288	\$4,438	\$35,726
2.1	HYDROLOGIC/HYDRAULIC ANALYSIS	\$9,950					\$8,000	\$11,600	\$6,350	\$17,950
2.2	WATER QUALITY ASSESSMENT	\$4,000						\$2,000	\$2,000	\$4,000
2.3	INFILTRATION ANALYSIS	\$2,362						\$2,362		\$2,362
2.4	IDENTIFY FUTURE PROBLEMS	\$3,343						\$1,000	\$2,343	\$3,343
2.5	STRUCT. VS. NON-STRUCTURAL	\$2,589						\$1,321	\$1,268	\$2,589
2.6	EVALUATE ALTERNATIVES/SEPA	\$8,081	\$4,140						\$12,221	\$12,221
2.7	IDENTIFY FUNDING ALTERNATIVES	\$783		\$600					\$1,383	\$1,383
TASK 2 TOTAL								\$18,283	\$25,565	\$43,848
MAXIMUM STATE SHARE (75%)								\$13,712	\$19,174	\$32,886
3.1	RECOMMEND CORRECTIVE ACTION	\$2,311							\$2,311	\$2,311
3.2	O & M PLAN	\$2,649							\$2,649	\$2,649
3.3	FINANCIAL ANALYSIS	\$1,006		\$2,550					\$3,556	\$3,556
3.4	PRIORITIZE CORRECTIVE ACTION	\$2,877							\$2,877	\$2,877
3.5	DRAFT PLAN	\$12,651			\$3,802				\$16,453	\$16,453
3.6	FINAL PLAN	\$7,794			\$1,293				\$9,087	\$9,087
TASK 3 TOTAL								\$0	\$36,933	\$36,933
MAXIMUM STATE SHARE (75%)								\$0	\$27,700	\$27,700
PROJECT TOTAL		\$98,989	\$5,221	\$3,150	\$6,755	\$5,800	\$8,000	\$60,000	\$68,415	\$128,415
PERCENTAGE		77	4	2	5	5	6	45,000	\$1,311	96,311
100										