

September 28, 1998
foothills
clerk 10/1/98

Introduced By: PETE VON REICHBAUER
Proposed No.: 98-617

ORDINANCE NO. **13310**

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

AN ORDINANCE approving the Foothills Water Association
Water Comprehensive Plan; and declaring an emergency.

PREAMBLE:

K.C.C. chapter 13.24 requires approval of comprehensive plans for water utilities as a prerequisite for granting right-of-way franchises and approval of right-of-way construction permits.

The Foothills Water Association (Association) is located approximately six miles east of the City of Maple Valley in the rural-designated area.

The Association is a non-profit corporation recently formed by the merger of four water systems, three of which were providing public drinking water from surface water sources that violated state drinking water standards and have had water quality problems also. Two of the water systems, the Kangley water system and the Selleck water system, were under orders from the United States Environmental Protection Agency to comply with the Safe Drinking Water Act.

The plan proposed a number of capital improvements that will allow the eighty-five initial connections and any future connections to utilize ground water meeting federal and state drinking water standards.

The King County utilities technical review committee reviewed and approved the water comprehensive plan on September 8, 1998.

1
2
3
4
5
6
7
8
9
10
11
12
13

King County has prepared a determination of non-significance for the plan in accordance with the State Environmental Policy Act.

The Association adopted its water comprehensive plan on September 17, 1998.

King County community development block grants will provide some of the funding needed for capital improvements. Processing and awarding of other grants and loans is dependent on council approval of the plan.

Design and construction work needs to begin immediately in order to address the existing water quality and quantity problems threatening public health and safety.

The UTRC recommends that the council approve the plan.

BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

SECTION 1. The Foothills Water Association 1998 Water Comprehensive Plan, Attachment A, is hereby approved without conditions.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

SECTION 2. The county council finds as a fact and declares that an emergency exists and that this ordinance is necessary for the immediate preservation of public peace, health or safety or for the support of county government and its existing public institutions.

INTRODUCED AND READ for the first time this 12th day of October, 1998.

PASSED by a vote of 12 to 0 this 19th day of October, 1998

KING COUNTY COUNCIL
KING COUNTY, WASHINGTON

Louise Miller
Chair

ATTEST:

Zucenas
Clerk of the Council

APPROVED this 22 day of October, 1998

[Signature]
King County Executive

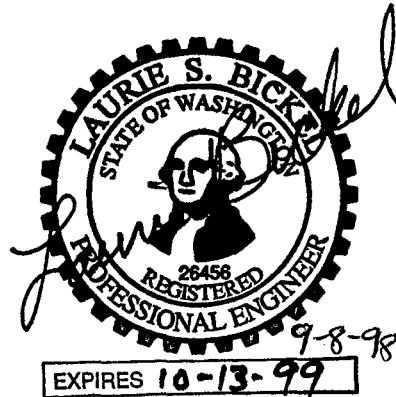
Attachments: A. Foothills Water Association 1998 Water Comprehensive Plan

98-617

Hedges & Roth Engineering, Inc.

13310

DRAFT
1998 WATER COMPREHENSIVE PLAN
FOR
FOOTHILLS WATER ASSOCIATION



Prepared & Checked by: Laurie Bickel Fulton, P.E.

Approved by: Gregory G. Hill, P.E.

Approved by Foothills Water Association for Submittal:

By: _____ Date: _____

Designated Contact for Foothills Water Association:

Approved by King County for Submittal:

By: Dwight Van Vleet Date: 9/4/98

Designated Contact for King County:

Dwight Van Vleet, Project Manager
Community Development Program

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
I. BASIC PLANNING DATA	3
Introduction	3
The Kangley Water System (State ID# 37640B)	3
The Selleck Water System (State ID# 77550L)	3
K Bar J Water System (State ID# 036128)	4
Bailey Roberts (State ID# 03760M)	5
State and Federal Enforcement Actions	5
History of this Planning Effort	5
Existing and Future Population, Land Use, and Service Area	6
Existing Water Consumption and Future Water Demand	7
Adjacent Utilities	8
Consistency with other Plans and Policies	8
II. WATER CONSERVATION	8
III. SYSTEM ANALYSIS	9
Inventory of Existing Systems	10
General	10
Sources	11
Storage	11
Fire Flow	11
Water Rights	11
Distribution	12
Operating Permits	12
IV. RECOMMENDED IMPROVEMENTS	13
General	13
Source	13
Storage	14
Distribution System	14
Opinion of Probable Costs	15
V. OWNERSHIP/ MANAGEMENT	15
Non-profit Association	15
VI. PROJECT FINANCING	16
VII. RECOMMENDATIONS AND CONCLUSIONS	18

APPENDICES

- A. ENGINEER'S OPINION OF PROBABLE COSTS
- B. MAPS
 - Figure 1 - Proposed Service Area and Zoning
 - Figure 2 - Foothills Water Association Proposed Water System
- C. WELL REPORTS
 - Robinson and Noble's K Bar J (Jacobs) Well Test Report
 - Robinson and Noble's Interim Report of K Bar J (Jacobs) Second Well
- D. WATER RIGHT INFORMATION
- E. FIRST YEAR OPERATING BUDGET
- F. SEPA CHECKLIST
- G. PREVIOUSLY INVESTIGATED SOURCE ALTERNATIVES
 - Connection to Existing Tacoma Pipeline No. 1 or No. 5
 - Filtration of Existing Surface Water Source
 - Connection to the Selleck Water System
 - Drill a New Well on Merlino Property
 - Drill a New Well on a BPA Powerline Easement
 - Existing Well on the Hanon Property
 - Existing Well on the Jacobs' Property
- H. SELLECK VALUATION REPORT
- I. K Bar J WELL USE AGREEMENT AND EASEMENT
- J. CURRENT OPERATING PERMITS
- K. SELLECK WATER SYSTEM BILL OF SALE
- L. FOOTHILLS WATER ASSOCIATION ORGANIZATIONAL AND POLICY DOCUMENTS

EXECUTIVE SUMMARY

The Kangley community, in April 1988, and the Selleck water system, in June 1993, each received a Proposed Administrative Order from the EPA requiring each water system to comply with the Safe Drinking Water Act (SDWA). Both systems have failed to comply due to the high cost of implementing the required changes and they are currently in violation of the SDWA. The intent of this comprehensive plan is to recommend and outline steps the Kangley and Selleck communities should take to comply with the SDWA to insure a safe drinking water supply. Many forms of a governing organization were considered for the water system administration. The final form of the organization is the new Foothills Water Association, which is a non-profit corporation and includes both Kangley and Selleck residents.

Compliance with the SDWA includes acquiring and implementing a new water source for the community, and purchasing and installing the required water system including a pump station, a reservoir and water mains and appurtenances. The comprehensive plan recommends improvements needed for the initial Foothills Water System and provides opinions of probable project costs and financing recommendations to fund the recommended improvements. Planning horizons include the expected initial, 6-year, 20-year and build-out conditions.

The residents of the Foothills Water Association currently receive their water from any one of several small, Group A and B community water systems, or from private wells. The Selleck water system was privately owned by Mr. Robert Schaefer with approximately 60 connections, while Kangley formed a public Water Association in July 1994 and has approximately 20 connections.

The comprehensive plan initially determines the quality of the existing water systems by appraising the water sources' quality and treatment, the age and material of the transmission and distribution mains, and the existence of storage facilities according to water quality regulations. Due to the systems' age and the materials with which they were constructed, there appears to be very little salvageable in the existing system. We recommend that a new groundwater source should be used, a new and larger water storage tank be constructed, and that the majority of pipes be removed or abandoned and a new distribution system and new service connections be constructed. Even though growth is expected in the area after a new water system is on line, the main reason for making improvements to the water systems is for health reasons, rather than to encourage new development in the area.

The water supply needed for the communities is dependent upon the service area size and its expected growth. The current land use is mainly residential within the 1½ square mile service area and is bordered primarily by mining and forestry land uses. The proposed distribution system is planned to be in place in 1999 with 85 initial connections and is expected to grow in 6 years to 93 connections. In 20 years, the number of connections is expected to increase to a total of 135 connections. The service area is expected to have 213 service connections at build-out.

The existing systems contain no source or distribution meters; therefore, future water demand can only be predicted by use of the Washington State Department of Health (WSDOH) Sizing Guidelines. A water source is required by the WSDOH to supply 800 gallons per day per connection. Standby storage water volume of 600 or 800 gallons per connection, depending on the size of the water system, is also required. Using the 6-year and 20-year prediction, the standby storage required will be 55,800 gallons and 108,000 gallons respectively, and the water source will need to supply a minimum of 74,400 GPD (51.6 gpm) and 108,000 GPD (75 gpm) respectively.

The K Bar J well was drilled on the western outskirts of the Selleck community. The well driller's report indicates that the well is 141 feet deep and is cased with 8-inch steel casing. Based on tests the hydrogeologist, Robinson and Noble, felt that a production rate of 100 gpm should be sustainable and would meet the requirements of the Kangley and Selleck communities. In the summer of 1994 a dry spell occurred with a subsequent significant drop in the well water level. An additional well was determined necessary to provide capacity during drought periods. A second well with an 8-inch diameter casing was drilled by Okanagon Drilling, with a perforated casing extending from 150 to 170 feet below ground level and was determined by R&N to be capable of 500 gpm long-term production. This is the proposed Foothills Primary Well. Not all of the 500 gpm capacity is needed for the proposed system, therefore a well pump capable of pumping 150 gpm is proposed. The Foothills backup well (the original K Bar J well) should also be equipped with a pump and have a 100 gpm pumping capacity to be used as a standby source.

King County has purchased the two wells and the surrounding property. They will turn the wells over to the proposed Foothills Water System. Water rights for the well also need to be acquired. King County has applied for these water rights through the Department of Ecology for the benefit of Foothills Water Association.

Part of the existing distribution system is salvageable. The newer PVC solvent-welded pipe extending from Selleck to Kangley provides reliable service and should be connected to the proposed new system. The other existing waterlines are suggested to be abandoned in place and a new distribution system laid with new water lines.

The facilities recommended to be installed on the same property as the wells include a 50,000-gallon water storage tank and pump station. Piping, new pumps for the wells and backup power are also recommended. Approximately 15,000 feet of water main will be constructed as part of the initial system. A cost estimate for the recommended system has been prepared assuming the above mentioned changes. Appendix A gives the opinion of project cost of the recommended plan. The proposed initial water system will be paid through grants and loans. Parties who benefit from the improvements will pay for future extensions to the system.

I. BASIC PLANNING DATA

Introduction

Kangley and Selleck residents currently receive their water from one of two separate Group A community water systems, or from any one of several small, Group B community water systems, or from private wells. This comprehensive plan concerns itself with the consolidation of four of the community water systems (two Group A's and two Group B's), three of which are connected to out-of-compliance surface water sources (creeks), and one of which is presently connected to the community's new groundwater source. Approximately 85 existing connections are involved in this four-system consolidation. Planning in this report will be done for the 6-year, 20-year and build-out conditions. The four water systems to be consolidated are as follows:

The Kangley Water System (State ID# 37640B)

The Kangley water system is a small group A water system owned by the Foothills Water Association that serves 20 connections in the unincorporated town of Kangley. The town is located in southeast King County approximately 11 miles east of the City of Covington. Kangley's water system was initially installed in the early 1900's and has had numerous simple upgrades and repairs since then. The system's headworks consists of a 6-inch PVC pipe with wire screen intake filter submerged in an un-named creek a short distance above town. System mains vary in size and materials but primarily consist of 6-inch wood stave pipe, 2-, 6- and 8-inch PVC, and 1-½" galvanized steel pipe. The system has no storage, filtration, or disinfection. Kangley Water System users who have signed shareholder agreements are entitled to service from the new consolidated water system when it is completed.

The Selleck Water System (State ID# 77550L)

The Selleck water system is a somewhat larger group A system that was acquired by the Foothills Water Association in March 1998. The Selleck system serves approximately 45 connections, four of which are in the Town of Kangley, with the remainder scattered throughout the historic unincorporated Town of Selleck (approximately 1.5 miles northeast of Kangley). The systems also serve area between Kangley and Selleck, including the area known as "Lavender Town". The Selleck water system was initially installed in the early 1900's. The intake pipe at the headworks consists of a 6-inch PVC pipe mounted in a screened, steel intake structure buried in an unnamed creek and covered with rocks. The intake structure is located approximately three miles southeast of the town, in the Seattle Watershed. The transmission pipe from the source to the town has had numerous repairs throughout the years and now consists of a variety of materials, including some remaining 6-inch wood stave pipe, 6-inch PVC, and a limited amount of A.C. pipe. An open-topped gravel filter structure is located approximately one mile before the first service connection. Drinking water flows from the filter structure into an

adjacent 6000-gallon partially buried storage tank before being carried to a chlorinator located between the storage tank and the first connection.

The overall Selleck distribution system is comprised of a combination of PVC, HDPE, wood, steel and A.C. pipe ranging in size from 1½ to 6-inch diameter. In the mid-1980's, a 6-inch PVC pipeline was installed extending from the Selleck water system to Kangley to allow for additional connections within Kangley. A more detailed description of Selleck water system facilities can be found in the draft Selleck Water System Valuation prepared by Greg Hill, dated April 17, 1995 and appearing as Appendix H in this comprehensive plan. Selleck Water System users that have signed shareholder agreements are entitled to service from the new consolidated water system when it is completed.

K Bar J Water System (State ID# 036128)

The K Bar J (also known as "Jacobs Well") water system is a modern, groundwater-based four-connection, Group B water system served by a single well located on a 2.25-acre parcel of land located adjacent to the system's customers, all of whom live along the western end of SE 257th Street, a private road located within the Selleck Water System's traditional service area. The K Bar J system was acquired by King County on behalf of the Foothills Water Association in January of 1997. Ownership of this water system will be transferred from King County to the Foothills Water Association no later than the completion of construction activities that consolidate the four water systems.

Original well use agreements and easements that run with the parcels served by the K Bar J system acknowledged among other things, the following: a) that the system was for sale at the time those agreements were signed, b) that King County (or a possible water district) would acquire the system, and c) that King County or any successors in interest (Foothills Water Association) would retain the right to *all* aspects of ownership including the right to sell excess water to third parties (Foothills Water Association customers) so long as adequate domestic supply would be provided to parties and parcels involved in the original well use agreement. K Bar J customers were in turn granted a guarantee that the \$6,500 connection fee paid by each customer would be applied as credit toward any new hook-up fee assessed by the new water system that would be created. One customer secured an additional provision whereby no additional hookup fee whatsoever could be assessed.

Preliminary estimates place the cost of consolidating the K Bar J water system with the new community water system at approximately \$40,000, including contingencies, engineering, legal costs, permitting, sales tax, etc. (approx. \$10,000 per connection). To avoid imposing a financial hardship, Foothills is exploring ways by which K Bar J customers can be admitted to the Association and made shareholders and customers of the consolidated water system without payment of additional hook-up fees. The K Bar J well use agreement and easement is contained in Appendix I.

Bailey Roberts (State ID# 03760M)

The Bailey Roberts water system is a surface water-fed Group B water system that serves six connections. The system is located immediately north the Bonneville Power Administration transmission line easement north of Kangley and serves customers on both sides of 348th Avenue SE, as well as several customers accessed via private roads heading east from 348th. The Bailey Roberts system receives its water from an unnamed creek. There is no filtration in the system and some storage is provided by means of an open-top wooden tank that appears to be a converted pickle barrel.

Preliminary estimates place the cost of consolidating the Bailey Roberts water system with the new community water system at approximately \$27,000 including contingencies, engineering, legal costs, permitting, sales tax, etc. (approx. \$4,500 per connection). To avoid imposing a financial hardship, Foothills is exploring ways by which Bailey Roberts customers can be admitted to the Association and made shareholders and customers of the consolidated water system without payment of additional hook-up fees.

State and Federal Enforcement Actions

In the late 1980's the Washington State Department of Health invited the United States Environmental Protection Agency (EPA) to take enforcement action against the Kangley and Selleck water systems for failure to comply with the various requirements of the Safe Drinking Water Act.

Since both the Kangley and Selleck water systems were served by surface water sources they were also required to comply with the new Surface Water Treatment Rule which went into effect in July of 1993. Due to the high cost of treatment, testing, and monitoring for both the Safe Drinking Water Act and the Surface Water Treatment Rule, both systems have continued to struggle with compliance since that time.

EPA eventually issued final administrative orders to both systems in the early 1990's and followed with court action and fines against the Selleck Water System, and its private owner and operator at that time, for failure to show acceptable progress toward resolving problems with the system's water supply. Kangley avoided fines and further enforcement action by adopting a corrective action plan that included cooperating with King County in the development of a new water source for the community.

History of this Planning Effort

In the late 1980's and early 1990's, failure to comply with regulations prompted the Kangley Water Association (predecessor to Foothills) to submit an application for assistance to the King County Community Development Block Grant (CDBG) Program, to study and implement cost

effective and feasible solutions for supplying Kangley with safe drinking water. The owner of the Selleck Water System informed King County that County assistance was not welcome in Selleck and so planning work was limited to Kangley only. With King County CDBG funding and technical assistance given to Kangley, an Abbreviated Comprehensive Water System Plan was completed for that community only in March 1994. Recommendations included using the K Bar J water system's groundwater source as the basis of the community's new water system but only after drilling a second, deeper well on the well property and combining *both* the Selleck and Kangley water systems to form a viable community water system. See Source Alternatives in Appendix G for details of alternatives originally suggested for the Kangley system.

Existing and Future Population, Land Use, and Service Area

A combined Foothills system initially will serve 85 single family residences. A building moratorium has been in effect since neither existing system has met current water quality standards. Due to this moratorium, a pent-up demand exists. Once the new system is brought up to current standards, future connections may be allowed and the initial growth will probably prove to be greater than the County's expected growth for the area. This growth will not occur unless additional water rights are obtained or there is a significant amount of water made available through the community conservation efforts. Due to the current zoning designations (RA-5 and RA-10, rural 5 acre and 10 acre, respectively, minimum classification) development and population increase in the Kangley and Selleck area will be limited. The Association has tried to get commitments from as many residents as possible for the initial system in order to reduce the cost per connection.

The Puget Sound Regional Council forecast predicts approximately 20% population increase from 1990 to 2020 in the FAZ zone containing Kangley and Selleck. However, based on pent-up demand, due to the building moratorium in the two communities since April 1988 (Kangley) and June 1993 (Selleck) and the large area of the FAZ zone, we feel the population prediction for this small area is too low if a new, reliable, good quality water source is available.

With an approved water system, the number of households could expand to ultimate saturation of the service area; however, current zoning and the rural make-up of the community will discourage large numbers of new connections unless a major change in land use occurs in the future.

The current land use is mainly residential within the service area, with the surrounding zoning primarily mining and forestry. The proposed service area, shown on the Proposed Service Area and Zoning Map in Appendix B, is bounded on the west by mining zoning, in the north by forest zoning and the Cedar River Watershed, in the east and partially in the south also by forest zoning. Using these boundaries, the service area is approximately 1½ square miles and has an expected build-out of 213 connections. Due to Foothill's limited service area and the RA-5 and RA-10 rural zoning classifications limiting the population growth, it is not likely that the number of connections in the water system's service area will increase above the 213 connections predicted unless zoning laws are altered in the future. Build-out is not expected to occur within

the next twenty years. Planning for build-out is beyond the time horizon of this report. Although a population increase in Kangley and Selleck is forecast, the main reason for making improvements to the water systems is for health reasons, rather than to encourage new development in the area.

Existing Water Consumption and Future Water Demand

The existing systems contain no source or distribution meters, therefore no historical consumption records are available. Until meters are installed and historic information is developed, future water demand can only be predicted by use of the Washington State Department of Health Sizing Guidelines. Once a master meter and individual meters are installed and monitored, the conservative design value of 800 gallons per connection can be adjusted to reflect actual consumption based on actual metered flows.

The Washington State Department of Health (DOH) requires the source to supply 800 gallons per day per connection. There are approximately 85 households to be initially connected to the proposed Foothills Water System. Based on our population forecasts, 8 new connections will be added in 6 years, and a total of 50 new connections within 20 years and 128 new connections will be added at the ultimate build-out of 213 households.

Because the number of connections will exceed 100 (a DOH threshold) within the planning period, 800 gpd will be used instead of 600 gpd as a baseline requirement for standby storage. As an example, for 85 connections with multiple sources, the standby storage calculation is as follows:

$$85 \text{ conn.} \times 800 \text{ gpd/conn.} = 68,000 \text{ gallons storage}$$

This can be reduced by the amount of water that can be produced daily by the system, assuming the largest source is out of service and backup emergency power is available. The 150-pgm backup well can produce 216,000 gpd, which exceeds the storage requirement. In a situation like this, with a high volume backup source, DOH allows reduction of the standby storage to 200 gpd per connection. Based on this 200 gpd figure, the standby storage for 85 connections becomes:

$$85 \text{ conn.} \times 200 \text{ gpd/conn.} = 17,000 \text{ gallons}$$

Reduction in the standby storage requirement is predicated on availability of an emergency power supply. The following table lists the projected connections, average demand gpm, maximum instantaneous demand (MID) and standby and equalizing storage. No equalizing storage will be required, through projected buildout, because the source pumping rate exceeds the maximum instantaneous demand, per DOH sizing guidelines.

YEAR	CONN.	AVERAGE DEMAND (GPM)	MAXIMUM INSTANTANEOUS DEMAND (MID) (GPM)	STANDBY STORAGE (GALLONS)	EQUALIZING STORAGE (GALLONS)
1998	85	47.2	138	17,000	0
2004	93	51.7	146	18,600	0
2018	135	75.0	177.5	27,000	0
BUILDOUT	213	118.3	232.1	42,600	0

Adjacent Utilities

There are no municipal utilities adjacent to the Foothills water system proposed service area. Both Covington Water District and the City of Black Diamond (the nearest utility providers) were considered when Kangley was considered a possible candidate to be managed under a satellite system management agreement. The residents have since rejected the satellite system management option.

Consistency with other Plans and Policies

The Foothills service area is not covered by any coordinated water supply plan. It is farther east than the South King County Coordinated Water Supply Plan east boundary.

The Foothills service area is in the Rural Area as designated by the King County Comprehensive Plan and is within the Tahoma/ Raven Heights Communities Planning Area. The water system will be a Group A system as defined by WSDOH. The new Group A water system is allowed under King County policy F-303 because the old systems were Group A and because the water quality of the existing systems threaten public health. The health problem can best be solved by a new Group A system.

A Determination of Non-Significance and SEPA Checklist has been prepared for the Plan and is included as Appendix F.

II. WATER CONSERVATION

The existing Kangley/Selleck water systems are composed of various materials, including old wood stave pipe and therefore the current leakage is substantial. By installing a new distribution system, the water leakage that currently exists will be extensively reduced and will therefore substantially conserve water. Any new homes will have low water use fixtures in accordance with the plumbing code.

The new well has been pump tested at 500 gpm, well in excess of the required flow. The source appears to be fully capable of serving the anticipated number of ultimate buildout connections to the system.

The existing water system is not metered. The new distribution system and groundwater source will be metered. Monthly readings will be taken at the well to monitor withdrawal rates. This data will also serve to establish seasonal use trends. The service meter data will be tabulated to compare the service use with the source meter readings to quantify the unaccounted-for water within the system.

In the event that additional conservation measures may be required, the Foothills Water Association Board will contact all members of the water system requesting voluntary conservation. Such measures will include restricting outside lawn watering, and car washing. Water main flushing would be restricted to emergency purposes, such as water quality problems. The water system manager would perform a water use inspection of users and inspect the system for potential leaks. If a prolonged period of water shortage is anticipated, a temporary water rate surcharge will be instituted to encourage water conservation.

III. SYSTEM ANALYSIS

The proposed Foothills Water System will be classified as a Group A water system per the Washington State Board of Health Drinking Water Regulations (Chapter 246-290 WAC), effective July 1994. Kangley and Selleck both have court orders to make improvements to the existing systems so they can comply with State Board of Health Drinking Water Regulations and the Surface Water Treatment Rule.

The K Bar J well, now referred to as the Foothills backup well, was drilled approximately 4000 feet northwest of Kangley. The well driller's report indicates that the well is 141 feet deep and is cased with 8-inch steel casing. The aquifer tapped is gravel, and was first penetrated at 120 feet. Initial evaluation of the existing K Bar J well indicated that the amount of water available would meet the requirements of the Kangley community.

Robinson and Noble performed the variable-rate step test first on the well. The well was pumped at 50, 112 and 130 gpm for 10 minutes at each rate. The specific capacities for the 10-minute condition at these rates were 90.9, 77.2, and 70.8 gpm per foot of draw down. The constant rate test was then performed on the well. The well was pumped at an average of 127 gpm for 24 hours. With this pumping rate the well had a draw down of 1.86 feet and a specific capacity of 68.3 gpm/ft. Based on these tests Robinson and Noble felt that a production rate of 100 gpm should be sustainable. The report by Robinson and Noble, which explains their findings in greater detail, is located in Appendix C.

In the summer of 1994, a dry spell occurred with a subsequent significant drop in the well water level. With the well's reliability to provide the necessary water during drought periods for the

system in question, a new deeper well was suggested. Robinson and Noble felt that since there was very little or no available drawdown left in the existing well during a drought period, a new well on the site should be drilled which was deep enough to go to the bottom of the aquifer. The original well was not drilled to the bottom of the aquifer and it was theorized that drilling a new deeper well would provide a more reliable water source.

A second well with a 8-inch diameter casing was drilled by Okanagon Drilling on the Jacobs' property between January 30 and February 2, 1995. A perforated casing was extended from 150 to 170 feet below ground level and developed using air-jet development and air-lift pumping. A variable rate step-test and a long-term constant rate test were performed on the well. From these tests the well was determined to be capable of 500 gpm long-term production and to have over 50 feet of available drawdown in a well that needs less than 10 feet in order to operate at the 500 gpm. This second well is the proposed Foothills primary well. Even with a drought, as experienced in 1994, the available drawdown is adequate. Water quality samples were also collected and were within the state required parameters. See Appendix C for more details and results on the new drilled well.

The two wells have more than enough capacity for the combined Foothills community. Even at build-out (213 connections), the required source production is only 170,400 gpd or 118.3 gpm. A well pump capable of pumping 150 gpm from the Foothills primary well to the new storage tank site is proposed. The backup well should also be equipped with a pump and be capable of 100 gpm pumping capacity and will be used as a standby source for additional reliability.

The well property was acquired by King County to provide the community with a water system source. Water rights for the well still need to be acquired. King County has applied for these water rights through the Department of Ecology. DOH has submitted a letter to DOE to help speed the application for change in places of use for existing water rights.

The water quality of the two wells is excellent. Water quality results (completed in 1994) are attached in Appendix C, Well Reports. There were no detectable levels of Volatile Organic Chemicals (VOCs), Radionuclide Tests were satisfactory for Gross Alpha and Gross Beta MCLs, and no coliforms have been detected. The inorganic chemicals are all well within the MCLs.

In R&N's in-house laboratory, in 1995, the Manganese level was reported to be over the MCL (0.7 mg/L) but we believe this is not a good data point since the certified test lab previously reported a result of less than 0.01 mg/L. The pH at the certified lab was 6.8.

Only preventative disinfection and fluoridation are planned as water treatment at this time. In the future, the corrosivity of the water should be monitored and pH adjustment may be required. At this time it is not clear that pH adjustment is necessary. More pH testing should be completed, as well as the Langlier Index test.

There are two applications for change in water rights. The first water right change proposes that 235 gpm of the Selleck surface water right be transferred to the Foothills primary groundwater well. The Selleck community has put the water to beneficial use at the rate shown on the water right change application since 1908. The second water right change proposes that Kangley's 67 gpm surface water right be transferred to the Foothills backup groundwater well.

Inventory of Existing Systems

General

Hedges & Roth Engineering, Inc. prepared a system valuation in 1995 for the Selleck system. A copy of this report is included as Appendix H. This report gives a valuation of water system assets. It should be noted that the value of the assets is not the same as the value of the water system in this case because the system has liabilities. These liabilities include old pipes which should be replaced and new facilities which need to be constructed to comply with State and Federal laws. The cost of required improvements probably exceeds the value of the assets of the system. The value of the existing water source is minimal since no water rights exist. The Selleck system was given to the Foothills Water Association in a settlement with the EPA. The Selleck Water System Bill of Sale is included as Appendix K.

Sources

The water systems that are consolidated in the Foothills Water Association are briefly described in the Basic Planning Data section. All but K Bar J have in common the use of unfiltered surface water as water sources. These surface water sources will not be used in the new water system because of the limited existing quantity and treatment costs associated with their continued use. Use of a surface water source without filtration is prohibited under the SWTR. Filtration of the sources and other required improvements are not cost effective when compared with the alternative of using the proposed groundwater sources, the Foothills primary and secondary wells.

Storage

The Selleck water system has an old 4,000-gallon steel storage tank upstream of the distribution system which will not be used in the Foothills water system.

Fire Flow

Since the Foothills area is mainly zoned RA-5 or RA-10 and is rural with lot sizes greater than one acre, it is exempt from the King County fire flow requirements and no fire flow is provided. The fire flow requirements are based on King County Title 17. The houses existing on lots with areas smaller than one acre located within the northwestern section of the community were built prior to 1977. Selleck is exempt from the King County fire

flow requirements due to the community's zoning and the year that these houses were built.

No fire hydrants are provided in the proposed water system design. Some larger blowoffs will be installed in several locations so a fire truck fighting a fire can be filled without going all the way back to the fire station. These blowoff assemblies will not provide the State required fire flow.

Water Rights

The Kangley water system has a Certificate of Surface Water Right to withdraw a maximum of 0.15 cubic feet per second (cfs), approximately 67 gpm, from an unnamed creek, presumably the one presently being used as a water source. The annual water right quantity allowed is 22.5 acre-feet per year, or 13.95 gpm. The diversion point for the Kangley water right is described as "580 feet east and 880 feet north of the south quarter corner of Section 26". This right will be transferred to the new Foothills system through the change of water right process through DOE to the Foothills backup well.

The Selleck water system does not have a Certificate of Surface Water Right to withdraw from the unnamed creek. A Water Right Claim was filed with the DOE for withdrawal of 12,000 gallons per minute from an unnamed creek located "2000 feet east and 500 feet south from the Northwest corner of Section 6", however no Certificate of Surface Water Right has been granted, according to Mr. Petrovich at the DOE. A portion (235 gpm) of the water right claim is believed to be available to be applied to water rights for the Foothills water system. This change of water right is currently being pursued to transfer the right to the Foothills primary well. Appendix D contains relevant water right information.

Distribution

The transmission line consists of predominately 6-inch PVC pipe from a 6-inch wood stave intake in an unnamed creek and is approximately three miles long. The transmission line was installed in the early 1900's and has had numerous repairs throughout the years including portions which have been replaced with A.C. and PVC pipe. The transmission line empties out into a small, crude gravel roughing filter in an uncovered concrete basin and then flows by gravity into the storage tank. All of this will be abandoned in the new system.

In March 1995 a series of exploratory excavations and sample removals were performed by James A. Guess Construction Inc. to determine the type of lines present in the Selleck system and their condition. The overall distribution system was determined to be comprised of a combination of PVC, wood, steel and A.C. pipe ranging in size from 1½ to 6-inch diameter. Several years ago a 6-inch PVC pipe was installed extending from the Selleck water system to Kangley to allow for additional connections within Kangley.

Most of the other waterlines are quite old, and are near the end of their service life and need to be replaced. We recommend only using the newer PVC waterlines and abandoning the rest of the distribution system as shown in the Foothills Proposed Water System Map in Appendix B.

Individual water services connections are connected to the main lines. There are no accurate as-built drawings so it is not known exactly who or how many people are connected to the system. The exact layout, location, and line size for each individual service connection is also unknown.

Operating Permits

The current operating permits for the system are located in Appendix J.

IV. RECOMMENDED IMPROVEMENTS

General

Very little of the existing water systems is salvageable. An almost entirely new water system is required. For design purposes and budget estimating we have assumed, as discussed previously, 85 initial connections to the system, 93 potential connections in the next six years and 135 connections within 20-years. As discussed previously there would be an ultimate build-out of 213 connections. Based on the potential increase in connections from the 6 to 20-year growth to build-out, it would be cost effective to design the system in phases. With this reasoning in mind, our initial design recommendations will be based on the 10 - 20-year expected growth. We feel that using both the Foothills primary and backup wells as sources is the best option for the system. The original K Bar J well will serve as a backup to the primary well. The proposed system components are described in the following paragraphs.

Source

Based on Robinson and Noble's findings, the proven high well flow rate and excellent water quality of the Foothills wells, these wells are the best water source option for Foothills to pursue. The deeper primary well drilled close to the backup well will provide more available draw down to protect against drought. Two wells will allow the pumps to alternate if desired, saving wear and tear on the pumps and providing backup reliability. Also, by outfitting the second well with a pump, maintenance can be performed on either pump without having to draw on the reserve in the storage tank. If any problem should occur with one of the pumps, the other well pump can serve as a backup. The primary well should be equipped with a pump capable of producing 235 gpm (338,400 gpd). The pump should be set at approximately 160 feet deep in the primary well. The backup well pump should have a pumping water depth of 130 feet and be set as low as possible in the well to allow for the largest amount of drawdown reserve. The backup pump should be capable of 150 gpm (216,000 gpd). The source pumping capacity is

established based upon well capacity and the ability to meet historical water system demands. Since no historical records are available, we do not know the demand. The pump sizing should accommodate demand for a minimum of 20 years.

Both pumps should also be installed with low water probes and shut-offs. The probes will give advance warning of insufficient water above the pump intake and shut off the pump to prevent breaking suction. Water level recording devices to collect long-term static and production of water level data should also be installed. The water level data should be reviewed on a quarterly basis for the first year to establish water level changes and trends for future reference.

Three-phase power will be extended from 348th Avenue SE, which is approximately 1800 feet from the well site.

Master meters will be installed at the wells to monitor overall water use of the water system. These master meters will also allow the Foothills Water System to keep historical records of water use and spot water consumption trends to detect excessive use or possible problems, such as leaks in the system.

Storage

DOH requires standby storage of 800 gallons per connection per day for systems with 100 or greater connections and 600 gallons per connection for systems with less than 100 connections. This can be reduced as a function of multiple-source capacity to as little as 200 gallons per connection, as described on page 7. For the 6 and 20-year projected connections, standby storage would need to be 18,600 and 27,000 gallons respectively. Minimum storage requirements are shown in the table on page 7. We recommend building a 50,000 gallon water storage tank, based on sizing for ultimate buildout and discussions with tank builders about the small incremental cost of additional volume.

Instantaneous flow rate demands for the 6 year, 20-year and build-out conditions, obtained from Table 1 in the DOH Sizing Guidelines, are 146 gpm, 177.5 gpm and 232.1 gpm respectively. Since the primary well pump has a flow rate (235 gpm) greater than the anticipated MID at buildout, equalizing storage will not be required, through projected buildout. As additional connections are added to the Foothills water system equalizing storage can provide water flow during peak demand periods. A second storage tank can be added, on the same property, if required by either water use or growth of the system. This second tank will probably not ever be required.

The next item to consider is where to locate the new water storage facility. DOH requires a minimum pressure of 30 psi at all connections. To meet this requirement, either a pressure booster station will be required (if tank is located at low elevation) or a tank at a high enough elevation to provide gravity flow would be required. The advantage of a gravity flow system is that during a power outage the system would still be able to use water up to the amount of standby storage in the tank (the well pump would not be running). In order to have gravity flow

out of the tank and avoid using a pressure boosting station, the minimum water surface elevation would need to be approximately 1225 feet. A suitable site was located east of the well site for a storage tank but was deemed to be cost-prohibitive. The cost of a gravity system is much greater in this case than the cost for the lower tank with a booster station concept. The wells and booster station will be equipped with backup power generation equipment in case of a power outage. The initial water storage tank is proposed to be located on the same site with the pump station and wells. See Exhibit A, following, for a system schematic.

Distribution System

The majority of the waterlines in both Kangley and Selleck have been in service beyond their expected useful lives. The pipe is still functioning, but because of the distribution system's age, the materials used and its location, we recommend the majority of pipe be removed or abandoned and a new distribution system and service connections can be built. The newer PVC solvent-welded pipe extending from Selleck to Kangley on SE 262nd Street and 348th Avenue SE reportedly provides reliable service and is usable. Over one mile of this line is to be used in the new distribution system.

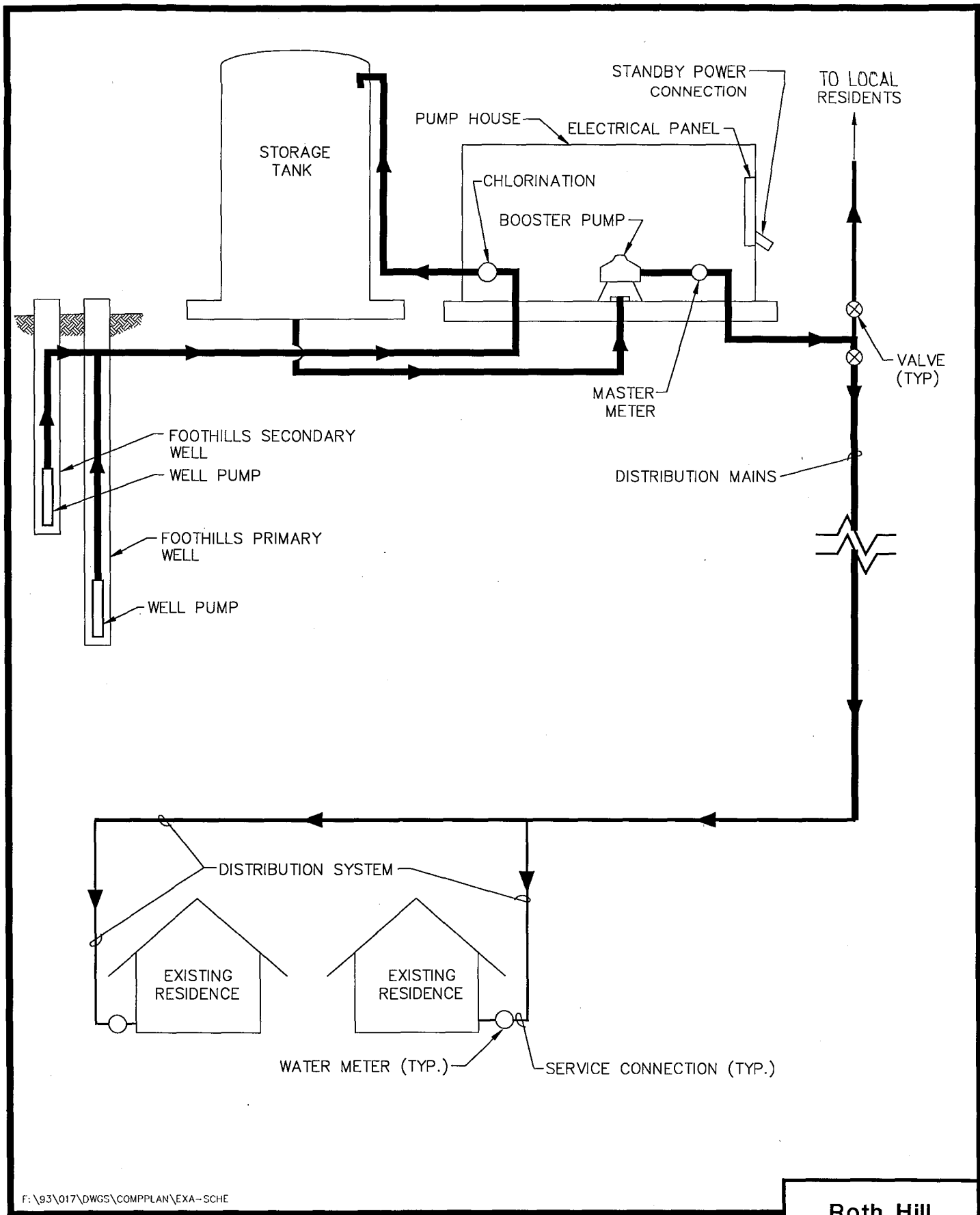
The other existing waterlines are suggested to be abandoned in place and in some places replaced with new waterline. See Appendix B for a detailed map. A total of 5900 feet of new 6-inch pipe and 5120 feet of new 4-inch pipe, and 3950 feet of new 2-inch pipe are proposed within the water initial water system

The solvent-welded PVC watermain was not designed to withstand the expected pressures within the proposed water system. Therefore, two PRV (pressure reducing valve) stations are proposed on 348th Ave. SE at the intersections of SE 257th Street and on 353rd Ave. SE. Individual PRVs are proposed for the connections with pressure greater than 80 psi. The distribution system will include gate valves and blow-offs at the ends of the 6-inch and 4-inch PVC mains for future cleaning and testing. Where mains are replaced, new service connections will be provided up to the location of the new meter box. If this is parallel to the old service, replacement of the service line from the meter to the house will be at the option of the homeowner. Where the new service line location is different from the old location, a new service line to the house may be required. Individual meters will be installed at each residence to monitor water use.

All of the recommended improvements to the distribution system are preliminary. They should only serve as a conceptual design and a reference for cost estimating and preliminary budgeting. Without a final water system design, the sizes and alignment of piping, the location of valves and meters, and hydraulics of the system cannot be determined accurately.

Opinion of Probable Costs

An opinion of probable costs for the recommended system has been prepared assuming the previously mentioned requirements. This cost estimate is based on building the system for the



F:\93\017\DWGS\COMPLAN\EXA--SCHE

EXHIBIT "A"

**FOOTHILLS WATER ASSOCIATION
PROPOSED WATER SYSTEM SCHEMATIC**

SEPTEMBER 1998

**Roth Hill
Engineering
Partners, Inc.**

ENGINEERS, PLANNERS
SURVEYORS, GIS/AM/FM

initially expected 85 connections with allowances for the major facilities to accommodate a 10-20 year growth. The total project cost to construct a community water system using both Foothills wells as sources is approximately \$1,171,000. which is about \$13,776. per connection based on 85 initial contributing connections. This does not include the cost of the K Bar J well and well property or the cost of drilling the new primary well on the property, as these costs have already been fully paid during the pre-construction phase. A rate structure should be created wherein future connections pay fees to cover their share of the cost of the existing system as well as future improvements. See the attached Engineer's Opinion of Probable Cost in Appendix A for further detail. In addition to new general facilities (facilities that benefit all customers) new water lines will be extended in response to property owners wishing to connect to the system.

V. OWNERSHIP/ MANAGEMENT

Non-profit Association

Kangley formed a non-profit association, the Kangley Water Association, in 1994 to replace the original community water association in Kangley that lacked official corporate status. The Kangley Association By-laws and organizational structure was created with the intent of eventually expanding to include Selleck and combining both the Kangley and Selleck water systems into one organization to produce a regional drinking water solution. The Kangley Association issued shares to all those connected to the Kangley system who signed shareholder agreements and other necessary paperwork.

In October 1997, a group of Selleck homeowners organized into the Selleck Steering Committee. The purpose of the group was to prepare for community ownership of the Selleck water system by discussing the proposed new water system, and responsibilities the community would face as it acquired ownership of the system. such as monitoring and operation. The group also began a relationship with the Kangley board with the intention by both parties to combine into one organization. In March of 1998 this union was accomplished with the expansion of the Kangley organization into and throughout Selleck, the renaming of the organization to "Foothills Water Association," election of new board officers representing both Kangley and Selleck, and the dissolution of the Selleck Steering Committee.

Also in March of 1998, after prolonged legal battles between the EPA and Tim and Robert Schaefer (former owners of the Selleck water system), the Schaefers and their various corporations transferred ownership of the Selleck water system and its associated water right claim to the Kangley Association in exchange for relief from future EPA penalties. Thus, the Kangley Water Association has assumed control of both Kangley and Selleck's primary water systems and has expanded its organization accordingly to implement the project described in this comprehensive plan.

The Foothills Water Association has not established policies for developer extensions or maximum service line lengths at this time. A developer extension policy, as well as other policies, will be developed after the initial water system is installed. After the system is installed, the Association will have a better understanding of its financial status and obligations, which may influence the rates and charges set forth in the Association's policies. Upon completion of the new water system, daily operational management will be performed under contract with a certified water system operator. Foothills Water Association organizational and policy documents are included in Appendix L.

VI. PROJECT FINANCING

The Kanglely Water System originally received King County Community Development Block Grants (CDBG) totaling \$150,000 during the years 1989, 1990, and 1991 for investigation, design and planning for a new water source and distribution system. Additional Community Development Block Grant funding in the amount of \$326,000 was received in 1995. A portion of the 1995 CDBG funds went towards purchase of the K Bar J water system and well property. The balance was used for preliminary design and planning of water system improvements. Additional CDBG funding in the amount of \$444,320 was awarded for 1998 for the upcoming construction project. In June of 1998, an additional \$105,000 in 1999 King County CDBG funds was applied for to ensure that the new water system can provide affordable water service to isolated customers in Old Selleck, where a significant portion of the new water system's customer base has been lost to a number of new group B water systems recently installed by Robert and Tim Schaefer, former owners of the Selleck water system. The 1999 CDBG request also was justified on the need to extend service to Bailey Roberts customers who need to abandon their existing surface water source. The King County Council will make a final decision on this most recent request by the end of November, 1998. Total King County Community Development Block Grant Fund monies awarded for the Foothills project thus far are in excess of \$900,000 and will exceed one million dollars if the 1999 funding request is awarded.

A significant portion of the CDBG dollars awarded to this project through 1995 have already been spent on pre-construction costs such as preliminary planning, well drilling and testing, well property acquisition, and the preparation of this comprehensive plan. Still to be incurred though are expenses for system-wide construction, which will total approximately \$1.2 million, including engineering, inspections, contingencies, and sales tax. CDBG funds will cover between approximately \$500,000 and \$600,000 of this amount (the \$600,000 amount includes the 1999 CDBG request). The remaining \$600,000 to \$700,000 will come from a combination of short term debt, long-term debt, and a potential federal grant to be explained below.

Concerning short-term debt, the Foothills Water Association has been offered up to \$700,000 in short-term (3-year) construction financing from the Drinking Water State Revolving Fund (DWSRF) which is jointly administered by the Washington State Department of Community Trade and Economic Development and the Public Works Trust Fund Board. The DWSRF loan

offer is contingent on Foothills securing a long-term loan to pay off the short-term loan at the close of construction. Foothills intends to meet this condition and has already convened one meeting between officials of the DWSRF program, the King County CDBG Program, and the Federal Rural Development Administration (RDA) (formerly Farmers Home Administration) to discuss a three-way funding partnership.

Following on this meeting, Foothills applied to the (RDA) for a combination long-term loan and grant not to exceed \$800,000. Foothills needs a grant in addition to a loan from RDA because of the Association's expected limited ability to take on debt. Early projections place Foothills' long-term debt capacity at only approximately \$500,000. Assuming that these projections are accurate, Foothills will need to secure an RUS grant of somewhere between \$100,000 to \$200,000 depending on the final amount of CDBG funds awarded for 1999 and the final terms of the RUS long-term loan that will be offered. The most likely construction funding scenario will have \$600,000 from King County CDBG, \$500,000 from an RDA loan, and \$100,000 from an RDA grant. The DWSRF construction loan will only be used during construction and will not exceed the combined total of the RDA loan and grant, or an expected \$600,000.

See Appendix E for the proposed first year operating budget which includes expected debt service expenses.

VII. RECOMMENDATIONS AND CONCLUSIONS

After reviewing all the source options available to the proposed Foothills Water System we feel that using both Foothills' wells, with the new well used as a main source and the original well as a backup, is the best water source option to pursue. This conclusion is based on recommendations from Robinson and Noble, the excellent water quality and quantity, and overall system cost comparison to alternatives.

The distribution system should be replaced with new pipe as indicated in the map in Appendix B due to the type and age of waterlines currently in use. The newer solvent welded PVC pipe on 348th Ave. SE reportedly has years of expected service life and should be connected to the proposed water system.

A 50,000 gallon water storage tank is proposed for standby storage. This tank will supply enough storage to accommodate the buildout growth.

A water right for 300 gpm (432,000 gpd) for the Foothills well field has been applied for. The Department of Health has been contacted to expedite the water right acquisition process from the Department of Ecology. The water right certificate is expected to be obtained within 3 to 4 months from when the DOH makes a recommendation to the DOE.

Funding in the form of new grants and loans will have to be obtained to make the required improvements, including in reality, an entirely new water system including source, storage,

transmission, distribution, treatment and a booster pump station. The more connections that are in the eventual organizational structure and planned to be connected to the source, the lower the cost will be per connection. Design should begin in 1998 and construction is anticipated to begin in 1999, after the necessary funding has been established. The proposed system should be completed and on-line in 1999 to 2000.

A wellhead protection plan is required to be prepared and implemented. WSDOH publishes a 'Wellhead Protection Program Guidance Document' which outlines the requirements of the program. The goal of this program is to identify any nearby potential hazards to the water system and define a sanitary control area and wellhead protection zones for 1, 5, and 10 year time of travel for contaminants. The program also requires development of an emergency response plan.

APPENDIX A

ENGINEER'S OPINION OF PROBABLE COSTS

Appendix A

Foothills Water System
Engineer's Opinion of Probable Costs

Prepared by: **Scott Goss**

Checked by:

Revised: **11-Aug-98**

Job No. **93-017**

PHASE 1- Initial service to 85 customers

Includes Alternates A, B, C(1), D, E, H, I(1)

Item	Description	# Units	Unit	Unit Cost	Total Cost
1	Mobilization (at 10% of Total Bid)	1	L.S.	\$ 69,483.50	\$ 69,484
2	Connection to Existing System	8	Each	\$ 1,500.00	\$ 12,000
3	Connection to Existing System(w/ x-con	1	Each	\$ 5,000.00	\$ 5,000
4	2" HDPE Water Main Pipe	3950	L.F.	\$ 10.00	\$ 39,500
5	6" CL52 Ductile Iron Water Main	1750	L.F.	\$ 26.00	\$ 45,500
6	4" CL52 Ductile Iron Water Main	3300	L.F.	\$ 23.00	\$ 75,900
7	6" CL150 - C900 PVC Water Main	4150	L.F.	\$ 19.00	\$ 78,850
8	4" CL150 - C900 PVC Water Main	1820	L.F.	\$ 19.00	\$ 34,580
9	Fittings for Ductile Iron or PVC	4000	Lb.	\$ 1.50	\$ 6,000
10	2" Gate Valves w/ valve box & marker p	4	Each	\$ 200.00	\$ 800
11	4" Gate Valves w/ valve box & marker p	12	Each	\$ 300.00	\$ 3,600
12	6" Gate Valves w/ valve box & marker p	3	Each	\$ 325.00	\$ 975
13	PRV Station	3	Each	\$ 17,500.00	\$ 52,500
14	Bank Run Gravel	1250	Ton	\$ 10.00	\$ 12,500
15	Crushed Surfacing	1120	Ton	\$ 16.00	\$ 17,920
16	Asphalt Concrete Patch	250	S.Y.	\$ 14.00	\$ 3,500
17	Reconnect Existing Service w/ Indiv. PR	18	Each	\$ 500.00	\$ 9,000
18	Reconnect Existing Services without PR	35	Each	\$ 300.00	\$ 10,500
19	New Service without Indiv. PRV	23	Each	\$ 450.00	\$ 10,350
20	New Services with Indiv. PRV	9	Each	\$ 650.00	\$ 5,850
21	New meters (5/8" x 3/4")	85	Each	\$ 60.00	\$ 5,100
22	Pump Station w/ chlorination equipment	1	L.S.	\$ 91,000.00	\$ 91,000
23	Surface Restoration	1	L.S.	\$ 9,000.00	\$ 9,000
24	Extend 3-Phase Power	1800	L.F.	\$ 19.44	\$ 35,000
25	Storage Tank - 50,000 gallon concrete	1	L.S.	\$ 50,000.00	\$ 50,000
26	Fire Hydrants	1	Each	\$ 2,000.00	\$ 2,000
27	Pumps for Main and Standby Wells	2	Each	\$ 10,000.00	\$ 20,000
28	2" Blowoff Assembly	6	Each	\$ 600.00	\$ 3,600
29	4" Blowoff Assembly	5	Each	\$ 1,300.00	\$ 6,500
30	Polyethylene Encasement	1200	L.F.	\$ 1.50	\$ 1,800
31	Trench Shoring per WISHA, Ch. 49.17	1000	L.F.	\$ 1.00	\$ 1,000
32	Electrical Service at Pump Station Site	1	L.S.	\$ 10,000.00	\$ 10,000
33	Pea Gravel for bedding PVC Pipe	334	Ton	\$ 15.00	\$ 5,010
34	Emergency Generator and Transfer Swi	1	Each	\$ 30,000.00	\$ 30,000

Sub-Total \$ 764,319

Contingency - 15% \$ 114,648

Sales Tax - 8.2% \$ 62,674

Engineering, Subconsultants, Legal Costs, Permitting, etc. - 30% \$ 229,296

Total \$ 1,171,000

APPENDIX B

MAPS

APPENDIX C

WELL REPORTS

Foothills Primary Well
Well #2 (~~The Main Production Well~~)

Drilling Report dated February 21, 1995
(The results of drilling and testing of well #2)

Clarification Letter Dated March 22, 1996

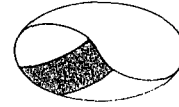
(This 2nd letter was written in response to the well property owner's \$600,000 appraisal. It explains the difference between the "instantaneous, or sustainable yield of Well #2 (500 gallons per minute) and the advisable "long term production capability" of the aquifer from which the well will draw (more in the neighborhood of 100 gallons per minute). This letter provides good background on the water resource we acquired for Kangley(/Selleck).

RECEIVED

FEB 27 1995

HEDGES & ROTH ENGINEERING, INC.
BELLEVUE, WA

ROBINSON & NOBLE, INC
GROUND WATER & ENVIRONMENTAL GEOLOGISTS
5915 ORCHARD STREET WEST
TACOMA, WASHINGTON 98467
(206) 475-7711
FAX 472-5846



February 21, 1995

Hedges & Roth Engineering, Inc.
14450 29th Place, Suite 101
Bellevue, Wa. 98007

ATTN: Greg Hill

SUBJECT: Interim report of findings regarding the drilling of the second well
on the Jacob's Site, near Kangley, WA.

Dear Greg,

At the request of Dwight Van [✓]Fleet, I have prepared a preliminary report regarding the results of the recent drilling project near Kangley. The project has been completed and the results are encouraging.

The initial evaluation of the Jacob's well in January, 1994 indicated that the aquifer tapped could supply the needed water for the proposed Kangley/Selleck water system. The subsequent drop in water level over the summer and fall of 1994 cast some doubts on the reliability of the system. The water level in the Jacob's well was observed to have fallen from its original static water level of 107 feet below land surface to 126 feet. This, in conjunction with the fact that the well has a total depth of only 140 feet, created some concern as to the wells ability to provide sustained source through drought periods. Since the drilling of the Jacob's well stopped before bottoming the aquifer, there was reason to believe that the well production was limited by the partial penetration of the aquifer. In order to verify this, the drilling of a second well was planned. This letter summarizes the drilling and testing of that second well and our evaluation of the site.

PROCEDURES

Well 2 was drilled by Okanogan Drilling of Okanogan, WA, between January 30 and February 2, 1995. The well was drilled with 8-inch diameter casing to a depth of 225 feet using air-rotary methods. A copy of the state Water Well Report for the well, as completed by the driller, is attached.

The well was completed by perforating the casing from 220 up to 150 feet. It was determined that the materials drilled below 175 feet were less-water bearing than those from 150 to 170, and in order to prevent water from transferring from the upper zone to the lower one, the well was

Page 2
Greg Hill
Hedges & Roth Engineering, Inc.
February 24, 1995

backfilled with drill cuttings and bentonite from the hole bottom up to 170 feet. The remaining portion of the perforations (150 to 170 feet) were developed using air-jet development and air-lift pumping. These development procedures required two days of work.

A generator-driven, submersible pump was installed in the well on February 10, 1995 and a variable-rate "step-test" was then performed. The well was pumped at rates of 50, 200, 275, 375, 475, and 590 gallons per minute (gpm). The resultant drawdowns at these rates were: 0.5, 1.55, 2.95, 4.55, 6.6, and 8.9 feet. This gives a specific capacity for the well of between 100 and 66.3 gpm per foot of drawdown.

A long-term, constant rate test was performed on the well from February 13 to 15, 1995. The well was pumped at 500 gpm for 24-hours. At the end of that time, pumping had induced 7.05 feet of drawdown, giving a 24-hour specific capacity of 70.9 gpm/ft. Water levels were manually recorded in both of the Jacob's wells and in the Burnett irrigation well (Burnett Well 2, as identified in the January 1994 report) through the course of the test. Jacob's well 1 was also equipped with a transducer-based electronic data logger allowing a continuous record of water level measurements in that well (one minute intervals for the three day period).

At the conclusion of the test, water quality samples were collected and submitted to Water Management Laboratories (WML) of Tacoma, WA.

FINDINGS

Based on the drilling information from both wells, the aquifer at the Jacob's site exists from approximately 118 to 182 feet below ground, and primarily consists of layered gravels and sands with variable amounts of silt matrix. Pump testing of the aquifer implied transmissivity values of between 275,000 and 300,000 gallons per day per foot. Testing has also indicated that both wells have good yields with low drawdown. Water level recovery data showed no indication of dewatering of the aquifer.

The new well is capable of long-term production of 500 gpm. The static water level in the well was 97.5 feet below ground at the start of the 24-hour test. This allows for over 50 feet of available drawdown in a well that needs less than ten feet in order to operate at its full production rate. Even if the 20-foot water level decline noted last summer is recurring, sufficient drawdown will still remain available for full production from the well.

Based on the results of our preliminary inorganic tests (attached), the water quality at Well 2 appears to be good, and is in close agreement with the testing performed during the Well 1 test. However, at the time of this writing, WML has reported a positive result for the Volatile Organic Compound (VOC) Chloromethane, an unregulated compound. The reported result was

Page 3
Greg Hill
Hedges & Roth Engineering, Inc.
February 24, 1995

0.6 parts per billion, which is 0.1 ppb over the detection limit. The reporting chemist indicated that the result may be a false positive and recommended that the well be resampled. Assuming the water quality concern is adequately resolved, the well should be reliable for the proposed need.

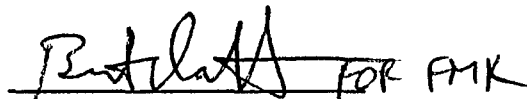
RECOMMENDATIONS

We recommend that Well 2 be equipped with a pump capable of producing 500 gpm with a pumping water level of 130 feet (assuming a seasonal low of 120 feet). The pump should be set as deep in the well as is practical, approximately 160 feet, allowing for the largest amount of reserve above the pump intake. The pump should also be installed with a low-water warning probe to allow for advance warning of insufficient head above the pump intake and an automatic shut-off probe to prevent breaking suction.

Both wells 1 and 2 should be equipped with water level recording devices to allow for collection of long-term static and production water level data. The collected data should be reviewed at least quarterly for the first year of production in order to establish trends in the water level changes.

If you have any questions or comments, please contact us. Thank you for the opportunity to serve you on this project.

Very truly yours,
ROBINSON & NOBLE, INC.


F/ Michael Krautkramer
Principal Hydrogeologist

Attachments

FMK/bgc
N:\apps\wp51\fmk\jacob2.ltr

**WATER QUALITY
ROBINSON & NOBLE, INC.
IN-HOUSE LABORATORY**

Source: Jacob's Well 2, Kangley

Collection date: 2-9-95

Analysis date: 2-9-95

Remarks:

<u>Quality Parameter</u>	<u>Laboratory Results</u>	<u>State MCL</u>
Specific Conductivity (umohs/cm)	225	700
Turbidity (NTU)	2.0	1.0
Color (visual)		
pH (pH units)	8.4	
Total Hardness - as CaCO ₃ (mg/l)	20	*
Bicarbonate Alkalinity - as CaCO ₃	90	**
Chloride (mg/l)	2.5	250
Iron (mg/l)	0.1	0.3
Manganese (mg/l)	0.7	0.05
Nitrate (mg/l)		10

Temperature

Other:

*: Total Hardness: 0-60 = Soft;
 61-120 = Slightly hard;
 121-200 = Hard;
 above 200 = Very hard

** : Alkalinity : Result x 1.22 = HCO₃ (Bicarbonate ion)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No. _____

Start Card No. 050202

UNIQUE WELL I.D.# AAJ366

(1) OWNER: Name King County CDBG Address Kangley / Jacob's Site

(2) LOCATION OF WELL: County King NE 1/4 NW 1/4 Sec 26 T. 22 N. R. 7 WM

(2a) STREET ADDRESS OF WELL (or nearest address) S.E. 257th Street Lot #9136

(3) PROPOSED USE: Domestic Industrial Municipal
 Irrigation Test Well Other
 DeWater

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top soil w/ Gravel	0	3
Gravel	3	14
Boulders & Gravel	14	35
Gravel w/a few Boulders	35	70
Cemented sand silt && Gravel	70	107
Silty Sand w/ some Gravel	107	118
Silt, Sand, Gravel--Water	118	175
Silty Brown Sand w/ Gravel & Water		182
Sand, Gravel---Water	182	195
Sand, Gravel, Boulders --- Water, silty	195	222

(4) TYPE OF WORK: Owner's number of well (if more than one) _____
Abandoned New well Method: Dug Bored
Deepened Cable Driven
Reconditioned Rotary Jetted

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 222 feet. Depth of completed well 222 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 8 Diam. from +2 ft. to 222 ft.
Welded Diam. from _____ ft. to _____ ft.
Liner installed Diam. from _____ ft. to _____ ft.
Threaded

Perforations: Yes No
Type of perforator used Air
SIZE of perforators 1" in. by 1/8" in.
360 perforations from 160 ft. to 172 ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes No
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes No Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes No To what depth? 40 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 96 ft. below top of well Date 2/10/95
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (C&V, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? Okano Drilling
Yield: 500+ gal./min. with 7 ft. drawdown after 24 hrs.

Work Started 1/31/95 19. Completed 2/9/95 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Okanagan Drilling (TYPE OR PART)

Address Rt. 2, Box 395, Okanogan, Wash.

(Signed) Joe Booth License No. 0554

Contractor's Registration No. OKANODD119LT Date 2/16/95 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6800. The TDD number is (206) 407-6008.

Date of test 2/13/95
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____

RECEIVED

MAR 25 1996

ROBINSON & NOBLE, INC.

GROUND WATER & ENVIRONMENTAL GEOLOGISTS
5915 ORCHARD STREET WEST
TACOMA, WASHINGTON 98467
(206) 475-7711
FAX 472-5846



March 22, 1996

Mr. Dwight Van Vleet
King County Planning and Community Development
Smith Tower Building
506 Second Avenue, Room 707
Seattle, WA 98104

Subject: Review and comment on the hydrogeologic aspects of the Market Value Appraisal Report for the Jacobs Property prepared by John K. Boldrey.

Dear Dwight,

At your request, we have reviewed the hydrogeologic aspects of the above-titled appraisal report. We find two very serious misconceptions in the discussions of the production potential of the aquifer tapped by the wells on the Jacobs' property. The first is related to misreading the production estimates within our reports, thereby confusing well production statements provided to guide system storage design with aquifer production limits which have implications for system size. The second is the implicit presumption that the presence of water beneath the property is equivalent to the water being something that the Jacobs own and, therefore, have a right to sell. This issue is one of water rights and the regulatory environment in which that issue currently exists.

It is incorrect to assume that the production capability around which a water system would be designed is 500 gallons per minute (gpm), or 720,000 gallons per day (gpd). The statements taken from our reports and included in the appraisal are sufficient to demonstrate the misconceptions of the appraiser. Production potential of an aquifer is a function of the amount of recharge and storage that exists for a given aquifer. The estimate for the subject aquifer is presented on page 5 of the appraiser's report where, in the last paragraph, the implications of estimated recharge are stated. This paragraph clearly states that the production estimate for the aquifer is in the range of 100 gpm. The method used is speculative. However, since the value exceeded the amount of water proposed for the system being considered, no need for refinement seemed necessary. This estimate was predicated on an assumption that, prior to the test of December 29 and 30, 1993, the static water level was relatively low for the aquifer. This interpretation was made because the summer water level observed at the time the well was drilled (8/18/93) was 107 feet below the top of the well, which correlated closely with the 109-foot level observed at the time of our test. This, in conjunction with the relatively low

Mr. Dwight Van Vleet
King County Planning and Community Development
March 22, 1996
Page 2

precipitation of the autumn of 1993, indicated that this likely represented the seasonal low water level for the aquifer. Subsequent measurements performed in late 1994 indicated that the static water level of the aquifer had dropped nearly 20 feet below the previous static. This factor would cause reduction of the estimated 100 gpm annual production potential if it were to be changed.

The fact that the instantaneous, or sustainable, yield of the well is estimated at 500 gpm is not relevant to the production potential of the aquifer. This number is provided to guide the design engineer in the development of the storage needs of the system. The statement suggests that the storage of the aquifer can be used instead of tank storage at land surface to whatever degree that the 500 gpm offsets the peak summer demands. The report was written to function as a guidance document for the design engineers. Since we have been writing such reports for that purpose since 1947, the meanings of the statements are clear to the various components of the design team. The misunderstanding of the appraiser is unfortunate.

The second issue, that of water rights, has been ignored in the analysis. Acquisition of water rights in the Cedar-Sammamish Watershed is, to put it mildly, problematic. Any assumption that a new water right would be issued for 500 gpm, or even 100 gpm for that matter, is very likely to be incorrect. The transfer of surface water rights to the Jacobs' well, in conjunction with a small increase in the water right, has been the proposed option for procuring emergency water rights for the Kangley/Selleck project. Even with the advantages of transferable surface water rights and the declaration of emergency by Department of Health, the acquisition of the necessary water rights is not a sure thing. Acquisition of water rights without those factors is extremely unlikely. Certainly, without those rights in place, the water is not the property of the Jacobs and, therefore, is not theirs to sell. The gross assumption that a 500 gpm source exists at the Jacobs site is, by virtue of the lack of water rights, totally erroneous.

In brief, the overstatement of the production potential by at least a factor of 5 is a fatal error in evaluating the water resource aspects of the site. Further, it is extremely speculative to assume that a water right would be issued of any size greater than that of a 5,000 gpd exempt well. The chances of a water supply system created around the Jacobs well obtaining water rights without the advantage of transfer and emergency status is sufficiently remote, and it should not be considered. The largest design number with which I am currently comfortable as a supply for the Kangley/Selleck Project would be 100 gpm as an annual average production. Unless the response at that rate is favorable after a few years of production, I would not recommend designing for any greater quantity. The amount of water available for any other entity without transferable rights and emergency status would, in my opinion, be 5,000 gpd, which is the maximum amount that can be taken without a formal water right application.

Mr. Dwight Van Vleet
King County Planning and Community Development
March 22, 1996
Page 3

If there are questions regarding these comments, or if we can be of further service, please contact us.

Respectfully submitted,
ROBINSON & NOBLE, INC.

A handwritten signature in cursive script, reading "F. Michael Krautkramer", written over a horizontal line.

F. Michael Krautkramer
Principal Hydrogeologist

Foothills Backer well

Well #1 (~~The "Jacob's Well"~~)

A.K.A. K Bar J or "Jacob's Well"

January 1994 Report on Test Pumping

October 26, 1994 Recommendation to Drill Well #2

**KANGLEY/SELLECK PROJECT
JACOB WELL TEST**

January, 1994

Prepared by

Robinson & Noble, Inc.

5915 Orchard Street West
Tacoma, WA 98467

TABLE OF CONTENTS

	Page
INTRODUCTION -----	1
TEST PROCEDURE -----	1
HYDROGEOLOGIC SETTING -----	4
WATER QUALITY -----	6
CONCLUSIONS & RECOMMENDATIONS -----	7

LIST OF FIGURES

Figure No.	Description
1	Location Map
2	Discharge/Drawdown Relationship
3	Pumping Well Drawdown Data, Semi-Log
4	Pumping Well Recovery, Semi-Log
5	Pumping Well Recovery as Ratio of Time
6	Water Level Record - Burnett Well 1
7	Water Level Record - Burnett Well 2
8	Burnett Well 2 Drawdown Data, Semi-log

APPENDIX

Water Well Report
Water Quality Results

KANGLEY
~~KANASKET~~/SELLECK PROJECT
JACOB WELL TEST

INTRODUCTION

As a part of a general project to develop a reliable water system for the Community of Kangley, Robinson & Noble was asked to evaluate the water resource potential of a new well drilled for Rob and Karen Jacob. The well is located in the northeast quarter of the northwest quarter of Section 26 of Township 22 North, Range 7 East. Figure 1 shows the site location. The well was drilled by Northwest Pump & Drilling of Auburn, Washington to a total depth of 141 feet below land surface. The aquifer tapped is reported to be gravel, first penetrated at 120 feet and extends below the total depth drilled. The well is completed as an open casing without a screen or perforations. Preliminary tests performed by the driller indicated a substantial production potential from the well. A copy of the Water Well Report submitted to the Department of Ecology by Northwest Pump and Drilling is presented as part of the appendix to this report.

As part of the evaluation of the source, Ramlo Well Drilling of Graham, Washington was contracted to install a test pump in the well and to perform the required testing. Testing consisted of a variable-rate step test to determine well characteristics and a constant-rate, long-term test to define aquifer characteristics and responses. At the conclusion of the testing, samples of the water were submitted to Water Management Laboratories of Tacoma for analysis.

TEST PROCEDURE

Prior to any pumping, water levels were measured in three wells, the Jacob well and two wells belonging to the Burnett family. The Burnett wells are a 6-inch diameter, single-family domestic well (Well 1) and an unused, 6-inch, domestic/irrigation well (Well 2). Well 1 is

approximately 600 feet southwest of the Jacob Well, and Well 2 is approximately 100 feet southwest of Well 1.

In order to establish a baseline water level in the aquifer, the Burnett Well 2 was equipped with an electronic transducer and data logger one day prior to setting the test pump in the Jacob Well. This allowed for close-order measurements throughout the course of the testing. The transducer record begins December 27, 1993 and ends December 31. The well is not presently in service so the record is not encumbered with minor residual drawdowns as were seen in the manually measured data from Burnett Well 1.

Ramlo Well Drilling installed a generator-driven, electric submersible test pump in the Jacob Well on December 28, 1993. The discharge water was escorted approximately 300 feet north of the well using plastic "layflat" tubing. The production rate was measured using a standard orifice and manometer assembly.

Testing began on December 28 with a variable-rate "step-test" designed to define well efficiency, quantify sand production, and determine well capability for the constant-rate test. The well was pumped at rates of 50, 112, and 130 gallons per minute (gpm) for 10 minutes at each rate. The pump was shut off between each step and the well was allowed to recover for a minimum of 5 minutes between steps in order to establish a predictable recovery pattern. The specific capacities for the 10-minute condition at the above rates were 90.9, 77.2 and 70.8 gpm per foot of drawdown (gpm/ft), respectively. A plot of the drawdown versus discharge rate is presented as Figure 2. The water produced during the step-test was slightly cloudy during the first two steps and clear thereafter. No sand production was evident during the course of the test.

The constant-rate test began on December 29, 1993. The well was pumped at an average of 127 gpm for 24-hours. The pre-test water level was 109.2 feet below the top of the sounding tube (2.75 feet above ground). After 24-hours of pumping, the water level was 111.06 feet. This represents a drawdown of 1.86 feet and implies a specific capacity of 68.3 gpm/ft for the 24-

hour pumping condition. The drawdown data is presented on Figure 3 as depth to water versus the log of the elapsed pumping time. The aquifer transmissivity (T) value indicated during the first 100 minutes of pumping is 840,000 gallons per day per foot (gpd/ft). After 100 minutes the implied T value is 250,000 gpd/ft. This later value indicates a change in aquifer conditions at distance from the well. The change may be a regional diminishment in aquifer transmissivity or perhaps a negative boundary condition.

The morning of December 30, the pump was shut off and the water level recovery was monitored for four hours. Additional measurements were made after 10 hours and 26 hours of elapsed recovery time. The recovery data are presented on Figure 4 as depth to water versus the log of elapsed recovery time. The data indicates a near-well T of 600,000 gpd/ft and a implied regional T of 240,000 gpd/ft. Figure 5 shows the recovery data plotted as depth to water versus the ratio of elapsed time since pumping began to elapsed time since pumping ended. This method of data presentation facilitates identification of any dewatering in the aquifer that may have been caused by pumping. In this case, no dewatering effects are evident.

Manual measurements of water level response at the Burnett Well 1 were taken throughout the test. The measurements were taken using an electric sounder. The data for this well are presented on Figure 6 as depth to water versus the linear plot of time. The small amount of water level change seen in the well (less than 0.1 feet), coupled with the erratic nature of the change, makes interpretation of the data difficult. The erratic nature of the data probably results from this observation point being a domestic well that was occasionally in use during the test. Because of the erratic results at the well, no attempt was made to correlate the water level changes to the pumping at the Jacob Well.

The transducer record at Burnett Well 2 is shown on Figure 7 as depth to water versus the linear plot of time. The data indicates there was some response to the pumping at the Jacob Well, but that the change was small (less than 0.2 feet). Figure 8 shows the same data as depth to water versus the log of elapsed time (in hours). From this plot, a T value of 168,000 gpd/ft and a

storage coefficient (S) of 0.022 was calculated. The well continued to drawdown after pumping stopped, as is common in remote observation wells. This phenomenon results from the slow collapse of the cone of depression that is formed during pumping. Shut down of the data logger unit 26 hours into the recovery precluded collection of a continuous recovery record. However, a confirmation measurement taken on January 3, 1994, four days after pumping ended, demonstrated that the water level had recovered to the pre-test level.

HYDROLOGIC GEOLOGIC SETTING

The Jacob Well is situated along the foothills of the Cascades on an upland area south of the Cedar River. The upland consists of glacial deposits laid up against the bedrock of the hills. The area is mapped by Luzier in Water Supply Bulletin 28 (1969) as a complex mix of recessional outwash, ice contact sediments, and landslide or mass wasting deposits which overlie a sculpted bedrock surface. The Jacob Well log shows 120 feet of matrix rich sand and gravel over a cleaner gravel aquifer, in which the well is completed. This gravel was penetrated to a depth of 140 feet but the bottom of the unit was not found. The two Burnett Wells discussed above are completed at or near the same elevation as the Jacob Well.

It appears that the gravel is saturated by the vertical percolation of local precipitation and by a lateral flow of water off the bedrock hills to the east. Though no gradient has been identified from field data, it is likely that the ground water flows northerly through the system discharging at the Cedar River. The average annual precipitation at the Landsburg Weather station is between 57 and 58 inches. This coupled with the fact that no stream channels are developed or near the site, indicate that substantial recharge should occur in the area. If we assume that 20 inches per year is recharging the ground water system then an average of 400 gpm for every square mile of recharge area would be expected. Even if only a half section of recharge area exists for the aquifer, a production of 100 gpm should be sustainable. November and December, 1993 were relatively dry, therefore, the condition observed during testing very likely represents

the seasonal low water level. Therefore, we feel that the test was run under the same conditions that would normally represent the low water level for the aquifer.

WATER QUALITY

Water quality samples were taken at the end of the 24-hour pumping test. The water was clean, clear, with no sand content. It had no noticeable adverse taste or odor. Samples were submitted to Water Management Laboratories (WML) in Tacoma on December 30, 1993 for analyses of inorganic constituents, and volatile organic compounds. A sample was mailed to the State Department of Health laboratory the same day for analysis of gross radionuclides. A bacteriological sample was collected and submitted to WML on January 3, 1994. The water has a relatively low specific conductivity of 104 micromhos per cm which indicates a low mineralization level. This implies that the water does not have a substantial residence time in the aquifer. The water is also slightly acidic, with a pH of 6.8. The low specific conductivity coupled with the slight acidity (Ryenan Stability index of 10.59) could present a higher corrosivity than usually found in ground water of Western Washington. The potential for corrosivity should be addressed in the design of a system supplied by this source. No radionuclides were reported by the State laboratory, no volatile compounds were detected, and no bacterial content was present in the water. The water quality meets all applicable standards and shows no reason that it could not serve as a public water supply source. Laboratory results are presented as an appendix to this report.

CONCLUSIONS AND RECOMMENDATIONS

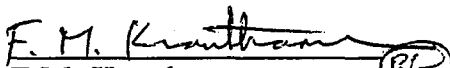
- The aquifer tapped by the Jacob Well is capable of providing a reliable source of water to the Kangley area.
- The aquifer appears to have a transmissivity of 250,000 gpd/ft or greater and a storage coefficient of 0.02. This indicates that the

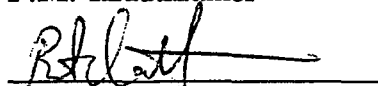
aquifer is very permeable and it is semi-confined by overlying lower permeability sand and gravel.

- The water quality is good with all parameters tested meeting standards set by the Department of Health. Evaluation of corrosivity of the water is advised in order to guide the design of a water supply system for this source.
- One option in developing this source would be to purchase the Jacob Well outright and use it as a community well. This should serve reliably under the observed conditions.
- Another option would be to drill a second well very near the Jacob Well and take the casing to the bottom of the gravel aquifer. This would better define the aquifer, provide more available drawdown to protect against drought, and allow placement of a screen, if appropriate, to provide a better overall facility. A new well should be constructed by cable-tool or air-rotary methods and would involve 8-inch drilling to a depth below 140 feet (probably no more than 200 feet). *This is a recommended option if water resource development criteria alone are considered.*
- The existing Jacob Well could easily produce over 200 gpm with a predicted drawdown of 3.5 feet after 200 days of continuous pumping. The well has 31 feet of available drawdown and would have 27 feet of reserve against drought conditions (23 feet if pump motor considerations are considered). This provides a reasonable security for the existing well.
- Because we do not know the area that contributes recharge or the storage characteristics of this system, it is prudent to construct a well that provides the most protection against periods of drought.

Respectfully submitted,

ROBINSON & NOBLE, INC.

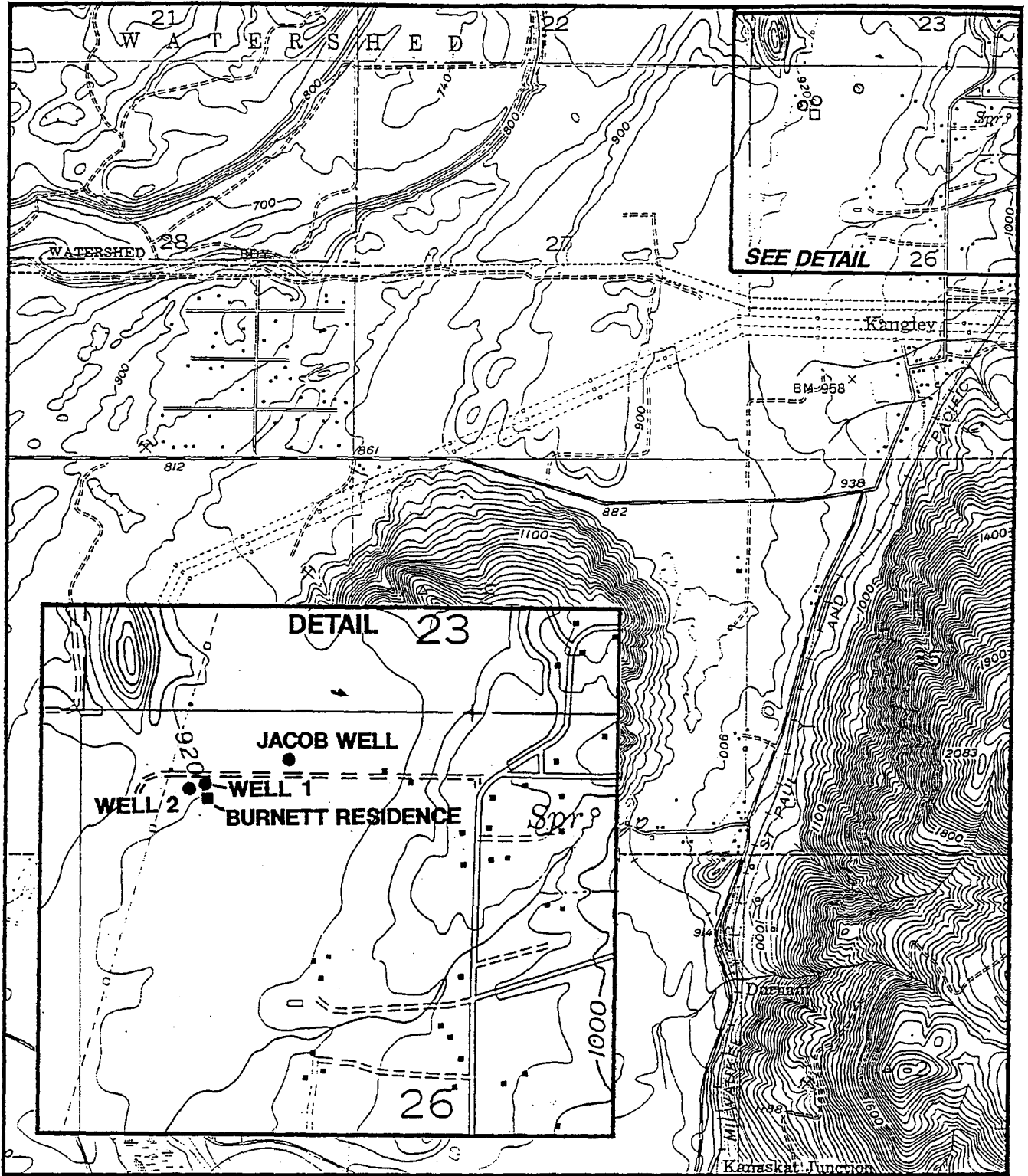

F.M. Krautkramer (BC)


B.G. Clothier

Robinson & Noble, Inc.

FIGURES

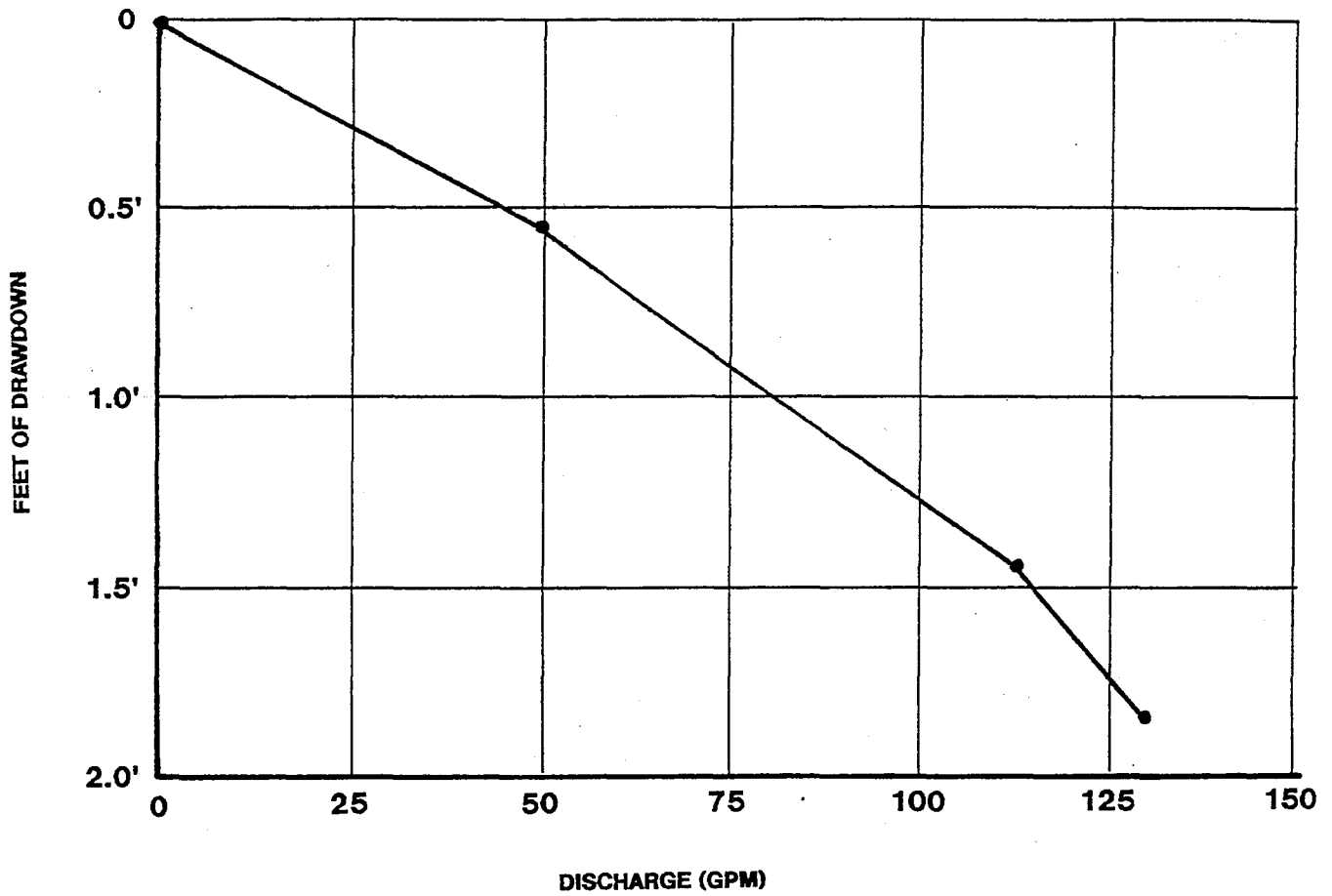




BASE MAP TAKEN FROM USGS CUMBERLAND QUAD

SCALE 1:24000

KANGLEY/SELLECK PROJECT LOCATION MAP



**DISCHARGE vs. DRAWDOWN RELATIONSHIP
KANGLEY PROJECT
JACOB WELL STEP-TEST
10-MINUTE CONDITION
12-18-93**

PRE-TEST STATIC WATER LEVEL = 109.2'

KANGLEY RESOURCE
EVALUATION PROJECT
JACOB WELL TEST
12-29 TO 12-30-93
DRAWDOWN DATA IN
PUMPING WELL
DISCHARGE = 127 GPM
TEST DURATION = 24-HRS

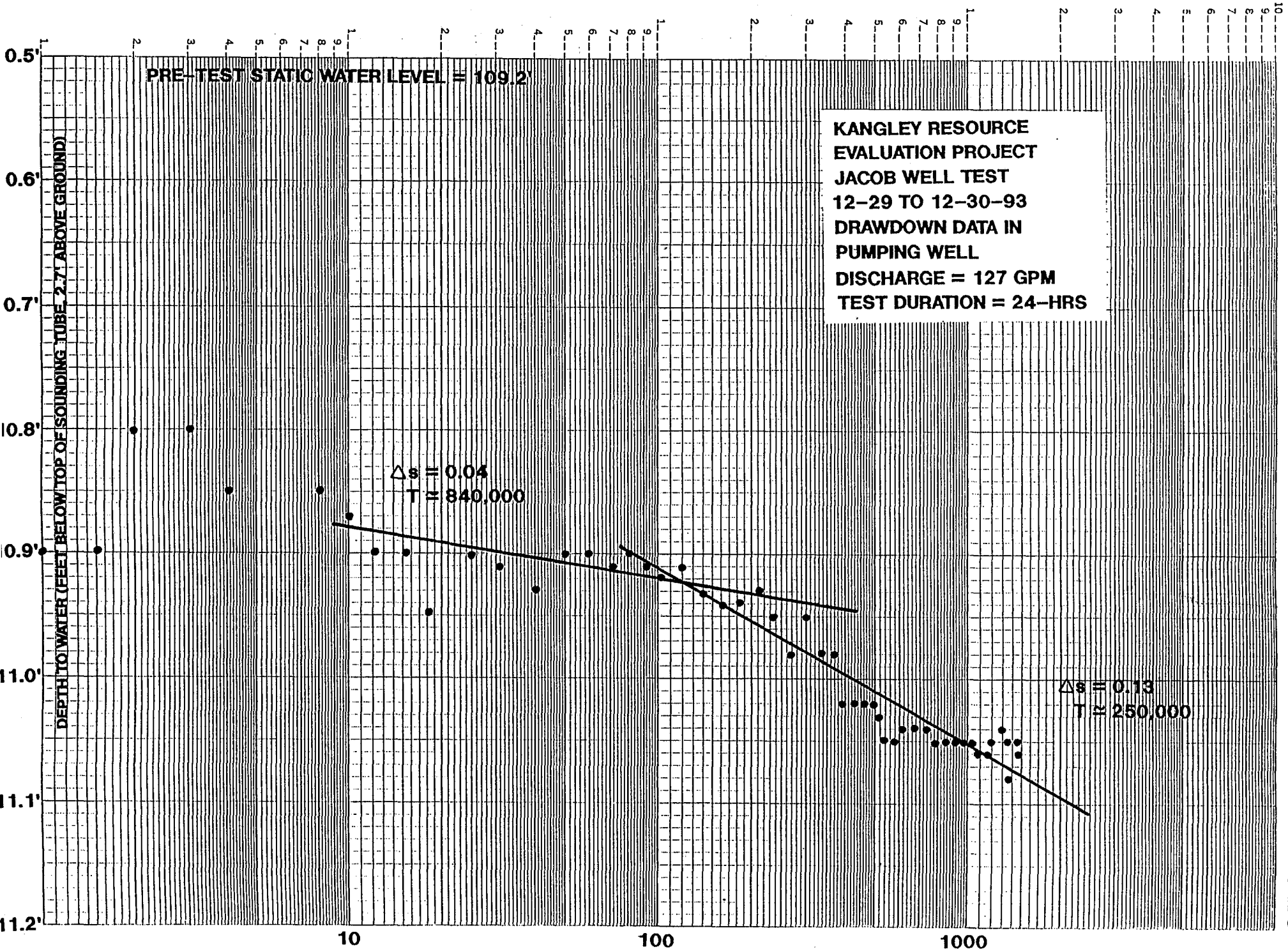


FIGURE 3

**KANGLEY RESOURCE
EVALUATION PROJECT
JACOB WELL TEST
12-20-93 TO 12-31-93
RECOVERY DATA AT
PUMPING WELL
DISCHARGE = 127 GPM
TEST DURATION = 24-HRS
RECOVERY PERIOD = 24-HRS**

$\Delta s = 0.14$
 $T = 240,000$

$\Delta s = 0.055$
 $T = 600,000$

DEPTH TO WATER (FEET BELOW TOP OF SOUNDING TUBE 2.7' ABOVE GROUND)

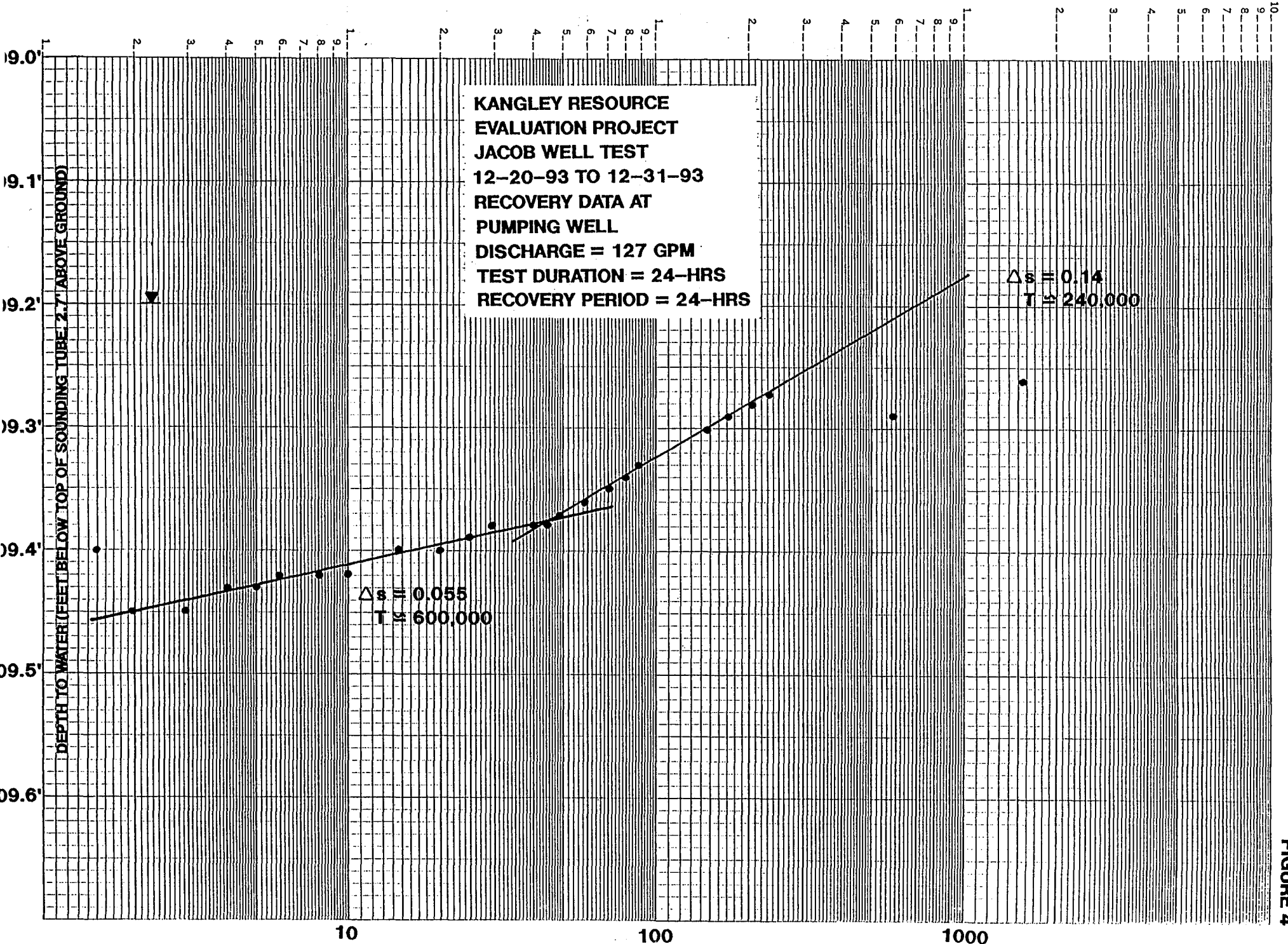
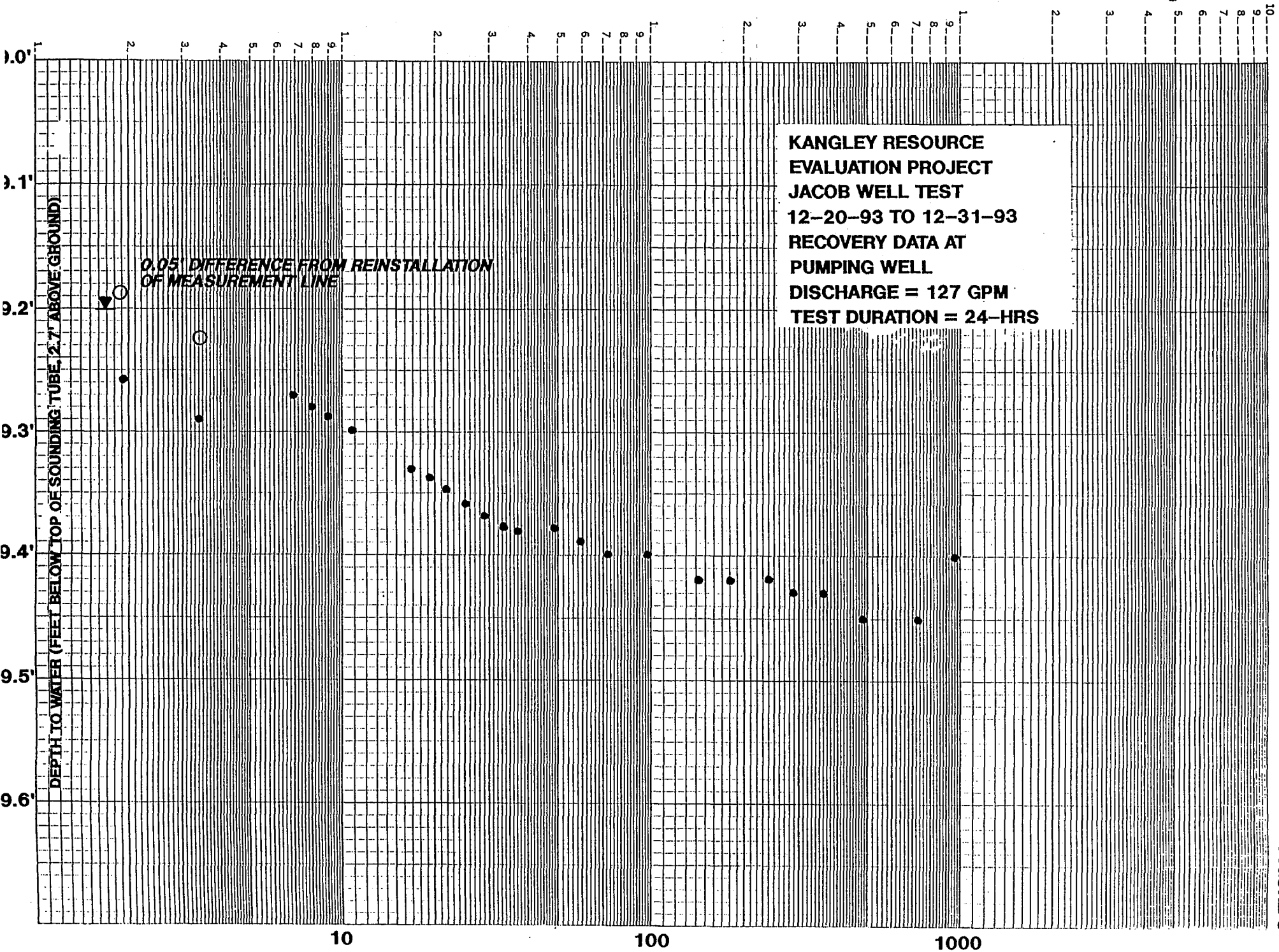


FIGURE 4



**KANGLEY RESOURCE
EVALUATION PROJECT
JACOB WELL TEST
12-20-93 TO 12-31-93
RECOVERY DATA AT
PUMPING WELL
DISCHARGE = 127 GPM
TEST DURATION = 24-HRS**

FIGURE 5

WATER LEVEL RESPONSE BURNETT WELL 1 12/28/93 - 1/3/94

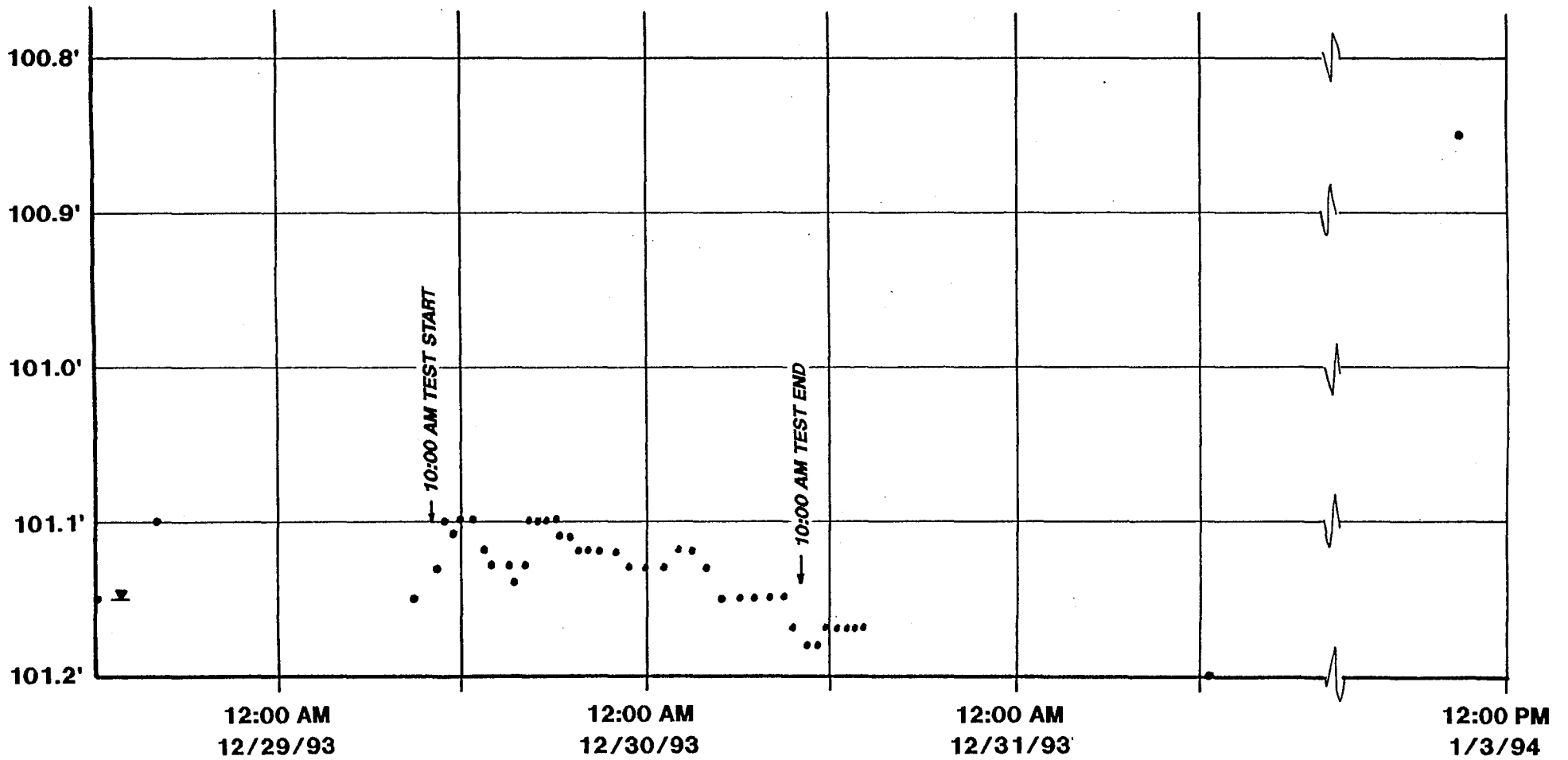


FIGURE 6

KANGLEY PROJECT
Jacob Well 24-hour test
Transducer record at Burnett Well 2
Discharge = 127 gpm, Distance = 700 feet.

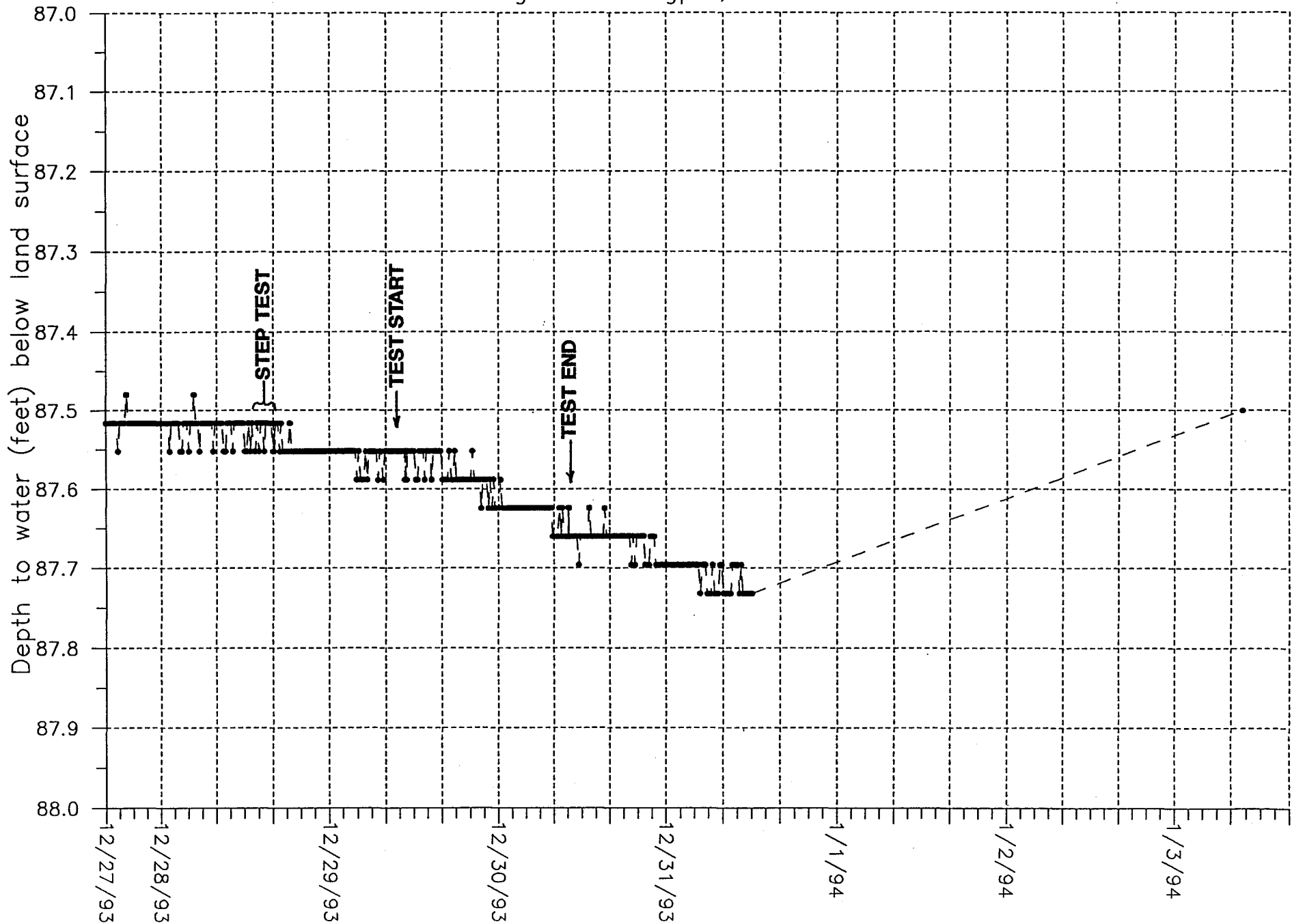


FIGURE 7

KANGLEY PROJECT
Jacob Well 24-hour test
Transducer record at Burnett Well 2
Discharge = 127 gpm, Distance = 700 feet.

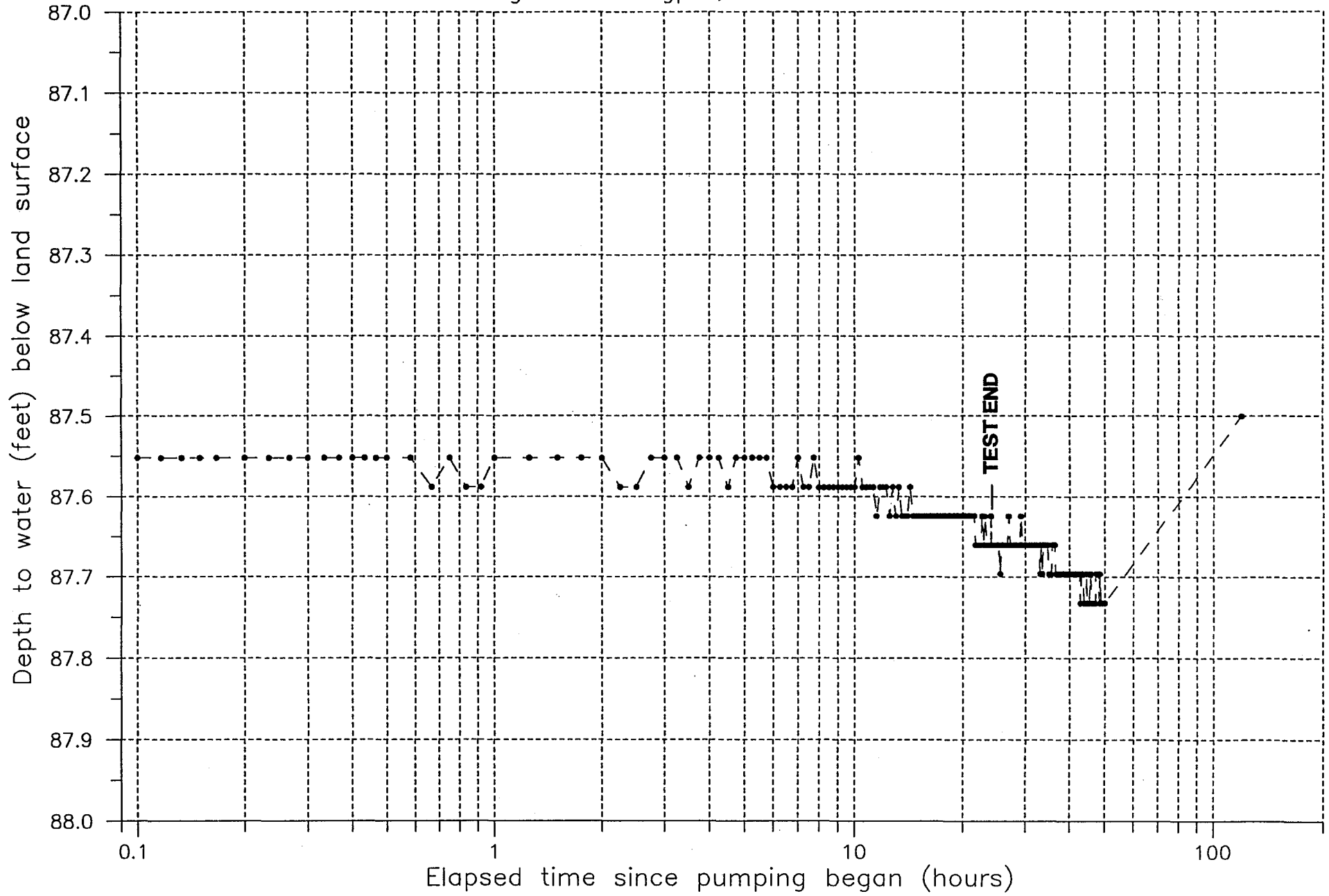


FIGURE 8

APPENDIX



Rob Jacobs 432-3435

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. 42292
Water Right Permit No.

(1) OWNER: Name JACOBS, ROBERT Address 26741 SE RAVENSDALE PL RAVENSDALE, WA 98051-

(2) LOCATION OF WELL: County KING - SW 1/4 NW 1/4 Sec 26 T 22 N., R 7 WM
(2a) STREET ADDRESS OF WELL (or nearest address) SE 257 LOT # 9136

(3) PROPOSED USE: DOMESTIC

(4) TYPE OF WORK: Owner's Number of well (If more than one) Method: ROTARY
NEW WELL

(5) DIMENSIONS: Diameter of well 8 inches
Drilled 140 ft. Depth of completed well 140 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 " Dia. from 0 ft. to 140 ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

Perforations: NO
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: NO
Manufacturer's Name
Type Model No.
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 20 ft.
Material used in seal BENTONITE CLAY
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off N/A

(7) PUMP: Manufacturer's Name Type N/A H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 107 ft. below top of well Date 08/18/93
Artesian Pressure lbs. per square inch Date
Artesian water controlled by N/A

(10) WELL LOG

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change in formation.

MATERIAL	FROM	TO
BROWN CEMENTED SAND & GRAVEL	0	120
W/ BOULDERS	0	120
WATER BEARING SAND & GRAVEL	120	140

Work started 08/09/93 Completed 08/18/93

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.

Was a pump test made? NO If yes, by whom?
Yield: gal./min with ft. drawdown after hrs.

Recovery data
Time Water Level Time Water Level

Date of test / /
Bailer test gal/min. ft. drawdown after hrs.
Air test 40 gal/min. w/ stem set at 140 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? NO

WELL CONSTRUCTOR CERTIFICATION:

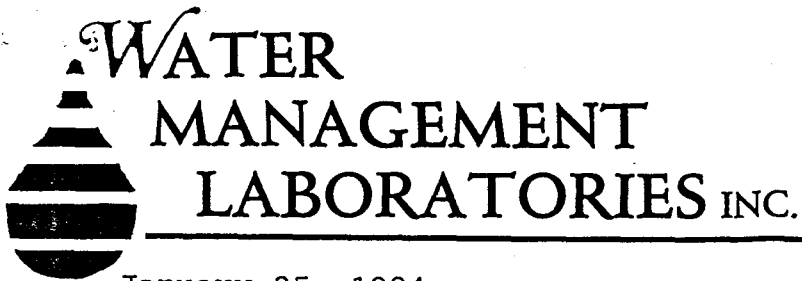
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME NORTHWEST PUMP & DRILLING (Person, firm, or corporation) (Type or print)

ADDRESS 3245 BURBURN WAY SOUTH

[SIGNED] *[Signature]* License No. 0097

Contractor's Registration No. NORTHWD137PO Date 10/02/93



1515 80th St. E.
Tacoma, WA 98404
531-3121

January 25, 1994

Robinson and Noble
5915 Orchard Street West
Tacoma, WA 98467
Attn: Burt Clothier

Dear Mr Clothier:

Results of analysis of one groundwater engineering sample taken by yourself on 12-30-93 at 10:00 a.m. and received 12-30-93 at 3:10 p.m. are as follows:

Sample Identification: Kangley Project
Jacob Well

<u>TEST</u>	<u>RESULT</u>
Arsenic	less than 0.01
Barium	less than 0.25
Bicarbonate (*)	44
Cadmium	less than 0.002
Calcium	15
Carbonate (*)	0
Chloride	1
Chromium	less than 0.01
Color (*)	less than 5
Copper	less than 0.02
Fluoride	less than 0.2
Iron	less than 0.03
Lead	less than 0.002
Magnesium	2
Manganese	less than 0.01
Mercury	less than 0.001
Nitrate Nitrogen	less than 0.2
Potassium	0.3
Selenium	less than 0.005

Robinson & Noble, Inc.
January 25, 1994
Page 2

<u>TEST</u>	<u>RESULT</u>
Silica	18
Silver	less than 0.01
Sodium	2
Specific Conductivity (*)	104
pH (*)	6.8
Sulfate	2
Total Dissolved Solids	93
Total Hardness (*)	51
Turbidity (*)	0.4
Zinc	less than 0.1

(*) All results are in milligrams per liter except color which is in color units, pH which is in pH units, specific conductivity which is in micro-mho per cm, and turbidity which is in nephelometric turbidity units. Bicarbonate, carbonate and total hardnesses are in milligrams per liter as calcium carbonate.

Lab Number: 89-16188

Sample was analyzed according to Standard Methods for the Examination of Water and Wastewater, 16th Edition.

Chain of Custody Record and results of VOC analysis are enclosed.

Sincerely,



Diane DuMond
Lab Coordinator

DD:cmh
enclosures

c:\comm\R&N12-30

WATER BACTERIOLOGICAL ANALYSIS

SAMPLE COLLECTION: READ INSTRUCTIONS ON BACK OF GOLDENROD COPY
If instructions are not followed, sample will be rejected.

DATE COLLECTED MONTH / DAY / YEAR 1 / 3 / 94	TIME COLLECTED 09 : 45 <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM	COUNTY NAME KING
--	---	---------------------

TYPE OF SYSTEM <input type="checkbox"/> PUBLIC <input checked="" type="checkbox"/> INDIVIDUAL (serves only 1 residence)	IF PUBLIC SYSTEM, COMPLETE: I.D. No. <table border="1"><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>											CIRCLE GROUP A B

NAME OF SYSTEM
KANGLEY PROJECT

SPECIFIC LOCATION WHERE SAMPLE COLLECTED (ie, kitchen tap @ school, fire station, fountain) JACOB WELL	TELEPHONE NO. DAY 1204 475 7711 EVENING ()
--	---

SAMPLE COLLECTED BY: (Name) DUPT CLOTHIER	SYSTEM OWNER / MGR.: (Name)
--	-----------------------------

SOURCE TYPE GROUND WATER UNDER SURFACE INFLUENCE
 SURFACE WELL or WELL FIELD SPRING PURCHASED or INTERTIE COMBINATION or OTHER

SEND REPORT TO: (Print Full Name, Address and Zip Code)
ROBINSON + NOBLE
5915 OCHARD ST W
TACOMA WASHINGTON 98467

TYPE OF SAMPLE (check only one in this column)

ROUTINE DRINKING WATER check treatment → Chlorinated (Residual: Total Free) Filtered Untreated or Other

REPEAT SAMPLE
Previous coliform presence Lab # _____
Previous coliform presence Date ____/____/____

RAW SOURCE WATER Source # S Total Coliform Fecal Coliform

NEW CONSTRUCTION or REPAIRS

OTHER (Specify) ENGINEERING

REMARKS
ENGINEERING SAMPLE

LABORATORY RESULTS (FOR LAB USE ONLY)

METHOD USED

MF	MPN	PA	<u>MMO</u>
----	-----	----	------------

TOTAL COLIFORM A / 100 ml E. COLI _____ / 100 ml
FECAL COLIFORM _____ / 100 ml HETEROTROPHIC _____ / per ml

ANOTHER SAMPLE REQUIRED

SAMPLE NOT TESTED BECAUSE:

- Sample too old
- Wrong container
- Incomplete form
- _____

TEST UNSUITABLE BECAUSE:

- Confluent growth
- TNTC
- Turbid culture
- Excess debris

ENGINEERING DRINKING WATER SAMPLE RESULTS

<input type="checkbox"/> UNSATISFACTORY, Coliforms present	<input type="checkbox"/> SATISFACTORY, Coliforms absent
REPEAT SAMPLES REQUIRED	<input type="checkbox"/> E. Coli present <input type="checkbox"/> E. Coli absent <input type="checkbox"/> Fecal present <input type="checkbox"/> Fecal absent

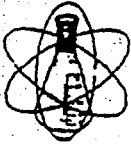
SEE REVERSE SIDE OF GREEN COPY FOR EXPLANATION OF RESULTS

LAB NO. 89-59049	DATE, TIME RECEIVED 1-3-94 10:59am	RECEIVED BY [Signature]
DATE REPORTED 1-9-94	ROUTE	ACCT. #

Please Print Plainly

USE HEAVY PENCIL

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
PUBLIC HEALTH LABORATORIES
OFFICE OF RADIATION LABORATORIES
1610 N.E. 150TH ST., SEATTLE, WA 98155-7224



WATER SAMPLE INFORMATION FOR RADIATION ANALYSES

LAB. NUMBER <u>10100464</u>	SYSTEM NAME: <u>KANGLEY PROJECT</u>	SYSTEM I.D. NO. <u>NEW</u>	SYSTEM CLASS (circle one) <u>A</u> B	SOURCE NUMBER
Is this follow up of a previous out of compliance sample? Yes <input type="checkbox"/> No <input type="checkbox"/>			COUNTY <u>KING</u>	
If yes, what was the laboratory number of the previous sample? _____				
SOURCE TYPE: ____ 1. SURFACE ____ 3. WELL ____ 2. SPRING ____ 4. PURCHASE	IF SOURCE IS LAKE OR STREAM, ENTER NAME		IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (ADDRESS)	

DATE OF FINAL REPORT
11/1/94

SEND REPORT TO: (PRINT FULL NAME & ADDRESS)

KANGLEY PROJECT
NAME
ROBINSON & NOBLE
5915 ORCHARD STREET WEST
STREET
TACOMA WA 98467
CITY ZIP CODE
TELEPHONE: (206) 475-7711
AREA CODE

	DATE COLLECTED	DATE RECEIVED
1	<u>12/30/93</u>	<u>01/04/94</u>

LABORATORY REPORT (DO NOT WRITE BELOW THIS LINE)

ANALYSES	LESS THAN	RESULTS pCi/L	*MCL pCi/L	COMPLIANCE		CHEMIST INITIALS
				YES	NO	
Gross Alpha	<	<u>2.0</u>		✓		<u>JR</u>
Uranium						
Gross Alpha minus Uranium			15			
Radium-226			3			
Radium-228						
Radium-226 Plus Radium-228			5			
Radon-222						
Gross Beta	<	<u>3.0</u>	50	✓		<u>JR</u>
Strontium-89			80			
Strontium-90			8			
Cesium-134			80			
Iodine-131			3			
Tritium			20,000			

LABORATORY SUPERVISOR
(Name or Initials)

JR

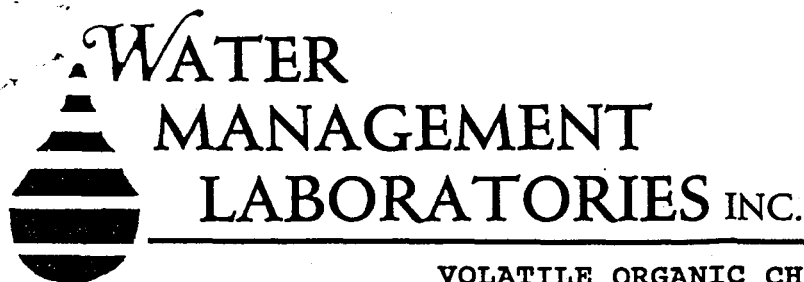
QUALITY ASSURANCE SUPERVISOR
(Name or Initials)

R. J. Smith

CHARGE: \$70.00

REMARKS:

*MCL is the maximum contaminant Level Allowed



1515 80th St. E.
Tacoma, WA 98404
531-3121

VOLATILE ORGANIC CHEMICAL REPORT

Results by Analysis by EPA Method 524.2
Measurement of Purgeable Organic Compounds in Water by Capillary Column
Gas Chromatography/Mass Spectrometry

Send Report To:
Robinson & Noble
5915 Orchard St. W.
Tacoma, WA 98467

Bill: AR187S
Robinson & Noble
5915 Orchard St. W.
Tacoma, WA 98467

COUNTY : King
SYSTEM NAME : Kangley Project
SYSTEM ID NO. : New
DATE COLLECTED: 12/30/93
DATE ANALYZED : 1/3/94
SOURCE NUMBER : S01
SOURCE TYPE : Well

LABORATORY NO. : 89
DATA FILE : 8971700
ANALYST : William Adams
DATE OF REPORT : January 12, 1994
SUPERVISOR'S INITIALS : *WMA*

EPA CODE	NAME OF COMPOUND	MCL* ug/L	AMOUNT ug/L	EPA CODE	NAME OF COMPOUND	AMOUNT ug/L
REGULATED COMPOUNDS				UNREGULATED COMPOUNDS		
2976	VINYL CHLORIDE	2	ND	2210	CHLOROMETHANE	ND
2977	1,1-DICHLOROETHYLENE	7	ND	2214	BROMOMETHANE	ND
2981	1,1,1-TRICHLOROETHANE	200	ND	2216	CHLOROETHANE	ND
2982	CARBON TETRACHLORIDE	5	ND	2978	1,1-DICHLOROETHANE	ND
2990	BENZENE	5	ND	2416	2,2,-DICHLOROPROPANE	ND
2980	1,2-DICHLOROETHANE	5	ND	2410	1,1-DICHLOROPROPANE	ND
2984	TRICHLOROETHYLENE	5	ND	2408	DIBROMOMETHANE	ND
2969	p-DICHLOROBENZENE	75	ND	2412	1,3-DICHLOROPROPANE	ND
2979	t-1,2-DICHLOROETHYLENE	100	ND	2986	1,1,1,2-TETRACHLOROETHAN	ND
2380	c-1,2-DICHLOROETHYLENE	70	ND	2993	BROMOBENZENE	ND
2983	1,2-DICHLOROPROPANE	5	ND	2414	1,2,3-TRICHLOROPROPANE	ND
2991	TOLUENE	1000	ND	2988	1,1,2,2-TETRACHLOROETHAN	ND
2987	TETRACHLOROETHYLENE	5	ND	2965	o-CHLOROTOLUENE	ND
2989	CHLOROBENZENE	100	ND	2966	p-CHLOROTOLUENE	ND
2992	ETHYL BENZENE	700	ND	2967	m-DICHLOROBENZENE	ND
2995	m/p-XYLENES		ND	2212	DICHLORODIFLUOROMETHANE	ND
2997	o-XYLENE (total xylene MCL) =	10000	ND	2218	TRICHLOROFLUOROMETHANE	ND
2996	STYRENE	100	ND	2430	BROMOCHLOROMETHANE	ND
2968	o-DICHLOROBENZENE	600	ND	2994	ISOPROPYLBENZENE	ND
2964	METHYLENE CHLORIDE	5	ND	2998	N-PROPYLBENZENE	ND
2985	1,1,2-TRICHLOROETHANE	5	ND	2424	1,3,5-TRIMETHYLBENZENE	ND
2418	1,2,4-TRIMETHYLBENZENE	70	ND	2426	TERT-BUTYLBENZENE	ND
TRIALOMETHANES (THM total) =		100		2428	SEC-BUTYLBENZENE	ND
2941	CHLOROFORM		ND	2030	p-ISOPROPYLTOLUENE	ND
2943	BROMODICHLOROMETHANE		ND	2422	n-BUTYLBENZENE	ND
2944	CHLORODIBROMOMETHANE		ND	2378	1,2,4-TRICHLOROBENZENE	ND
2942	BROMOFORM		ND	2248	NAPHTHALENE	ND
* MCL: Maximum Contaminant Level NOTE: An amount of ND indicates that the true concentration is less than the method detection limit of 0.5 ug/L				2246	HEXACHLOROBUTADIENE	ND
				2420	1,2,3-TRICHLOROBENZENE	ND
				2228	cis-1,3-DICHLOROPROPENE	ND
				2224	trans-1,3-DICHLOROPROPENE	ND

NOTE: DIBROMOETHANE (EDB) AND DIBROMOCHLOROPROPANE (DBCP) WERE ALSO ANALYZED AND FOUND AT CONCENTRATIONS LESS THAN 0.5 ug/L. THIS DOES NOT CONSTITUTE AN ADEQUATE ANALYSIS FOR THESE COMPOUNDS. **Composite results for any analytes are totals.

Method: 502.2 524.2 504.1

FOR LAB USE ONLY

Bac I 16108

v. JR M. GEIV.

LABORATORIES, INC.
1515 80th St. E.
Tacoma, WA 98404

(206) 531-3121 FAX: (206) 531-5287

Pass Fail R.S.

Date 1/14/94 Chemist WMA

Analytes: TRACABLE

Date of Analysis: 1/13/94

A. Lab Sample Number: 0972700
1. Accepted: / / 2. Rejected: / / 3. Reason: Air Bubble
By: _____ By: _____
Too Warm
Broken Bottle
Other

B. Sample Submitted For:
EDB/DBCP _____
VOC: THMP _____
TTHM _____ BTX _____
New Well _____
Resample # _____
Engineering _____
Req'd Monitoring _____

Preserved: _____ 4oC
_____ Na2S2O7

UTILITY: Complete items 1 through 14 (please print)

ALL INFORMATION MUST BE COMPLETED

1. INAW System ID Number 2. KANGLEY PROJECT System Name 3. KONG County Class A or B

4. Source Type (circle one): SURFACE WELL WELL-FIELD PURCHASED SPRING DISTRIEUTION

5. DOH Source Number: 6. Utility's Name JACOB'S WELL for this source.
(Enter EXACTLY as shown on WFI item 17, such as SO1, SO2....S10, etc.)

7. Specific Location Where Sample Was Taken: _____
(Which tap, address, sample site #, etc.)

8. Indicate Treatment Type: (Check all that apply)
a) Chlorination d) Aeration
b) Filtration e) Other _____
c) Fluoridation (Specify)

9. Date Collected 12/30/93 10. Time Collected 10:00 AM/PM 11. Collected By: BURT CROTHER
Name Phone

12. COMPOSITE INFORMATION (OPTIONAL-APPLIES TO MULTIPLE SOURCE SYSTEMS ONLY); ONLY if you want the lab to composite this sample with other samples from your system. Sign and enclose the COMPOSITING WAIVER FORM. Enter the DOH source number(s) of the sample(s) to be composited with this sample:
1. 2. 3. 4.

13. Charges to be paid by:
ROBINSON + NOBLE
Name Phone
5915 ORCHARD ST W
Street
TACOMA WA 98467
City Zip Code

14. Report results to:
SAME
Name Phone
Street
City

Comments:

mainline

~~215~~

CHAIN OF CUSTODY

ANALYSIS REQUESTED

LAB USE ONLY		MATRIX		# CONTAINERS & PRESERVATION					SAMPLE IDENTIFICATION	DATE				ANALYSIS REQUESTED										REMARKS	
NUMBER	REJECT	Water	Waste	Unpres.	H2SO4	HNO3	EDTA	Na2O3	Filtered		Mo	Dy	Yr	Time											
															1		X		X						
2		X		X											VOC										(2)
3		X		X											BACT										(1)
4																									
5																									
6																									
7																									
8																									
9																									
10																									

REJECT REASON:					CHAIN OF CUSTODY	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OTHER	SEAL USED
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TOO OLD	YES NO
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IMPROPER CONTAINER	SEAL INTACT
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NO PRESERVATIVES	YES NO
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WRONG TEMP	

TAKEN BY:	<u>BURT CLOTHER</u>	DATE:	<u>12/30/93</u>
RELINQUISHED BY:	<u>BURT CLOTHER</u>	TIME:	<u>15:15 AM</u> (PM)
RECEIVED BY:	<u>C Holme</u>	DATE:	<u>12/30/93</u>
		TIME:	<u>3:10 AM</u> (PM)

WATER MANAGEMENT LABORATORIES, INC.
 1515 80th Street E., Tacoma, WA 98404
 PHONE (206) 531-3121 * FAX (206) 531-5287

REPORT TO: BURT CLOTHER
 Company Name: ROBINSON & NOBLE
 Address: 5915 ORCHARD ST W
TACOMA WA 98467
 Phone: (206) 475-7711 / Fax: ()

RECEIVED

OCT 27 1994

HEDGES & ROTH ENGINEERING, INC.
BELLEVUE, WA

ROBINSON & NOBLE, INC
GROUND WATER & ENVIRONMENTAL GEOLOGISTS
5815 ORCHARD STREET WEST
TACOMA, WASHINGTON 98467
(206) 475-7711
FAX 472-5848



October 26, 1994

Greg Hill
Hedges and Roth Engineering
14450 NE 29th Place, Suite 101
Bellevue, WA 98007

RECEIVED

OCT 28 1994

KING COUNTY
PCDD

Subject: Status change and recommendations for Jacobs' property regarding Kangley/Selleck water source.

Dear Greg:

As you are aware, a recent measurement of the Jacob's well has shown a drop of nearly 20 feet in the static water level of the aquifer in response to the drought in the area. This dramatic response was not foreseen since the August 1993 and January 1994 water levels were both measured at 107 feet below top of casing. The water level measurement accomplished October 4, 1994 was 126.67 feet below the top of the casing.

The implications of this 20 foot drop in water level are not completely known with current information. Though the Jacob well penetrates about 20 feet of highly permeable gravel and had as much as 33 feet of water in it, the full thickness of the gravel was not determined. If the gravel is only a few feet thicker than indicated by the Jacob well, then the 20 foot drop represents a significant loss of capacity of the aquifer and the implications are very serious. If the gravel extends another 60 or 100 feet down, then the implications are less serious regarding the capacity of the aquifer. The only practical way to resolve this is to drill deeper at the Jacobs site.

Further, the observed drop of 20 feet in the water level may not represent the full response of the aquifer since we are still in a period of virtually no precipitation. The water level should be monitored to determine the actual low level reached and to monitor the pattern of recovery of the water level as the wet season progresses.

We recommend that a new well be drilled to a depth sufficient to define the full thickness of the gravel aquifer. Ramlo Drilling is capable of providing that service under their existing contract on the project. I do not recommend deepening the existing well because that carries some risk of damaging casing that would leave that facility unable to meet the commitments that it presently carries. The potential liability could become complex and would better be avoided.

Once the new well is drilled and the amount of gravel is known, a practical set of alternatives can be evaluated. These range from confident use of the well as a source through mitigated use of the well with enhanced recharge to the gravel to a recommendation of not using the aquifer

3/3

Greg Hill
Hedges and Roth Engineering

October 26, 1994

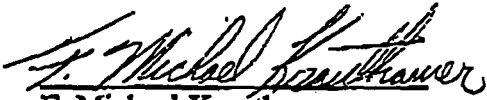
Page 2

as the source for the system. The water level in the new well should be recorded for several months to determine the lowest water level response and the recovery pattern for the aquifer. If the pattern of recovery is marginal, we may want to assure ourselves that mitigative measures could be brought to bear should drought conditions threaten the viability of the source in the future. One such mitigative measure could be escorting of the current Selleck spring water source to the recharge area of the gravel aquifer and allowing it to percolate into the aquifer. This could be a relatively simple way to make recharge more reliable.

At the time the only clear recommendation is that a new well be drilled through the full thickness of the gravel aquifer and monitored to define the aquifer response to the current drought.

If there are any questions regarding this matter, please contact me.

Very truly yours,
ROBINSON & NOBLE, INC.


F. Michael Krautkramer
Hydrogeologist

FMB/GRECHILL.LTR

APPENDIX D

WATER RIGHT INFORMATION

Water Right / Water Right Claim

Summary of Available Documentation
(1 page table, plus certificates from Kangley and Selleck)

August 5, 1997 Letter to State Department of Ecology
(Accompanied Water Right Change Applications)

Kangley and Selleck Water Right Change Applications Submitted 8/5/97

Legal Notice for Change in Kangley Right
(Status of Selleck Change Request not known, 10/31/97)

Available Documentation on Selleck and Kangley's water rights and claims -

	Kangley - "Certificate of Water Right"	Selleck - "Water Right Claim"
Name of Original Filer	"Kangley Water System"	"Selleck, Inc."
Dates	Priority Date: 6/30/74	Claim filed: 8/5/71 Water 1st put to use: 1908?
Numbers	Application # Sl-22255, Permit # Sl-22255P, Certificate # Sl-22255C	Claim Reg. # AUG 1971 005457
Source	Surface Water "Unnamed stream"	Surface Water "Unnamed creek"
Quantities (maximum): (annual)	.15 cubic feet per second (67.32 gallons per minute) 22.5 acre feet per year (13.95 gallons per minute)	12,000 gallons per minute 1,909,080 acre feet per year
Times/Type of Use	"Continuously"/Domestic	"Year around"/Domestic
Point of Diversion / Withdrawal	"580 feet east and 880 feet north of the south quarter corner of section 26"	"2000 feet east and 500 feet south from the NW corner of section 6"
Located Within...	SW 1/4 of SE 1/4 of section 26, township 22 N, range 7 E (W.M.)	NW 1/4 of section 6, township 21 N, range 8 E, (W.M.)
Legal Description of Where the Water is Used	Section 26, Township 22 N, Range 7 E	Section 23, 24, 25, 26 Township 22 N, Range 7 E
Notes / Miscellaneous	This water right was issued to Kangley on February 28, 1978 by Dept. of Ecology.	"Continuous use since 1910" is the basis for the Selleck Water Right Claim.

Copies of both documents are attached

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

S122255C
RECEIVED

MAR 14 1994

- Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)
HEDGES & ROTH ENGINEERING, INC.
BELLEVUE, WA
- Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE June 30, 1974	APPLICATION NUMBER S1-22255	PERMIT NUMBER S1-22255P	CERTIFICATE NUMBER S1-22255C
--------------------------------	--------------------------------	----------------------------	---------------------------------

NAME
KANGLEY WATER SYSTEM

ADDRESS (STREET) 34803 S. E. 268th Street	(CITY) Ravensdale	(STATE) Washington	(ZIP CODE) 98051
--	----------------------	-----------------------	---------------------

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Unnamed stream

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND 0.15	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR 22.5
---------------------------------------	----------------------------	------------------------------------

QUANTITY, TYPE OF USE, PERIOD OF USE
Community domestic supply - continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION-WITHDRAWAL
580 feet east and 880 feet north of the south quarter corner of Sec. 26

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) SW $\frac{1}{4}$ SE $\frac{1}{4}$	SECTION 26	TOWNSHIP N. 22	RANGE, (E. OR W.) W.M. 7 E.	W.R.I.A. 8	COUNTY King
--	---------------	-------------------	--------------------------------	---------------	----------------

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
-----	-------	------------------------------------

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by the Kangley Water System in Sec. 26, T. 22 N., R. 7 E.W.M.

SEE BACK of this sheet.

COPY

COPY

Engineer's quick calculations

$$m10 = .15 \frac{ft^3}{min} \times \frac{60 \cancel{sec}}{min} \times \frac{7.48 \cancel{gal}}{ft^3} = 67.32 \text{ gpm}$$

$$\text{Annual} = 22.5 \text{ Acre-ft} \times \frac{43560 \cancel{ft^2}}{Acre} \times \frac{1 \cancel{day}}{365 \text{ day}} \times \frac{1440 \cancel{min}}{day} \times \frac{7.48 \cancel{gal}}{ft^3} = 13,950 \text{ gal}$$

040-1-2 (Rev. 4-77)

(SEE REVERSE SIDE)

CERTIFICATE

COPY

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.020.

This certificate of water right is specifically subject to relinquishment for nonuse of water as provided in RCW 90.14.180.

Given under my hand and the seal of this office at Redmond Washington, this ...28th... day

February....., 19 78.....

Department of Ecology

ENGINEERING DATA

by.....

ROBERT K. McCORMICK, Regional Manager

FOR COUNTY USE ONLY



200-11-107250
CASE NO. OTHER 26000

WATER RIGHT CLAIM

1. NAME Sellect, INC.

ADDRESS 21505 Maple Valley Highway, S.E.
Maple Valley, Wash. ZIP CODE 98038

2. SOURCE FROM WHICH THE RIGHT TO TAKE AND MAKE USE OF WATER IS CLAIMED: surface water
(SURFACE OR GROUND WATER)

W.R.I.A. 09
(LEAVE BLANK)

A. IF GROUND WATER, THE SOURCE IS _____

B. IF SURFACE WATER, THE SOURCE IS Unnamed Creek

3. THE QUANTITIES OF WATER AND TIMES OF USE CLAIMED:

A. QUANTITY OF WATER CLAIMED 12,000 per minute PRESENTLY USED 12,000 per minute
(GALLONS PER MINUTE)

B. ANNUAL QUANTITY CLAIMED 1,909080 PRESENTLY USED 1,909080
(ACRE FEET PER YEAR)

C. IF FOR IRRIGATION, ACRES CLAIMED _____ PRESENTLY IRRIGATED _____

D. TIME(S) DURING EACH YEAR WHEN WATER IS USED: Year around

4. DATE OF FIRST PUTTING WATER TO USE: _____ MONTH _____ YEAR About 1908

5. LOCATION OF THE POINT(S) OF DIVERSION, WITHDRAWAL: 2,000 ft. FEET East AND
500 FEET South FROM THE NW Corner CORNER OF SECTION 6
BEING WITHIN N.W. 1/4 OF SECTION 6 T. 21 N. R. 8 (EXCEPT W.M.
IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY LOT _____ BLOCK _____ OF
GIVE NAME OF PLAT OR ADDITION)

6. LEGAL DESCRIPTION OF LANDS ON WHICH THE WATER IS USED: Section 23, 24, 25, 26, Township 21 N.,
Range 7 E.W.M.

COUNTY King

7. PURPOSE(S) FOR WHICH WATER IS USED: Domestic

8. THE LEGAL DOCTRINE(S) UPON WHICH THE RIGHT OF CLAIM IS BASED: Continuous use since 1910

DO NOT USE THIS SPACE

THE FILING OF A STATEMENT OF CLAIM DOES NOT CONSTITUTE AN ADJUDICATION OF ANY CLAIM TO THE RIGHT TO USE OF WATERS AS BETWEEN THE WATER USE CLAIMANT AND THE STATE OR AS BETWEEN ONE OR MORE WATER USE CLAIMANTS AND ANOTHER OR OTHERS. THIS ACKNOWLEDGEMENT CONSTITUTES RECEIPT FOR THE FILING FEE.

DATE RETURNED _____ REGISTRY NUMBER **AUG 1971 005457**

THIS HAS BEEN ASSIGNED WATER RIGHT CLAIM REGISTRY NO. **005457**

John F. Liddle

ASSISTANT DIRECTOR DIVISION OF WATER MANAGEMENT - DEPARTMENT OF WATER RESOURCES

I HEREBY SWEAR THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

X *William A. Sellect, Inc. Treas.*

DATE Aug 50 1971

IF CLAIM FILED BY DESIGNATED REPRESENTATIVE PRINT OR TYPE FULL NAME AND MAILING ADDRESS OF AGENT BELOW

ADDITIONAL INFORMATION RELATING TO WATER QUANTITY AND/OR WELL CONSTRUCTION IS AVAILABLE



**King County
Housing and Community
Development Program**

Community Services Division

Key Tower

700 Fifth Avenue, Suite 3700
Seattle, WA 98104-5037

(206) 296-8672

(206) 296-0229 FAX

(206) 296-5242 TTY/TDD

August 5, 1997

Brad Petrovich
Washington State Department of Ecology
Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452

Re: Change of Water Rights for Kangley and Selleck

Dear Brad:

Enclosed please find applications for changes in water rights for the Kangley/Selleck community east of Ravensdale in rural King County. The Kangley Water Association is the official applicant and King County is the current owner of the community's new water source. Both Kangley and King County have signed the applications. We request that you expedite the processing of these applications under the guidelines of your emergency rule so that we can move forward with the consolidation of these two surface water-fed water systems. As you know, both systems are currently out of compliance and operating under final administrative orders issued by the EPA.

To review, Kangley is asking that you transfer all of its surface water right (approximately 14 gallons per minute (gpm) continuous) to a new groundwater point of withdrawal (the King County well property). Kangley is also requesting that you transfer 235 gpm of Selleck's 12,000 gpm surface water claim to the same new groundwater point of withdrawal, leaving the balance harmless. The two requests will result in a groundwater right for Kangley of 249 gpm--an amount sufficient for the service area of the new consolidated Kangley/Selleck water system.

As you will recall, these applications were the subject of meetings at your office on April 22 and May 6, 1997. I represented Kangley at those meetings and on May 6th, Tim Schaefer of the Selleck Water Corporation represented Selleck, Inc. (the official holder of the Selleck claim). Bob James, Regional Engineer for the State Department of Health was present at both meetings, and assisted me in preparing the applications. I believe we have followed through on all that you asked for, and we thank you for the help you gave us.



Brad Petrovich
August 5, 1997
Page 2

If you need more information, please let me know. Could you also give me a sense of the expected timeline for approval? I look forward to hearing from you soon. I can be reached at (206) 296-8696.

Sincerely,



Dwight Van Vleet
Project Manager

DVV:S2601

cc: Charlie LaFleur, President, Kangley Water Association
Tim Schaefer, President, Selleck Water Corporation
Grechen Schmidt, Environmental Health Specialist, EPA Drinking Water Unit
Bob James, Regional Engineer, Washington State Department of Health
Greg Hill, Project Manager, Hedges and Roth Engineering, Inc.
ATTN: Laurie Bickel, Project Engineer
Michael Krautkramer, Principal Hydrogeologist, Robinson and Noble, Inc.
Joyce Stahn, CDBG Coordinator, Community Development Program

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Accepted By
Date
Is Field Exam. Required?
<input type="checkbox"/> YES <input type="checkbox"/> NO
Determined By

APPLICATION FOR CHANGE OF WATER RIGHT

PURPOSE DIVERSION OR WITHDRAWAL
 PLACE ADDITIONAL POINT OR POINTS

NAME Kangley Water Association		Bus. Tel. 206-296-8696
ADDRESS P.O. Box 545		Home Tel.
(CITY) Ravensdale, WA	(STATE) WA	Other Tel. 253-833-0911
(ZIP CODE) 98051	APPLICATION NUMBER SI-22255	PERMIT NUMBER SI-22255 P
		CERTIFICATE NUMBER SI-22255C

APPROPRIATIONS MADE (GIVE DATE IF PRIOR TO JUNE 7, 1917 IF SURFACE WATER, OR JUNE 7, 1945 IF GROUND WATER)

IS THE WATER RIGHT RECORDED IN YOUR NAME? YES NO
IF NO, GIVE NAME RECORDED UNDER
Kangley Water System

1. RIGHT CONSISTS OF

WATERS USED FROM (STREAM, LAKE, WELL, OR TRENCH, ETC.) Un-named Stream	GALLONS PER MINUTE OR CUBIC FEET PER SECOND .15 cubic feet per second
WATER CURRENTLY USED FOR Community Domestic Supply	TIME OF USE Continuous

2. LOCATION OF PRESENT POINT OF DIVERSION OR WITHDRAWAL

ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL
580 feet east and 880 feet north of the south quarter corner of section 26

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) SW 1/4 SE 1/4	SECTION 26	TOWNSHIP N. 22	RANGE (E. OR W.) W.M. 7E	COUNTY King
---	----------------------	--------------------------	------------------------------------	-----------------------

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
-----	-------	------------------------------------

3. LEGAL DESCRIPTION OF LANDS WATER IS USED ON

**Area Served by the Kangley Water System in Section 26
T 22 N, R 7 E W.M.**

SECTION 26	TOWNSHIP N. 22	RANGE (E. OR W.) W.M. 7E	COUNTY King
----------------------	--------------------------	------------------------------------	-----------------------

(ATTACH SEPARATE SHEET IF NECESSARY)

ARE YOU THE LEGAL OWNER OF THE ABOVE DESCRIBED LANDS? YES NO
IF NO, EXPLAIN YOUR INTEREST
Kangley Water Association has historically served this area and has access to the un-named creek

REASONS FOR THE PROPOSED CHANGE

1) Change point of withdrawal to a protected groundwater source which draws from a viable aquifer.

2) Provide safe drinking water to the Kangley/Selbeck community.

A MINIMUM FEE OF \$10.00 MUST ACCOMPANY THIS APPLICATION

CONTINUE ON REVERSE SIDE

CHANGE

Kangley / Kangley

CHANGE REQUESTED		
CHANGE WATER USE TO <i>NO change</i>	TIME OF USE <i>NO change</i>	GALLONS PER MINUTE OR CUBIC FEET PER SECOND <i>NO change</i>

5. LOCATION OF PROPOSED POINT OF DIVERSION OR WITHDRAWAL

ON ACCOMPANYING SECTION MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION. SHOW NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER OR PROPERTY CORNER.

ALSO, ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL

New wells are 100' north of south property line and spaced 100 feet apart on lot 9136

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) <i>NE 1/4, NE 1/4, NW 1/4, NW 1/4 less south 30'</i>	SECTION <i>26</i>	TOWNSHIP N. <i>22</i>	RANGE (E. OR W.) W.M. <i>7E</i>	COUNTY <i>King</i>
---	----------------------	--------------------------	------------------------------------	-----------------------

6. IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION) <i>see ABOVE</i>
-----	-------	--

ARE YOU THE OWNER OF THE LAND ON WHICH THE PROPOSED POINT OF DIVERSION OR WITHDRAWAL IS TO BE LOCATED
 YES NO

LEGAL DESCRIPTION OF LANDS WATER IS USED ON

*Area served by the Kangley Water Association,
 as expanded to serve sections 23, 24, 25, 26,
 27, 34, and 35 of Township 22 N, R 7 E*

SECTION <i>23, 24, 25, 26, 27, 34, 35</i>	TOWNSHIP N. <i>22 N</i>	RANGE (E. OR W.) W.M. <i>7E</i>	COUNTY <i>King</i>
--	----------------------------	------------------------------------	-----------------------

(ATTACH SEPARATE SHEET IF NECESSARY)

ARE YOU THE LEGAL OWNER OF THE ABOVE DESCRIBED LANDS IF NO, EXPLAIN YOUR INTEREST
 YES NO *The Kangley Water Association*

*intends to design and construct a public water system to
 serve the Kangley/Selleck community. King County owns the well site*

* PLEASE NOTE LEGAL LAND OWNER SIGNATURE AND APPLICANT SIGNATURE ARE BOTH REQUIRED. IF THE LEGAL LAND OWNER AND APPLICANT ARE THE SAME, PLEASE SIGN IN BOTH PLACES. THANK YOU. *And will transfer ownership of property by the completion of the project.*

King County Housing and Comm. Dev.
 LEGAL LANDOWNER (PLEASE PRINT)

Charles J. [Signature]
 APPLICANT'S SIGNATURE

[Signature]
 LEGAL LANDOWNER SIGNATURE (OWNER OF PROPERTY DESCRIBED IN ITEM NUMBER 5)

*700 Fifth Ave, Suite 3700
 Seattle, WA 98104-5037*
 LEGAL LANDOWNER'S ADDRESS

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Accepted By _____
Date _____
Is Field Exam. Required?
<input type="checkbox"/> YES <input type="checkbox"/> NO
Determined By _____

APPLICATION FOR CHANGE OF WATER RIGHT

- PURPOSE DIVERSION OR WITHDRAWAL
 PLACE ADDITIONAL POINT OR POINTS

NAME KANGLEY WATER ASSOCIATION	Bus. Tel. 206-296-8696
	Home Tel. _____
	Other Tel. 253-833-0911

ADDRESS P.O. Box 545	(CITY) RAVENSDALE, WA	(STATE) WA	(ZIP CODE) 98051
--------------------------------	---------------------------------	----------------------	----------------------------

APPLICATION NUMBER _____	PERMIT NUMBER _____	CERTIFICATE NUMBER _____
--------------------------	---------------------	--------------------------

DECREED RIGHT (TITLE OF CASE)
Water Right Claim Registry Number 005457

APPROPRIATIONS MADE (GIVE DATE IF PRIOR TO JUNE 7, 1917 IF SURFACE WATER, OR JUNE 7, 1945 IF GROUND WATER)
Continuous use since 1910

IS THE WATER RIGHT RECORDED IN YOUR NAME? YES NO IF NO, GIVE NAME RECORDED UNDER
SELLECK, Inc.

1. **RIGHT CONSISTS OF**

WATERS USED FROM (STREAM, LAKE, WELL, OR TRENCH, ETC.) UN-NAMED CREEK	GALLONS PER MINUTE OR CUBIC FEET PER SECOND 12,000 G.P.M.
WATER CURRENTLY USED FOR Domestic	TIME OF USE Continuous

2. **LOCATION OF PRESENT POINT OF DIVERSION OR WITHDRAWAL**

ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL.
2000 ft. East and 500 ft. South from the NW corner of Section 6

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) NW 1/4	SECTION 6	TOWNSHIP N. 21	RANGE (E. OR W.) W.M. 8 E	COUNTY King
--	---------------------	--------------------------	-------------------------------------	-----------------------

IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION

LOT _____	BLOCK _____	OF (GIVE NAME OF PLAT OR ADDITION) _____
-----------	-------------	--

3. **LEGAL DESCRIPTION OF LANDS WATER IS USED ON**

SECTIONS 23, 24, 25, and 26

SECTION 23, 24, 25, 26	TOWNSHIP N. 22	RANGE (E. OR W.) W.M. 7 E	COUNTY King
----------------------------------	--------------------------	-------------------------------------	-----------------------

(ATTACH SEPARATE SHEET IF NECESSARY)

ARE YOU THE LEGAL OWNER OF THE ABOVE DESCRIBED LANDS? YES NO IF NO, EXPLAIN YOUR INTEREST
The Kangley Water Association intends to serve customers within the above-defined area.

REASONS FOR THE PROPOSED CHANGE

- Add points of withdrawal to a protected groundwater source which draws water from a viable aquifer**
- Provide safe drinking water to Kangley Selleck community**

A MINIMUM FEE OF \$10.00 MUST ACCOMPANY THIS APPLICATION

CONTINUE ON REVERSE SIDE

CHANGE

KARLEY/SEUECK

4. **CHANGE REQUESTED**

CHANGE WATER USE TO <u>NO change</u>	TIME OF USE <u>NO change</u>	GALLONS PER MINUTE OR CUBIC FEET PER SECOND <u>TRANSFER only 235 gallons/minute</u>
---	---------------------------------	--

5. **LOCATION OF PROPOSED POINT OF DIVERSION OR WITHDRAWAL of the 12,000** 2 p.m.

ON ACCOMPANYING SECTION MAPS, ACCURATELY MARK AND IDENTIFY EACH POINT OF DIVERSION. SHOW NORTH-SOUTH AND EAST-WEST DISTANCES FROM NEAREST SECTION CORNER OR PROPERTY CORNER. See attached

ALSO, ENTER BELOW THE DISTANCES FROM THE NEAREST SECTION OR PROPERTY CORNER TO THE DIVERSION OR WITHDRAWAL
Wells are 100' north of South Property line of lot 9136 and spaced 100' apart.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) <u>NE 1/4, NE 1/4, NW 1/4, NW 1/4, less S. 30 feet</u>	SECTION <u>26</u>	TOWNSHIP N. <u>22</u>	RANGE (E. OR W.) W.M. <u>7E</u>	COUNTY <u>King</u>
---	----------------------	--------------------------	------------------------------------	-----------------------

6. **IF THIS IS WITHIN THE LIMITS OF A RECORDED PLATTED PROPERTY, COMPLETE THIS SECTION**

LOT <u>—</u>	BLOCK <u>—</u>	OF (GIVE NAME OF PLAT OR ADDITION) <u>See Above</u>
-----------------	-------------------	--

ARE YOU THE OWNER OF THE LAND ON WHICH THE PROPOSED POINT OF DIVERSION OR WITHDRAWAL IS TO BE LOCATED

YES NO

LEGAL DESCRIPTION OF LANDS WATER IS USED ON

Area served by the Karley Water Association
As expanded: Sections 23, 24, 25, 26, 27, 34
and 35 of Township 22 N, Range 7E

SECTION <u>23, 24, 25, 26, 27, 34, +35</u>	TOWNSHIP N. <u>22 N</u>	RANGE (E. OR W.) W.M. <u>7E</u>	COUNTY <u>King</u>
---	----------------------------	------------------------------------	-----------------------

(ATTACH SEPARATE SHEET IF NECESSARY)

ARE YOU THE LEGAL OWNER OF THE ABOVE DESCRIBED LANDS YES NO IF NO, EXPLAIN YOUR INTEREST

The Karley Water Association intends
to receive all or part of the Sallach Water Corporation's service
AREA and will design and construct a new water system to serve the area.

* PLEASE NOTE LEGAL LAND OWNER SIGNATURE AND APPLICANT SIGNATURE ARE BOTH REQUIRED. IF THE LEGAL LAND OWNER AND APPLICANT ARE THE SAME, PLEASE SIGN IN BOTH PLACES. THANK YOU.

King County Planning & Comm. Development
 LEGAL LANDOWNER (PLEASE PRINT)

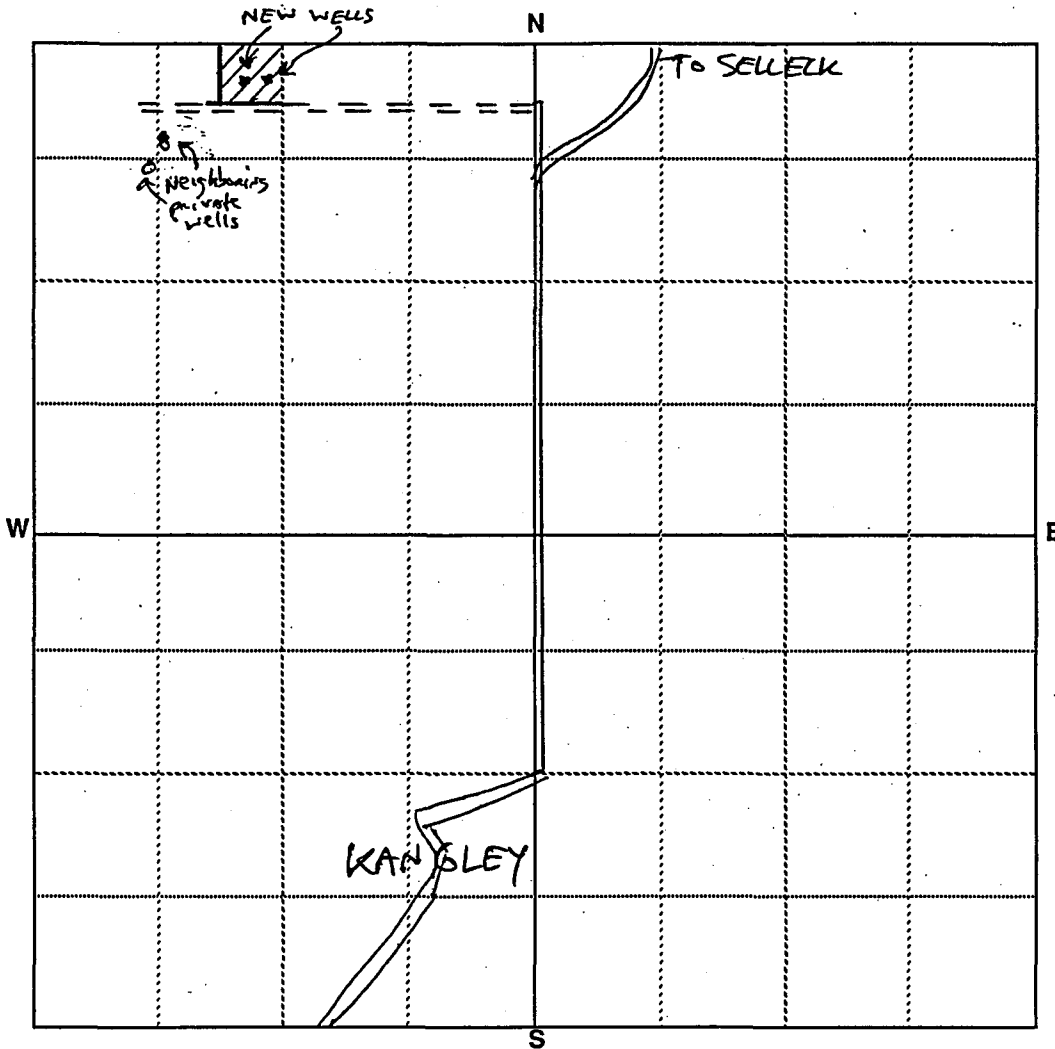
Charles J. [Signature]
 APPLICANT'S SIGNATURE

[Signature]
 LEGAL LANDOWNER SIGNATURE (OWNER OF PROPERTY DESCRIBED IN ITEM NUMBER 5)

700 Fifth Avenue, Suite 3700
Seattle, WA 98104-5037
 LEGAL LANDOWNER'S ADDRESS

SECTION MAP

Sec. 26 Twp. 22 N N. R. 7 E



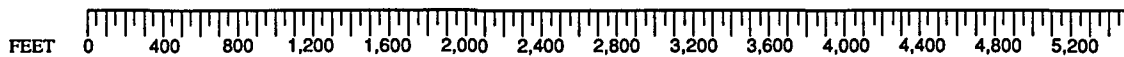
Scale: 1 inch = 800 feet (each small square = 10 acres)

Show by a cross (X) the location of point of diversion (surface water source) or point of withdrawal (ground water source). For ground water applications, show by a circle (O) the locations of other wells or works within a quarter of a mile.

Indicate traveling directions from nearest town in space below.

From Kansley proceed North 0.65 miles to point where road curves to right. At beginning of curve proceed straight onto gravel road. After about 200 feet gravel road turns left and heads west. Proceed west approximately 1300 feet (.25 mi.). Wells are 100 feet North of gravel road (SE 25TH Street) or lot # 9136 and are spaced approximately 100 feet apart.

Fold along scale



Detach this scale at the performance, fold excess paper under or cut off excess by cutting along the scale line. This scale corresponds to the SECTION MAP above. You can read feet directly from this scale to outline property and locate points of diversion or withdrawal on the SECTION MAP. Enclose this map along with the application and \$10.00 examination fee.

INSERT MAP

Your water right application will be processed by the Regional Office of the Department of Ecology having jurisdiction in the area in which your water works are located. Please submit your completed application form, maps, sketches, and \$10.00 examination fee to the appropriate Regional Office.

*Hand-delivered
8/5/97
by
D.V.V.*

Northwest Regional Office
3190 - 160th Avenue S.E.
Bellevue, WA 98008-5452
Tel. (206) 649-7000
TDD (206) 649-4259

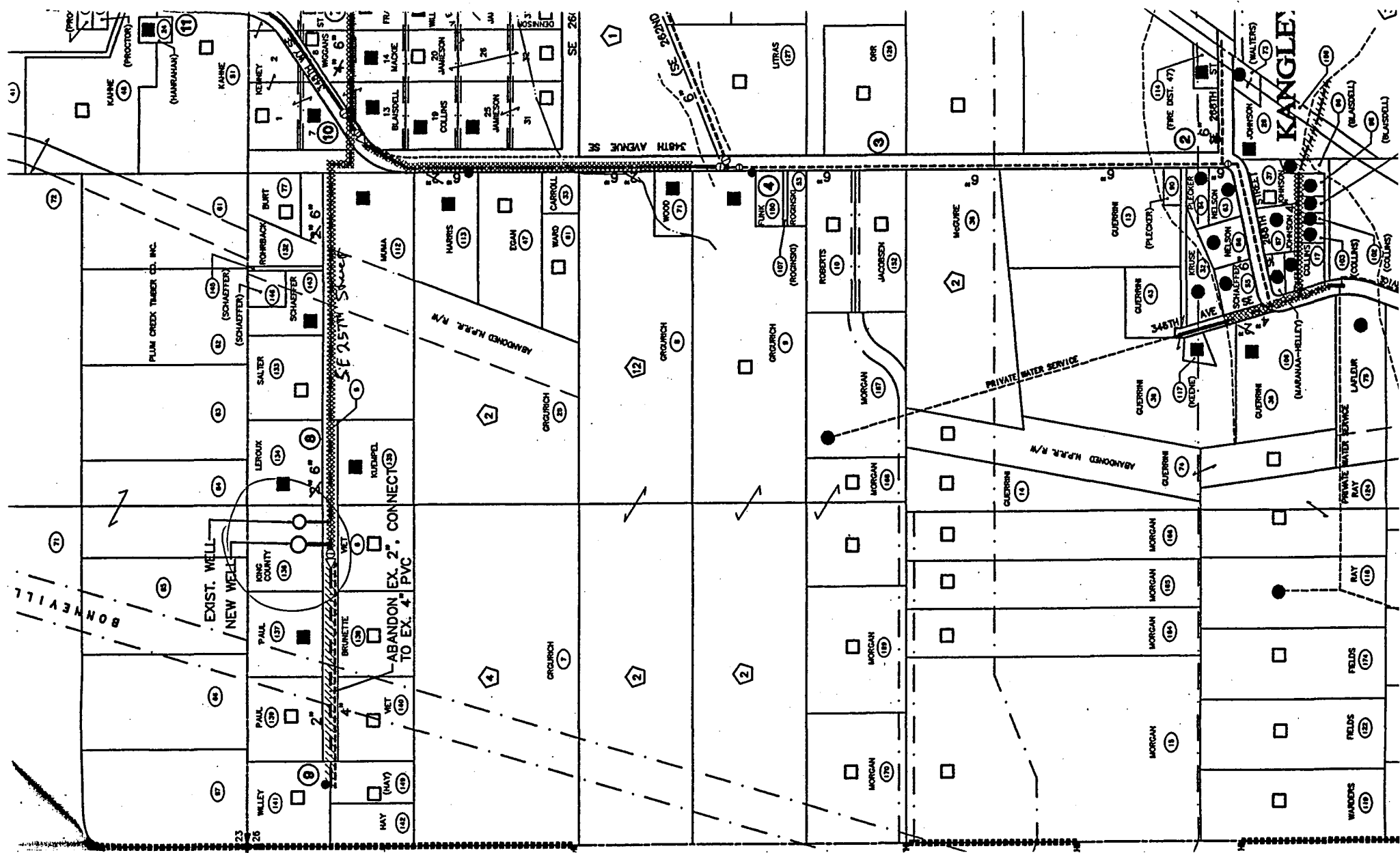
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, Washington 98902-3401
Tel. (509) 575-2490
TDD (509) 454-7673

Southwest Regional Office
PO Box 47775
Olympia, Washington 98504-7775
300 Desmond Drive
Lacey, WA 98503
Tel. (360) 407-6300
TDD (360) 407-6306

Eastern Regional Office
N. 4601 Monroe, Suite 100
Spokane, Washington 99205-1295
Tel. (509) 456-2926
TDD (509) 458-2055

The appropriate Regional Office will be happy to answer any further questions you may have.

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs please contact the appropriate Regional Office from above.



In South County Journal
10/21 Add 10/28/97

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
NOTICE OF APPLICATION TO
CHANGE AN EXISTING WATER RIGHT
TAKE NOTICE:

Legals

Sec. 3
10/21/97

CALL FOR BIDS
DAY WATER AND SEWER DISTRICT
11909 Renton Ave. So.
Seattle, WA 98178
(206) 772-7343

1 bids for the construction of the
States and 76th Ave. So. Water
on/Service Upgrades will be
by Skyway Water/Sewer District
ds will be opened/read at the
November 7, 1997, at 10:00
ceived after the fixed opening
be considered. Award of the
ar be made by the District's
nmissioners. A pre-bid confer-
held on October 27, 1997 at
f 76th Ave. So./So. Langston
a by all bidders is strongly

s of constructing approx-
ft (LF) of 10-in DIP, 1350
50 LF of 4-in DIP, 4 fire
water service line installa-
ter service line installa-
mately, 130 ft of street
pavement removal/

Contract Documents and
be obtained, or infor-
wed, at the Seattle
d Carothers Assoc.,
eattle, WA 98122 Ph:
iles of the Project
s Drawings may be
upon receipt of a
made payable to
oc. Purchase price
55 (mail); \$16.29
cial deliveries are
rge. Informational
for inspection at

ight to reject any
Irregularities and
process. SWSD
i to the lowest
ct bids within six-
ier November 7,
ithdraw their bid
successful bidder
ct within ten (10)
date:

ried by a

That KANGLEY WATER ASSOCIATION
of RAVENSDALE, WASHINGTON on
AUGUST 18, 1997, has filed an application
of change to SURFACE WATER
CERTIFICATE S1-22255C. Certificated
use is for .15 cfs, 22.5 acre-feet per year
for COMMUNITY DOMESTIC SUPPLY -
CONTINUOUSLY, as granted under
Surface Water Right S1-22255C, priority
date JUNE 30, 1974.

That the original point of diversion is
located in SW $\frac{1}{4}$, SE $\frac{1}{4}$, Section 26, Township
22, Range 7E W.M., KING County. The
place of use is located within AREA
SERVED BY THE KANGLEY WATER
ASSOCIATION IN SECTION 26,
TOWNSHIP 22N, RANGE 7E W.M.

The request here is to CHANGE THE
POINT OF DIVERSION FROM A
SURFACE WATER SOURCE TO A
GROUND WATER WITHDRAWAL (2
WELLS) LOCATED IN THE NW $\frac{1}{4}$, NW $\frac{1}{4}$,
SECTION 26, TOWNSHIP 22N, RANGE
7E, KING COUNTY, AND CHANGE THE
SERVICE AREA TO SERVE SECTIONS
23, 24, 25, 26, 27, 34 AND 35, TOWNSHIP
22N, RANGE 7E, KING COUNTY,
WASHINGTON.

No increase will be made to the instanta-
neous diversion/withdrawal rate or annual
quantity.

Protests or objections to approval of this
application must include a detailed state-
ment of the basis for objections: protests
must be accompanied by a two (\$2.00)
recording fee and filed with the Department
of Ecology at the address shown below,
within thirty (30) days from Oct. 28, 1997.
Department of Ecology
Northwest Regional Office
3190 - 160th SE
Bellevue, WA 98008

Published in the South County Journal
October 21 and 28, 1997. 3770

City of Covington, Washington
Ordinance No. 50-97

AN ORDINANCE of the City of
Covington, King County, Washington,
establishing a small works roster pursuant
to RCW 35.34.352(3) and 39.04.155.

City of Covington

Ordinan

AN ORD

Covington

repealing

by refer

APPENDIX E

FIRST YEAR OPERATING BUDGET

11/20/97

1st shows to Board of Standards Committee 11/25/97

**Kangley Selleck Water System Consolidation
Proposed First Year Operating Budget**

Not yet reviewed by Kangley Board

Income	Monthly Amount Per Connection	Monthly Amount For Whole System with 85 Connections	Annual Amount For Whole System with 85 Connections
Basic Water Service Charge	\$40.00	\$3,400	\$40,800
Usage Charges Above Base Rate*	0.00	0	0
Total Income*	<u>\$40.00</u>	<u>\$3,400</u>	<u>\$40,800</u>
Expenses			
DWSRF Loan Pay-off**	\$25.00	\$2,125	\$25,500
Savings Placed in Reserve Account	2.50	213	2,550
System Operator	4.71	400	4,800
System Bookkeeper	1.18	100	1,200
Water Testing & Monitoring	.59	50	600
Legal (Attorney fees)	1.96	167	2,000
Accountant (Annual audit & fin. stmts.)	.29	25	300
Electrical Expenses	1.18	100	1,200
Property Taxes (well site)	.39	33	400
Supplies and Postage	.74	63	750
Total Expenses	<u>\$38.54</u>	<u>\$3,276</u>	<u>\$39,300</u>
Operating Surplus (This surplus is in addition to the reserve account deposit.)	\$1.46	\$124	\$1,500

* Though Kangley Selleck may establish a consumption charge that causes high water users to pay more than the proposed base rate of \$40 per month, it has chosen for now to not project any revenue from such charges. Accurate projections for high water use consumption charges are not possible until the new consolidated system is built and operating.

** To pay off the Drinking Water State Revolving Fund loan, the Kangley Water Association estimates that a debt service rate of \$25 per connection per month and a total water bill not exceeding \$40 per month are the upper limits. Any amounts higher will likely impose a hardship on Kangley Selleck residents. But Kangley is also well aware that \$25 per month from 85 connections will only generate debt service capacity for a loan of \$504,027. (This assumes that it borrows at a 3% annual interest rate for 30 years with 360 monthly payments of \$2,125 each. Monthly amortization factor used is .00421604 x loan amount.) For a reconciliation between this application's \$1,000,000 face amount and this worksheet's implied \$504,027 loan amount, see next section on "Improvement Program Financing."

APPENDIX F

SEPA CHECKLIST

SEPA RULES

WAC 197-11-970 Determination of Nonsignificance (DNS).

DETERMINATION OF NONSIGNIFICANCE

Description of proposal:

The Foothills Comprehensive Water System Plan will address the water service needs of the towns of Kangley and Selleck, located within the southeastern portion of King County. The towns presently are on separate water systems. Both water systems use surface water as their source and are in violation of Safe Drinking Water Act (SDWA) regulations. The comprehensive plan will address an alternative water source for Kangley and Selleck, as a combined water system, along with recommending necessary improvements to the existing system.

The proposed water system improvements include installing approximately 5900 lineal feet of 6" water main and approximately 9070 lineal feet of various smaller diameter PVC and HDPE water mains, along with a well pump house, chlorination system, and storage tank appurtenances at the well property located between Kangley and Selleck.

Proponent:

Foothills Water Association

Location of proposal, including street address, if any:

Communities of Kangley and Selleck

Lead agency:

King County Department of Community and Human Services

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

There is no comment period for this DNS.

This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 15 days from the date below. Comments must be submitted by ____.

Responsible Official: Mr. Dwight Van Vleet

Position/Title: King County Community Development Specialist **Phone:** (206) 296-8696

Address: King County Department of Community and Human Services
700 Fifth Avenue, Suite 3700
Seattle, WA 98104-5037

Date:

Signature: _____

(OPTIONAL)

You may appeal this determination to (name) _____ at (location) _____ no
later than (date) _____ by (method) _____.

You should be prepared to make specific factual objections.

Contact _____ to read or ask about the procedures for SEPA appeals.

There is no agency appeal.

ENVIRONMENTAL CHECKLIST

Purpose of Checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant. Requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers to provide additional information reasonably related to determining if there may be significant adverse impact.

Use of Checklist for Nonproject Proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable:

Foothills Water Association Comprehensive Water System Plan

2. Name of applicant:

Foothills Water Association

3. Address and phone number of applicant and contact person:

PO Box 545
Ravensdale, WA 98504

4. Date checklist prepared: August 6, 1998

5. Agency requesting checklist:

King County Department of Community and Human Services
Washington State Department of Ecology
Washington State Department of Health

6. Proposed timing or schedule (including phasing, if applicable):

The Foothills Water Association water system consolidation project is anticipated to be completed in the summer of 1999.

7. Do you have any plans for future additions, expansion, or further activity related to, or connected with this proposal? If yes, explain.

An additional water storage tank may be constructed in the future, to be located by the proposed storage tank, but only if the future number of hookups exceeds the amount of required storage for the initial water system.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

None Known.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

Selleck Inc., Pacific States Management and Robert and Tim Schaefer are attempting to receive approval for several Group B water systems within the service area of the Foothills Association. These Group B water systems will only serve properties owned by the individuals and corporations just mentioned. Their approval status or legality is not known at this time.

10. List any government approvals or permits that will be needed for your proposal, if known.

The project outlined in the Comprehensive Plan will require approval from the following agencies:

- Metropolitan King County Council (Plan Approval via Dept. of Natural Resources)
- Washington State Department of Ecology (Water Right)
- Washington State Department of Health (Plan and Project Approvals)

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

This comprehensive water system plan is prepared in response to the Proposed Administrative Orders from the EPA requiring the Kangley water system and the Selleck Water Systems to comply with the Safe Drinking Water Act. The plan serves as a guide for the two communities to consolidate their water system by upgrading their existing water lines, implementing water storage facilities and changing over to a safer more reliable water supply in accordance with local, county and state requirements. The comprehensive plan encompasses the two communities of Kangley and Selleck and outlying areas not used for mining or forestry.

The proposed water system improvements include installing approximately 5900 lineal feet of 6" water main and approximately 9070 lineal feet of various smaller diameter PVC and HDPE water mains, along with a well pump house, chlorination system, and storage tank appurtenances at the well property located between Kangley and Selleck.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any applications related to this checklist.

The comprehensive plan area includes the two communities of Kangley and Selleck, and the surrounding outlying areas. These area system improvements will encompass all of section 26 and portions of sections 23, 24, and 27 within Township 22 north and Range 7 east in King County, Washington. The water system improvements include the SW and SE portion of section 23, the SW portion of section 24, and parcels 18 & 23 within section 27.

TO BE COMPLETED BY APPLICANT

EVALUATION FOR
AGENCY USE ONLYB. ENVIRONMENTAL ELEMENTS1. EARTH

- a. General description of the site (circle one): Flat, (rolling), hilly, steep slopes, mountainous, other (_____).

- b. What is the steepest slope on the site (approximate percent slope)?

Slopes vary. Actual land slopes vary from 0% to 65% slopes but water lines will not be installed on steep slopes.

- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

Barneston gravelly coarse sandy loam, 6-30% slopes
 Barneston gravelly coarse sandy loam, 30-65% slopes
 Beausite gravelly loam, 6-30% slopes
 Belfast silt loam, 0-2% slope
 Chuckanut loam, 6-15% slopes
 Chuckanut loam, 15-30% slopes
 Norma loam, 0-3% slopes
 Tokul gravelly loam, 6-15% slopes
 Tokul gravelly loam, 15-30% slopes

- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

According to the King County Sensitive Areas Map Folio, erosion hazard areas exist in project areas and will be addressed during design of the projects.

- e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Excavation will be required for installation of the water mains. The depth of excavation is anticipated to be four feet. Suitable native soil excavated from the waterline trenches will be used as backfill. Imported fill (Bank Run Gravel) may be necessary if the native soil is unsuitable in some areas.

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Slight erosion could occur as a result of trenching activities. Erosion Control measures will be used in areas of potential erosion.

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

No significant additional impervious surfaces will result from the water main portion of the project. At the well, a pump house and chlorination facility could add approximately 300 square feet of impervious surface. The water storage tank would add approximately 1,200 square feet of impervious surface.

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

An erosion and sedimentation control plan will be prepared for these projects and include the following:

- Keeping a minimum length trench,
- Using methods of construction that minimize total area and time required for construction,
- Filter fabric siltation barrier fencing,
- Backfill immediately and begin landscaping or road patching as necessary to limit the amount of time soils are exposed.

2. AIR

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities, if known.

Dust and standard emission from construction equipment.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No

- c. Proposed measures to reduce or control emissions or other impacts to air, if any.

Standard emission controls for construction equipment will be utilized.

3. WATER

a. Surface

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, salt-water, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

There are two class 2 unnamed streams with Salmonids and two unclassified unnamed streams flowing through the plan area as indicated by the King County Sensitive Area Map Folio.

The King County Sensitive Area Map Folio did not identify any wetlands, lakes or ponds, streams or 100 year flood plains within the study area.

- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The comprehensive water system plan does require work over one of the class 2 streams and one of the unclassified streams. The project alignment proposed minimizes the impact to any water bodies and wetlands by limiting construction to within the existing road prism. The surface waters will be addressed in the permitting phases of the affected project.

- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No amount known at this time.

- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.

None known.

- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

According to the King County Sensitive Area Map Folio, the comprehensive water system plan area does not lie within the 100 year floodplain.

- 6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground:

- 1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities, if known.

The Comprehensive Water System Plan does not directly withdraw groundwater. However, groundwater will be withdrawn from the existing two wells once water rights are transferred from existing surface water sources and the new water lines have been installed. Foothills Water Association is currently in the process of obtaining water rights from DOE to withdraw 300 gpm from the wells.

- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage: industrial, containing the following chemicals ... ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No additional waste material will be discharged into the ground resulting from the installation of the water system.

c. Water Runoff (including storm water):

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

No additional storm water runoff will result from installation of the water main. Additionally, sedimentation ponds and other necessary methods will be used to control runoff at the storage facility site.

- 2) Could waste materials enter ground or surface waters? If so, generally describe.

Does not apply.

- d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Runoff water impacts will be controlled by temporary erosion and siltation facilities installed and maintained per King County Surface Water Management Design Manual.

4. PLANTS

- a. Check or circle types of vegetation found on the site:

deciduous tree: (alder),(maple), (aspen), other (_____)

evergreen tree: (fir), (cedar), pine, other (Spruce)

shrubs

grass

pasture

crop or grain

wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other (_____)

water plants: water lily, eelgrass, milfoil, other (_____)

other types of vegetation

- b. What kind and amount of vegetation will be removed or altered?

Does not apply for the administrative portion of the comprehensive plan. Minimal vegetation will be removed for the water system improvement project. Some trees or brush will be removed to install the water lines in the easements.

- c. List threatened or endangered species known to be on or near the site.

None known.

- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Does not apply, however the specific projects will address areas affected by construction which will be restored to their original conditions based on preconstruction photographs of the site.

5. ANIMALS

- a. Circle any birds and animals that have been observed on or near the site or are known to be on or near the site:

birds: (hawk), heron, eagle, (songbirds), other (swallows,
woodpeckers)

mammals: (deer), bear, elk, beaver,
other (squirrels, mice, rabbits, weasels)

fish: bass, salmon, trout, herring, shellfish, other) (_____)
None known.

- b. List any threatened or endangered species known to be on or near the site.

This area may contain threatened or endangered species; however, it is not known at this time and would be specifically addressed in a project SEPA.

- c. Is the site part of a migration route? If so, explain.

None known.

- d. Proposed measures to preserve or enhance wildlife, if any:

Does not apply. Future project actions will address potential measures.

6. ENERGY AND NATURAL RESOURCES

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity will be used for pumping and lighting at the pump and chlorination building. Other portions of the project will have no other additional energy requirements.

- b. Would your project affect the potential use of solar energy by

adjacent properties? If so, generally describe.

Does not apply.

- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Does not apply.

7. ENVIRONMENTAL HEALTH

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

The Comprehensive Water System Plan will not directly cause any environmental health hazards. However, the chlorine used to treat the well water will be in the form of sodium hypochlorite. Sodium hypochlorite at a concentration of 12% minimizes the amount of environmental health hazard and should only prove to be a hazard if spilled. The building housing the chlorine will be designed to contain any spill within the building.

- 1) Describe special emergency services that might be required.

An emergency manhole to contain the hypochlorite solution along with other UFC measures will be applied when the project commences.

- 2) Proposed measures to reduce or control environmental health hazards, if any:

Environmental risks are reduced by chlorinating the well water with sodium hypochlorite instead of chlorine gas. A chlorine gas leak could have serious health implications.

- b. Noise

- 1) What types of noise exist in the area that may affect your project (for example: traffic, equipment, operation, other)?

The plan is located within residential and rural areas and will have little vehicular traffic.

- 2) What types and levels of noise would be created by, or associated with, the project on a short-term or long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Construction equipment will be operated during regular work hours throughout the construction phase. In addition, there would be operation of the pumping equipment and ventilator fans on an as needed basis. All operational equipment noises will be within allowable residential limits.

- 3) Proposed measures to reduce or control noise impacts, if any:

Construction equipment would be muffled. Construction schedules will be limited to normal working hours.

8. LAND AND SHORELINE USE

- a. What is the current use of the site and adjacent properties?

The study area is predominately residential with various vacant parcels. The majority of the area has been designated rural by King County with a minor portion designated as forestry land use.

- b. Has the site been used for agriculture? If so, describe.

No

- c. Describe any structures on the site.

No structures exist where the proposed pump and chlorination building or where the proposed water storage tank are planned.

- d. Will any structures be demolished? If so, what?

None

- e. What is the current zoning classification of the site?

According to the King County Comprehensive Plan, the plan area is predominately RA-5, rural with one dwelling per 5 acres, and RA-10, rural with one dwelling per 10 acres. There is one small parcel designated NB, neighborhood business.

- f. What is the current comprehensive plan designation of the site?

The King County Comprehensive Plan has designated the area rural with a small area designated for forestry use.

- g. If applicable, what is the current shoreline master program designation of the site?

No shoreline exists and therefore does not apply.

- h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

The known sensitive areas are those which have been identified in sections B1(d) and B3 of this document.

- i. Approximately how many people would reside or work in the completed project?

No one would reside in the proposed project. One part-time employee would work on the completed project.

- j. Approximately how many people would the completed project displace?

None

- k. Proposed measures to avoid or reduce displacement impacts, if any:

Does not apply

- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposed water system is consistent with residential land use and is addressed further in the comprehensive plan.

9. **HOUSING**

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Does not apply.

- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

Does not apply.

- c. Proposed measures to reduce or control housing impacts, if any:

Does not apply.

10. AESTHETICS

- a. What is the tallest height of any proposed structure(s), not including antennas: what is the principal exterior building material(s) proposed?

The pump and chlorination building will be approximately eight to nine feet high and is anticipated to be a wood frame structure.

- b. What views in the immediate vicinity would be altered or obstructed?

The pump building will be located on an existing vacant lot and will not significantly affect any views.

- c. Proposed measures to reduce or control aesthetic impacts, if any:

Structures will be sized to be as small as functionally possible.

11. LIGHT AND GLARE

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Not applicable.

- b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

- c. What existing off-site sources of light or glare may affect your proposal?

None

- d. Proposed measures to reduce or control light and glare impacts, if any:

Does not apply.

12. **RECREATION**

- a. What designated and informal recreational opportunities are in the immediate vicinity?

The closest recreational opportunity are the lakes in the vicinity such as Retreat Lake, Lake no. 12, and Lake Sawyer to the west. Nolte State Park is located to the south.

- b. Would the proposed project displace any existing recreational use? If so, describe.

No.

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Does not apply.

13. **HISTORIC AND CULTURAL PRESERVATION**

- a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

Historic sites exist within the Selleck Historic District located in the SW corner of Section 24, in Township 22 North and Range 7 East.

- b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

The site contains historic buildings.

- c. Proposed measures to reduce or control impacts, if any:

The water system improvements will be constructed within road rights of way or easements and will not impact the historic buildings.

14. TRANSPORTATION

- a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on-site plans, if any.

Kent-Kangley Road will provide access to the project site.

- b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

No direct bus service exists in the area. The closest bus stop is located on SE 292nd Street and 216th Avenue SE, approximately 8 miles away.

- c. How many parking spaces would the completed project have? How many would the project eliminate?

The completed project will have one parking place. No parking spaces will be eliminated.

- d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

No new roads will be required. Construction will occur on existing roads. Road patching and repair will occur as necessary. A small access drive will be required at the pump/chlorination building and the water storage tank.

- e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No

- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

Daily weekday trips may be normally required at the pump station site.

- g. Proposed measures to reduce or control transportation impacts, if any:

None required.

15. **PUBLIC SERVICES**

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

No

- b. Proposed measures to reduce or control direct impacts on public services, if any.

Does not apply.

16. **UTILITIES**

- a. Circle utilities currently available at the site: (electricity), natural gas, (water), (refuse service), (telephone), sanitary sewer, (septic system), other.

- b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

The comprehensive plan serves as a guide for improvements to the existing water system within the study area. Subsequent actions may include installation of new water lines, a pump and chlorination building, and a water storage tank consistent with King County planning and zoning. Three phase power will be extended from an adjacent road.

C. **SIGNATURE**

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

EVALUATION FOR
AGENCY USE ONLY

Signature: _____

Date Submitted: _____

D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS

- (1) How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

The comprehensive plan proposes the project have a minimal amount of sodium hypochlorite stored on site to provide preventative disinfection for the well water.

Proposed measures to avoid or reduce such increases are:

Safety measures according to the Uniform Fire Code will be applied.

- (2) How would the proposal be likely to affect plants, animals, fish, or marine life?

Not applicable.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Temporary erosion and sedimentation controls will be employed during water system construction.

- (3) How would the proposal be likely to deplete energy or natural resources?

The proposal will have minimal effect with only the well pump using available energy resources. Trees may be cut on the storage tank site or the access road to it.

Proposed measures to protect or conserve energy and natural resources are:

Development must conform to King County Guidelines and Regulations.

- (4) How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

The comprehensive plan will not effect the current usage of the study area. Installation of water lines through classified and

unclassified streams will be of minimal temporary impact during construction and have no long term impact after they are installed.

Proposed measures to protect such resources or to avoid or reduce impacts are:

Compliance with applicable King County guidelines, zoning regulations, and all State regulations during design and construction.

- (5) How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

The comprehensive plan does not allow or encourage uses incompatible with existing plans. The plan would allow for improvements to be made upon the existing water system.

Proposed measures to avoid or reduce shoreline and land use impacts are:

Compliance with applicable King County guidelines, zoning regulations, and all State regulations during design and construction.

- (6) How would the proposal be likely to increase demands on transportation or public services and utilities?

Development and growth may follow from having an approved water system but would be regulated in accordance with environmental restrictions as well as County guidelines.

Proposed measures to reduce or respond to such demand(s) are:

Growth to be guided by King County Comprehensive Plan Zoning and community planning.

- (7) Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The Foothills water Association Comprehensive Water System Plan does not conflict with any known environmental laws. Development and Growth may follow and will be in accordance with environmental restrictions, as well as County planning guidelines.

APPENDIX G

PREVIOUSLY INVESTIGATED SOURCE ALTERNATIVES

PREVIOUSLY INVESTIGATED SOURCE ALTERNATIVES

The following are the source options previously evaluated prior to 1995 for Kangley exclusively with the recommended option given last.

1. Connection to Existing Tacoma Pipeline No. 1 or No. 5

This source option involves connecting the Kangley system to existing Tacoma Pipeline No. 1 or proposed Tacoma Pipeline No. 5. will not be ready for service in the near future. The City of Tacoma would require Kangley to connect to pipeline no. 1 east of the railroad crossing on Green River Headworks Road. Connecting at this point would require approximately 15,600 lineal feet. of 8-inch ductile iron piping to reach Kangley.

The connection to Pipeline No. 5 would need to be made at the intersection of Hudson Road and the Cumberland-Kanaskat Road which would require approximately 11,600 lineal feet. of 8-inch ductile iron pipe to reach Kangley.

For Kangley to connect to either pipeline, the City of Tacoma also requires sufficient storage to meet a three day supply and chlorine contact time requirements. Therefore, with this source option, storage would be mandatory. Based on DOH sizing requirements of 600 gallons/connection/day for 20 connections, the tank would have to be a minimum of 36,000 gallons. For the tank to supply water to Kangley at the DOH required 30 psi, the tank would have to be built with a minimum water level elevation of 1090 feet. If the tank was not built with this water elevation, a booster pump station would be required to increase pressure.

A pump station would also be needed if either Pipeline No. 1 or No. 5 were used as a source. With an elevation difference of over 200 feet between either Pipeline No. 1 or No. 5 and Kangley, a pump station would be required to pump the water to a new storage tank near Kangley.

Finally, to connect to the City of Tacoma water system Kangley must pay several hook-up fees which the City charges. The first of these is a system development charge which depends on the master meter size. The other is a service line construction charge per connection.

All of the previously mentioned requirements make this option very expensive. The estimated cost for Kangley to connect to Pipeline No. 1 is approximately \$1,150,000 which is \$44,000 per connection not including a new distribution system. Pipeline No. 5 would cost less because it would require 4,000 fewer lineal feet of pipe to reach Kangley. However, because Pipeline No. 5 is not expected to be in service in the near future it can not be considered as an immediate water source. Due to these high costs and time constraints we feel it would not be feasible for Kangley to pursue either pipeline as a water source.

2. Filtration of Existing Surface Water Source

This option would allow Kangley to utilize the existing creek source for water and comply with the Surface Water Treatment Rule. The creek water could be treated by slow sand filtration, rapid rate filtration, a package treatment plant, or a pressure system once it is drawn from the creek. Slow sand filtration would be the most cost-effective filtration option for Kangley to pursue if they wanted to treat their existing water source. The slow rate sand filtration process is very simple. The water enters the filter tank above the filter media. As the water passes through the filter media it is slowly treated through biological action and filtering. After being treated by the sand filter, the water is chlorinated and treated with any other necessary chemicals. Once this treatment is completed the water is ready for storage or distribution.

Based on 20 connections and a treatment rate of 0.06 gpm/s.f. the system would need a treatment area of 185 square feet. This option is estimated to cost \$36,000 per connection, not including the distribution system. A \$220,000 cost for land acquisition for watershed protection is included in this estimate for comparison purposes. This value is unknown and the actual cost could be much different than this.

Slow sand filtration demonstrates the high cost of filtration. The other filtration methods mentioned may cost even more. All of the filtration options also need frequent monitoring, constant maintenance and upkeep which would require a full time operator to take care of the system.

This option would also require a pump station, new storage facility, and new transmission and distribution systems. Because the source option has a water elevation less than 1090 feet, which is the minimum required to maintain 30 psi in the system by gravity flow, a pump station would be needed. The pump station would serve as a booster station to increase pressure in the system. Since the system has over 10 connections, storage would have to be added to meet DOH requirements. This tank would need to be at least 15,000 gallons (600 gallons per connection per day) to accommodate the existing residents and future growth.

Because of the high costs of installation, pumping and storage requirements, environmental impacts, permitting requirements, lack of watershed protection, and full time maintenance requirements, filtration and use of the current surface source would not be a feasible option for Kangley.

3. Connection to the Selleck Water System

The next water source option evaluated was connecting the Kangley system to the Selleck Water System. The Selleck system has approximately 70 connections and is privately owned and operated. The Selleck community is located approximately ½ mile north of Kangley. The system gets its water supply from a surface water supply several miles from Selleck. The only treatment the water receives is chlorination. The Selleck system has a 4,000 gallon storage tank and much of the distribution system is reported to be 6-inch wood stave pipe.

Currently, several Kangley residents are connected to the Selleck system by a 6-inch PVC watermain which was installed several years ago in hopes of connecting all of Kangley to the

Selleck system. Because of recent legal problems, the Selleck system has not been able to add any new connections. Its problems are very similar to Kangley's. Since the Selleck system is a surface water source it must comply with State Board of Health Drinking Water Regulations WAC 246-290 and the Surface Water Treatment Rule, which it has not done. Failure to comply has forced a court order on Robert Schaefer, the owner of the Selleck system, to make improvements to meet these regulations.

To upgrade the Selleck system in order for it to meet current regulations would be very costly. The system would need filtration, which as mentioned previously, is very expensive and requires continuous monitoring and testing. Also, approximately 15,000 to 20,000 l.f. of the existing transmission and distribution mains are old, deteriorated wood pipe which will need to be replaced. Much of this pipe is located in sensitive areas and would require very extensive permitting efforts to replace it if it could be done at all. The system would also need additional storage to meet DOH requirements.

The issue of water rights should be resolved before a recommendation to use Selleck as a source could be made. The Selleck system does not appear to have state-approved water rights. There has been a water right claim filed with the state, but approval was never granted, according to Mr. Petrovich at the Department of Ecology. Mr. Robert Schaefer is operating under the assumption that since they have been taking water from the creek since 1910 they have a grandfathered claim to the water. This is not true; instead Mr. Schaefer has to submit his case to the courts and they make the decision on whether or not to grant the Selleck system water rights. Because of the water rights issue and high filtration and repair costs, the Selleck system is not a viable water source option for Kangley.

4. Drill a New Well on Merlino Property

This option would involve acquiring an easement or small piece of property from the gravel pit which Mr. Don Merlino owns in order to drill a new well. Hedges & Roth Engineering, Inc. sent a letter to Mr. Merlino in October of 1993 regarding the possibility of him granting an easement or giving property to Kangley for a new well.

He contacted our office to discuss the cost of an easement or small piece of property. He said the minimum cost would be \$250,000 for Kangley to buy a piece of property from him for its water supply. Because of this high cost for property, drilling a well on the Merlino property would not be a feasible water source for Kangley.

5. Drill a New Well on a BPA Powerline Easement

This option would involve drilling a new well on a Bonneville Power Administration Powerline Easement in a location recommended by this project's hydro-geologist. Hedges & Roth Engineering, Inc. sent a letter to the Department of Energy requesting permission to drill a well on one of its powerline easements near Kangley. They said based on our letter that in principle they would approve our idea of drilling a well on the powerline easement. They could not grant full permission until we submit plans showing where the well would be located and the exact

dimensions of the proposed well and pump house facilities. If these plans pass their review they could then give final approval for a well.

Their letter also had several requirements that the well and watermain must meet for approval by BPA. The well house must be 1,000 cubic feet or less in volume. The well and facilities must maintain a minimum clearance of 50 feet from the tower legs and 25 feet from the guy anchors. The underground pipelines shall be designed to withstand HS-20 loading from BPA's maintenance vehicles. Finally, any underground cables shall be buried with at least thirty inches of cover. BPA also said they will not be responsible for any damage to the Kangley well facilities during maintenance, reconstruction, or future construction of its own facilities.

It would cost approximately \$40,000 to drill a new well on BPA property. If Kangley were to pay the \$40,000 and drill a well, there is no guarantee that water would be found. There is also the chance that once the well is drilled and water is found, the well may not produce enough water for the Kangley system. To reduce risk Kangley would be better served to find a well source which is already in service and has a known flow rate sufficient to serve their needs.

Because of the above restrictions, risks, and a more suitable existing well source in the area we do not recommend pursuing a new well site area on BPA property. This option can be kept as a back up site and investigated further if, in the future, a more suitable well or well site is not found.

6. Existing Well on the Hanon Property

This option proposes that Kangley convert an existing private well on the Hanon property to a public well to supply Kangley with water. The Hanon property and well are located north of Kangley. The well was drilled in December of 1988 and currently serves only the Hanon farm and residence with domestic and irrigation water. The well driller's report says the well is approximately 129 feet deep and is cased with 6-inch diameter steel casing.

Robinson and Noble did a step test on the well in the Fall of 1993 using the existing well pump. The well produced approximately 20 gpm. It may be capable of a higher production rate with a larger pump and reconstruction of the well.

In negotiating the possible use of the Hanon well, Ms. Hanon set two requirements that need to be met before Kangley could use the well for water. The first of these being that Ms. Hanon wants 11 water shares reserved for future development of her property. The other requirement is that she wants unlimited use of water for her residence and llama farm. This would include water for irrigation and her animals. Based on Ms. Hanon's requirements, low reported flow from the well, and Robinson and Noble's recommendations, we do not advise pursuing the Hanon well as a water source option.

7. Existing K Bar J Well

A well was recently drilled approximately 4000 feet Northwest of Kangley. The well driller's report indicates that the well is 141 feet deep and is cased with 8-inch steel casing. The aquifer tapped is

gravel, and was first penetrated at 120 feet. This well could be used to serve the Kangley residents.

The variable rate step test was performed first on the well by Robinson and Noble. The well was pumped at 50, 112 and 130 gpm for 10 minutes at each rate. The specific capacities for the 10-minute condition at these rates were 90.9, 77.2, and 70.8 gpm per foot of draw down. The constant rate test was then performed on the well. The well was pumped at an average of 127 gpm for 24 hours. With this pumping rate the well had a draw down of 1.86 feet and a specific capacity of 68.3 gpm/ft. Based on these tests Robinson and Noble feel that a production rate of 100 gpm should be sustainable. The report by Robinson and Noble which explains in greater detail the above findings is in Appendix C.

In the report from Robinson and Noble, they gave two recommendations. The first of these is to purchase the K Bar J well and use it as a community well. The second recommendation is to drill a new well close to the K Bar J well and to a depth greater than 140 feet. This would provide more available draw down to protect against drought. Because of the great expense to drill a new well it is our opinion that Kangley would be better served in the short term to acquire the K Bar J well and use the money they save by not drilling a new well to rebuild their deteriorating distribution system. A new well could be drilled in the future as funds are available. With this in mind the following paragraphs address the issues Kangley will face when converting the Jacobs' well into a public water system.

The first issue is acquisition of the Jacobs' well and the property it is located on. The well is not currently being used. Kangley will need to buy the well and property it is located on or negotiate an easement from the Jacobs' to use the well. The well is located about 30' west of the eastern property line on the Jacobs' property. A protective covenant to provide the 100' radius of protection for the wellhead exists for the adjacent property. There is a house and drain field planned for the property outside of the radius but the driveway would go through the protected area. There is also a low area that contained standing water at the time of our February visit at the edge of the right of way (apparently just outside of the well radius). This area needs to be graded so it drains away from the well.

The next issue is acquiring water rights for the well to develop it into a Public Well for the Kangley Water System. Kangley must apply for these water rights through the Department of Ecology. Currently, it takes about 3 years to get water right approval from DOE. Our office contacted Brad Petrovich from DOE about ways to speed up the process for water right acquisition for health emergency reasons. He said the only way to speed up the process would be for the Washington State Department of Health to submit a letter stating that the Kangley water system is a public health hazard. Once this is done, DOE will make Kangley's water right application a top priority, which in turn will cut the acquisition process down to approximately 60-120 days.

APPENDIX H

SELLECK VALUATION REPORT

AGENCY REVIEW DRAFT COPY

**SELLECK WATER SYSTEM
VALUATION**

**Prepared For:
King County Department of
Community Development**

**Prepared By:
Hedges & Roth Engineering, Inc.
14450 NE 29th Place, Suite 101
Bellevue, Washington 98007**

Submitted By: Gregory G. Hill, P.E.

April 17, 1995

Selleck Water System Valuation

INTRODUCTION

The Selleck Water System is a privately owned system which serves 65 customers in east rural King County, Washington. The system is owned and operated by the Selleck Corporation. The operators are Robert Schaefer along with family members and at least one employee.

Selleck is a rural community located approximately 10 miles due east of Kent, Washington. Once an incorporated town, Selleck proper is now owned by The Selleck Corporation. There are 22 customers in old Selleck proper, and 4 customers located in the adjacent community of Kangley, Washington.

The community of Selleck can trace its roots to a logging and sawmill operation which operated in the late 19th and early 20th century. The sawmill required extensive quantities of water for operation and water for the members of the community who worked in the timber and supporting businesses. The first portions of the system were likely constructed in the late 1800's in conjunction with the construction of the sawmill and surrounding town. The material used at that time was wood stave water pipe.

Essentially, wood stave water pipe is constructed much as one would envision a wood stave water barrel. Tapered strips of wood, typically cedar are bound together and wrapped with steel wire. Couplings were fashioned in the same way and allowed a bell and spigot type of connection. Properly installed wood stave pipe apparently worked quite well and offered few operational and maintenance problems. Repairs were effected by the use of wooden plugs or wedges which could be driven into the leaking area of the water pipe.

EXISTING SYSTEM

Source

Selleck currently utilizes a surface water source. The headworks is comprised of a screen and transmission main located in a stream channel. The headworks is approximately 3.0 miles from the community. The headworks and all tributary area are located within the City of Seattle Cedar River Watershed. The headworks is accessible to within approximately 2,000 feet by vehicle over controlled access roads in the watershed.

No known stream flow records were available for review. It is reported that although the stream fluctuates for seasonal variations, the source is more than adequate for the dry seasons. A verbal query to the State Department of Ecology indicated that a water rights claim has been filed for this source, but that the claim has not been adjudicated. The claim was apparently filed in the 1970's.

Transmission Main

The transmission main was constructed by a combination of laying the pipe on top of the ground, or overland and direct bury. Visible sections of the transmission main indicated that schedule 40 PVC solvent weld pipe was used for the construction. The transmission main route traverses some significantly steep terrain. In some locations, the transmission main is suspended by cables across minor ravines. No known sections of wood stave pipe remain in the transmission line.

Treatment

The water is screened at the headworks to prevent twigs and debris from entering the transmission main. A gravel filter structure is located along the transmission main route approximately one mile from the first service. A cast in place concrete structure was constructed and filled with filter media. The filter vessel is currently not covered. A building which was covering the filter vessel was destroyed recently. Although no engineering analysis has been completed on the filter vessel, it appears that the filter bed size is such that the bed provides for relatively high loading rates. Gradations and details of the filter media were not visible at the time of the system tour. The gravel filter is manually backwashed at intervals determined by the operator. Raw water is used for the backwash. The effluent from the backwash drains overland away from the vicinity of the filter bed.

A chlorination facility is constructed approximately one half mile from the first service. The chlorination system was apparently designed by a licensed professional Civil Engineer and approved by the Washington State Department of Health.

The system owner has had at least two engineering reports prepared to review the feasibility of treating the surface water. Additional discussion on the studies or feasibility of treating the source will not be included in this report. The respective reports were authored by Larry E. Steward P.E., in 1994 and Laurie S. Bickel, P.E. in 1992.

Storage

A 6,000 gallon steel storage reservoir is located near the filter vessel. The intent of this reservoir is to provide for equalizing storage when the transmission main is being repaired or when the filter system is backwashed.

Distribution System

The wood stave water pipe was for the most part eventually replaced over a period of time. The material used in the replacement efforts appears to be material commonly used in the respective eras of construction. Additions to the system were also completed as customers expressed interest in connecting to the system.

The system as it exists today is a combination of various sizes, materials and ages. The inventory as represented by the owner's records is summarized below:

4900' - 2-inch PVC or polyethylene

1750' - 2-inch steel

8750' - 6-inch PVC

1300' - 4-inch A.C.

It should be noted that no PVC material was located at test pit number 14. Iron pipe and wood stave pipe were located in two test pits at this location. It should also be noted that 2-inch PVC was not found at test pit number 13. The material at this pit was 1½ inch polyethylene pipe.

Overall System Hydraulics

The water is gravity fed from the headworks to the storage reservoir. The overflow elevation of the reservoir breaks the hydraulic grade line which extends from the headworks.

The distribution system is divided into two pressure zones via a pressure relief valve (PRV) located on 252nd Avenue SE and approximately SE 257th Street extended. The exact overflow elevation of the reservoir is unknown. The reservoir overflow establishes the system pressures in the upper zone. The PRV establishes the pressures for the low zone. The service area of the system ranges from approximately 1070 to 960 USGS datum. The reservoir elevation appears to provide adequate service pressure for the high zone of system. Exact system pressures in the low zone were not measured although it is reported by local residents to be approximately 90 to 100 psi. Adjustments to the PRV valve will control the pressure in the low zone.

Physical Condition of the System

In March 1995, a series of exploratory excavations and sample removals were completed at selected portions of the system. James A. Guess Construction, Inc. completed excavations to expose the water lines which allowed data collection and observations to be completed. The exploratory excavations were witnessed and data was collected by personnel from Hedges and Roth Engineering, Inc.

Selected sections of the water lines were either completely removed, or material samples taken to verify material types and conditions.

The observation reports are summarized below.

	<u>Description</u>	<u>Depth</u>	<u>Horizontal Offset</u>
1.	6-inch PVC 160 Class SDR 26 excavated west of fire station driveway. No pipe bedding. Trench backfill is clay, gravel, organic mix. Test pit is 98 feet east of Puget Power pole 18-1048N70. 34826 SE 268th.	3'-4"	6' north of pavement.
2.	Test pit is 25' east of Puget Power pole 18-1048N70. 6-inch PVC 160 Class SDR 26. No pipe bedding. Trench backfill is gravel and small amounts of clay and organics.	3'-0"	5' north of pavement.
3.	6-inch PVC Class 160 SDR 26. Trench backfill is sand, gravel and small amounts of clay. Main is on the east side of the street. Approximate site address is 26340 348th Avenue SE.	2'-8"	Main directly under edge of pavement.
4.	2-inch galvanized iron pipe located in 100% sand trench. Pipe shows some exterior rust. Test pit 30' north intersection of SE 262nd Street and 348th Avenue SE.	2'-8"	2'-8" west of pavement.

- | | | | |
|-----|--|--------|------------------------------------|
| 5. | 6-inch PVC 160 Class SDR 26 pipe. Trench backfill is primarily 2" to 8" cobbles. No pipe bedding. Material coupon taken at this excavation. Water system was shut down for approximately 15 minutes. James A. Guess Construction back filled the trench and bedded the pipe with 5/8 minus crushed rock. Test pit at intersection of SE 262nd and 353rd Avenue SE. | 1'-9" | 6' off edge of pavement. |
| 6. | Test pit at 25701 SE 352nd. No pipe bedding. Trench backfill sand and gravel mix. Up to 4" cobbles in native soil. | 2'-2" | 4'-6" west of pavement. |
| 7. | Test pit is at 35111 SE 257th Street. 4" A/C main outside pipe is slightly soft. Exposed at joint and it appeared to have a slight deflection at the joint. Soils are mostly sand with some rock. No bedding around pipe. Native materials are adequate at this location. | 4'-5" | Main is at north edge of pavement. |
| 8. | Located a 2-inch gray PVC pipe. Soils are pit run materials with some 6" to 8" rocks. It appears that the pipe was bed in native materials with all 2½" and smaller rocks. | 2'-10" | 9' south of gravel road edge. |
| 9. | Test pit at 34225 SE 257th Street. 2-inch PVC gray pipe located. Soils are pit run with 6" to 8" rock. Pipe appears to have been bed in native soils with 2½" and smaller rocks. Water drained from 2-inch pipe when it was cut for sample of pipe was very dirty. Water did clear after running for 2 to 3 minutes. When section of pipe was cut out a small stone (included with pipe sample and photo) was found inside pipe adjacent to cut. | 2'-10" | |
| 10. | Test pit completed at 25614 348th Way SE. No pipe found. It was later determined that the as-builts received were actually proposed lines. | | |
| 11. | Test pit completed at 25415 348th Way SE. 1" galvanized iron pipe exposed and material sample taken. 250 pair telephone cable near pipe trench. Exterior of pipe in relatively good condition. Interior has scale and build-up. Approximately 25-30% lost cross sectional area. | 1'-4" | 8'-9" west of asphalt. |
| 12. | No excavation completed. Pipe exposed above grade at the end of SE 254th Street. Discarded material sample taken. | | |
| 13. | Test pit completed near 25620 SE 252nd. 1½ inch polyethylene pipe exposed. No pipe bedding. Soil is sand and small gravel. | 2'-0" | 7'-9" south of edge of pavement. |

14. Test pit near intersection of SE 253rd Street and 358th Avenue SE. Exposed 3" steel pipe. O.D. is 3.62 inches. Also exposed 6" wood stave pipe west of valve cluster. No bedding. No material samples taken from either pipe due to concern over ability to find repair couplings. 2'-11" 28' east of pavement.

Financial Status of the System

Annual revenue and operating expenses were not made available for review. The system is currently not metered. The exact method for charging rate payers for connection charges or water use is not known.

GENERAL PLANNING DATA

The Selleck Water System is classified by the Washington Department of Health as an unapproved Group A water system. The surface water source and system classification subject the operation of the source to the Surface Water Treatment Rule. Due to the system classification, the system also requires the following minimum planning documents and testing programs:

Water Comprehensive Plan

The System is required to prepare and maintain a current Water System Comprehensive Plan.

Coliform Monitoring Plan

An approved coliform monitoring plan must be prepared and on file with the DOH. This usually involves at least one to three samples per month within the system. This test is to ensure the absence of coliform bacteria in the water system.

Inorganic Chemical and Physical Plan

Samples required in the system representative of the source water, the water after treatment, and the water prior to reaching the first customer. The inorganic analysis should be completed annually.

Lead and Copper monitoring

This testing and monitoring is not required due to the size of system.

Organics/VOC and SOC Monitoring

The system needs a plan for VOC and SOC monitoring and testing. A waiver of this requirement may be obtained if the system vulnerability assessment indicates low risk and successful sampling for a period of 3 years indicate compliance. Monitoring for the VOC's is 4 quarterly samples for a period of 3 years minimum, and every 3 years thereafter if compliance is maintained.

Monitoring for SOC's is also 4 quarterly samples every three years with possible reduced monitoring if compliance is maintained.

Nitrates

The system would require an annual sample for Nitrates.

Radionuclides

The system would require one sample every four years if compliance is maintained

The Department of Health Guidelines would require that the system provide for 800 gallons of storage per connection, or a minimum of 52,000 gallons of useable storage. The Department's guidelines also require that 800 gallons per day of source be provided for each connection, or a source of 52,000 gallons daily or nominally 40 gallons per minute.

King County has designated the planning for the area as rural. Accordingly, fire flow requirements from the King County Fire Marshall do not recommend the volume of storage nor the minimum fire flow availability that the community should plan to maintain.

The distribution system is sized only for local customer demands. If substantial additional customer demands were placed upon the system or if fire flow protection were required, the system would require extensive water line replacement. It is recommended that 4-inch or 6-inch minimum ductile iron pipes be used when replacing the small diameter lines.

SYSTEM CONSIDERATIONS

The system is comprised of a cross section of available material types and ages. The pipe in this system can generally be classified as wood stave pipe older than 40 years old, iron pipe between 20 and 30 years old, asbestos cement (A.C.) pipe estimated to be 20 - 30 years old, and either PVC or other plastics between 5 and 20 years old. It is important to understand that although degrees of dissimilar material types and ages are common in most water systems, there are specific points to consider about each type of material.

Iron Pipe

The first aspect to consider about this material is the age of the iron pipe. It was reported that the iron pipe in this system generally exceeds twenty years in age. It is likely that the iron pipe in this system is galvanized threaded iron pipe. Galvanized threaded iron pipe was used extensively in the post World War II housing boom and until the 1960's for smaller diameter components of water systems. Copper pipe began to replace iron pipe in the late 1960's as the most common material used for small water lines such as service lines. The iron pipe is a mild steel material which received an exterior galvanized coating. The galvanizing was designed to provide protection from oxidation and corrosion. There are two fundamental issues which resulted in the decline in popularity of iron pipe for buried water systems. The first issue was the introduction of type K or rolled copper pipe material and polyethylene pipe. Where as iron pipe required a threaded connection usually at 20 foot intervals, rolled copper and polyethylene pipe became available in 100 foot rolls. This allowed up to 100 foot runs of pipe to be installed without joints. The second issue which is pertinent to this report is the susceptibility of iron pipe to corrosion.

Galvanizing in itself provides the best passive steel corrosion protection available to date. However,

galvanized iron pipe, by the very nature of its manufacturing, installation environment and use was destined to provide relatively short effective service lives when used for buried water lines.

The galvanizing is applied to the exterior of the pipe. The pipe is then cut into standard lengths for ease of installation at the project sites. These pipe lengths usually range between 10 and 20 feet in intervals of even numbers. The pipe ends are then threaded by a machining process so the pipes could be joined by a threaded coupling. The threading process removed the galvanized protection at each end of every piece of pipe installed in the system. This process removes the protective coating and subjects the pipe to possible corrosion at every joint in the system. Even if the nominal average length of pipe in the system is 20 feet, a small system of 20,000 lineal feet of pipe was subject to at least 1,000 points in which the material's protection from corrosion was significantly compromised. This process resulted in a compromise which was endemic to the use of iron pipe as a buried water line throughout the industry and was certainly not unique to this project site.

Two other aspects of corrosion are specifically influenced by site and project condition. The first aspect is the corrosion hazard of the environment in which the pipe is exposed, or in this case, the soil in which the pipe is buried. The second aspect is the corrosion hazard of the material which the pipe carries.

There have been substantial advances in the research and understanding of soil characteristics which influence the corrosion hazards of the soil which surrounds the exterior of the pipe. A complete corrosion analysis of the pipeline routes was beyond the scope of this report. However, it is within the scope of this report to comment on specific observations of the pipeline route which are related to corrosion analysis parameters. There are conflicting soil and environmental characteristics in the system which would impact the corrosion hazard of the soils. There was no evidence at any of the test pits of ground water or high organic soils which may imply high or low soil pH. However, the system area does have highly permeable soils, which does subject the pipeline to possible cyclic conditions ranging from saturated to dry soils. Alternating conditions of moisture and dry conditions subject a given material to increased risk of oxidation over those same materials subjected to either a continuously dry or submerged conditions. The presence of the Bonneville Power Transmission Lines should also be considered in a comprehensive pipeline route corrosion study. It is recommended that a soil corrosion analysis be completed in all pipeline routes for new construction or replacement.

The casual observer may conclude that because in this case the iron pipe carries water, that there is no corrosion hazard from the inside out. Recall that the galvanizing is placed only on the outside of the pipe. Recognize also that water is often referred to as the universal solvent. Recall also that the water in this system is surface water. Two characteristics of surface water lend it to be particularly aggressive. Surface water is usually absent of inorganic trace elements. This facilitates ionic exchange between the water and material in the pipe which results in pitting of the pipe. Also, surface water is usually saturated with dissolved oxygen which facilitates the formation of iron oxides or rust. A corrosion analysis of the interaction of the water and pipes was also beyond the scope of the report. Water quality test results were not reviewed, nor conducted at this time. It is not recommended that a water corrosion analysis be completed at this time because the system, due to its size, does not require monitoring and compliance with the SDWA Lead and Copper Rule, and modern pipe materials such as cement lined ductile iron pipe (DIP), polyvinyl chloride (PVC), high density polyethylene pipe (HDPE) are inert and copper lines are less susceptible to corrosion than iron.

The rather extensive discussion on pipeline corrosion is appropriate because of its importance to this evaluation. It is important to understand the risks that the iron pipe has been subjected and recognize the likelihood that although the iron pipe is functioning at this time, it is probably near the end of its useful service life.

The material samples removed at the sampling excavations, visual observations of the pipeline above and below grade, evidence of build-up of rust and scales on the interior of the pipe, and what appeared to be low water pressure in a portion of the system which should have ample water pressure, all support the opinion that the existing iron pipe is near the end of its useful service life.

Asbestos Cement Pipe

Asbestos cement pipe or A.C. was extremely popular in the late 1960's, 1970's and early 1980's. In certain areas of the United States it was considered the material of choice for a majority of some water and pressurized sewer systems.

A.C. pipe provides relatively long service life. Three major aspects of A.C. pipe make it undesirable pipe material. The first characteristic is the brittleness of the pipe. When undermined, such as a post construction excavation for other utility installation, A.C. pipe is unable to bridge the excavation and will more than likely break when the trench is backfilled, or shortly thereafter.

The second characteristic is the need to allow only certified asbestos pipe layers to work on the pipe. This is of course due to the health concerns over inhalation of asbestos fibers. The third, and most significant aspect is the need to handle material disposal in accordance with applicable hazardous waste disposal practices. To date, King County and the Washington State Department of Transportation have allowed asbestos pipe which is taken out of service to remain buried and abandoned in its existing location. A change in policy by King County could make this material a substantial liability. The A.C. pipe tested indicated that the exterior of the pipe was soft. This is an indication of pending failure. It is impossible to determine how much longer the pipe can remain in service, but it is likely that 5 years additional service could be expected from this material.

PVC or Other Plastic Pipe

Approximately 2400 lf of this system is estimate to be small diameter polyethylene pipe. This material was observed to be in excellent condition. Usually this material is installed by rolling the 100 foot section out in the trench. Connections are made with plastic or bronze insert fittings and stainless steel hose clamps. Either system provides for excellent corrosion protection and long service life. Samples removed from the 6-inch PVC pipe indicate that all sections tested were schedule 40 PVC. Samples removed from the 2-inch PVC at test pit number 9 revealed an unidentified class of PVC pipe. One of the exploratory test pits revealed that the 6-inch PVC pipe was solvent weld connection type water pipe. This is important to understand because the probable impact to the long term service life of the pipe.

Although the PVC pipe is used extensively in buried water pipes, the selection of solvent weld pipe and the method of installation resulted in a less than optimum material utilization. The first point to consider is the type of material selected for this part of the system. Solvent weld pipe results in providing a rigid joint at each pipe connection. Effectively this type of joint connection makes the pipe act as a single rigid body, and as such any force imparted on any segment of the pipe is imparted on the entire pipeline. The casual observer may conclude that this provides some benefit. For example, the installer does not need to block or protect any fittings which may be subject to sliding apart under non-restrained conditions. Compared to iron, PVC has a relatively high coefficient of expansion and contraction for temperature fluctuations. Because of these characteristics, solvent weld PVC pipe is generally used in above grade applications where the pipeline is not subject to substantially varying temperatures in the medium it carries or the environment in which it is installed, and is not subject to external forces on the pipeline,

such as trench overburden. Usually, PVC pipe installed below grade is classic bell and spigot connection type pipe.

This is a particularly important point due to the inability of a solvent weld joint to release stresses placed on the pipe by differential foundation settlements, trench backfill settlement, any other shifting of the trench and loadings due to surface conditions such as truck traffic. This fact can be compensated by some extent by proper compaction of the pipe foundation and the installation of sleeves which allow for expansion and contraction of the pipeline due to forces placed on the pipeline by any shifting of the trench. It is unknown whether expansion sleeves were installed in pipe. The Selleck pipeline should not be subjected to thermal stresses in that one would not expect significant fluctuations in ground or water temperatures.

The second point to consider for this section of the pipeline is the method of installation used when this pipeline was constructed. PVC and plastic pipe is considered a flexible material when design of the trench maximum depths and method of bedding the pipe are considered. Essentially, PVC and plastic pipe are designed to deflect or become oval shaped when installed, and the loading from the trench backfill or truck tire loading is imparted upon the pipe. The paramount consideration in ensuring that the pipe will remain oval shaped, and not be crushed or fractured, is to be certain that the bedding material around the entire pipe is granular gradations in which 100% of the material passes through a 3/4 inch sieve and is uniformly compacted. Absolute assurance that a point load, such as a large rock or other object, is not in contact with the pipe is essential. The concept of PVC pipe bedding design and installation is exactly like attempting to crush a chicken egg with a human hand. As long as the egg is grasped in its entirety by the hand, and uniform pressure is applied entirely around the egg, crushing it is impossible. An average adult can easily crush the same egg by placing it between the thumb and index finger and simply squeezing it.

Generally, in order to ensure proper PVC pipe installation, the pipe bedding material specified is either pea gravel or 5/8 minus crushed rock. Native granular material such as that type of material common to the exploratory test pits can serve as proper PVC pipe bedding material, if the installers a) compact the foundation of the pipe zone prior to installation of the pipe, b) very carefully select the native material which is used in the pipe bedding zone to ensure that large stones or sharp objects do not provide point or puncture loads on the pipe and c) the pipe bedding zone on the sides and top of the pipe are properly compacted. Proper compaction can be accomplished only by a vibrating or reciprocating compactor used in conjunction with the pipe laying process.

The exploratory test pits revealed only native granular material in the pipe bedding zone. There was no evidence of imported pea gravel or 5/8 minus crushed rock used in the pipe bedding zone. No large stones or other foreign objects were observed to be in contact with the pipe at these location. Accordingly, the material found at each of the test pits was well within the recommendations of the PVC material's manufacturers and accepted engineering practice. However, because the pipeline construction was not monitored by an independent construction testing lab or licensed engineer, the exact type of material used at the location, other than the test pits, or methods and extent of compacting the pipe bedding zone are unknown.

Wood Stave Pipe

There is an unknown quantity of wood stave pipe still in the distribution system. Although used extensively in early water system construction, current material availability and construction practices can lead only to a single conclusion about its current use in any system. That conclusion is that although the material may function, the fact remains that repair couplings are not widely available, few system

operators are familiar with repair techniques, and the inherent inability to sterilize a wood lined pipe make wood stave pipe an outdated system for water distribution. Accordingly, prudent system management would recommend timely removal of any wood pipe currently being used in any public system.

SYSTEM VALUATION

Essentially, there are two basic methods of valuing a water system.

The first method is arrived at by calculating the replacement cost of the infrastructure, and assigning a depreciation cost based upon the age of the system, materials used, construction techniques, and any other aspects which may impact the system value.

The second method is arrived at by calculating the annual revenue, expenses, and profit realized by the owner. A return on investment period may be negotiated, and net value of the system then calculated.

There are likely several opinions that could be formulated on the best way to calculate the value of the Selleck Water System. In an inter agency negotiation, such as one City purchasing a water system from another, the fundamental concept of the valuation philosophy is likely to be based upon the replacement costs of the system as described in the first method of valuation. Allowances are also considered for the condition of the infrastructure.

In a private party transaction, the revenue producing capability of the system would more than likely be the center of the philosophy. The income from the water sales or monthly charges, plus anticipated revenues from connection charge or share fees are considered as income. Direct operating expenses, financing plus funding for replacements or upgrades are projected. The return on investment or payback periods on the investments are also introduced into the equation. These elements provide the basic variables in determining the negotiation parameters for the buyer and seller.

The valuation philosophy developed for this report is predicated on the concept that the water system will be transferred from the current ownership of private party to an undetermined public ownership and operation structure. It is anticipated that the public ownership will be either King County Metro or a municipal water district.

The philosophy is further predicated upon the abandonment of the surface water supply and implementation of a regional ground water source.

Regardless of whether the system is in private or public ownership, the owners of the system assume the full obligation of providing clean, reliable and safe drinking water in perpetuity. Accordingly, the distribution system pipes are categorized into three types of assets. No specific value will be calculated for the line valves or blow offs installed in the system. The fourth type of asset will be the ancillary facilities such as the reservoir, chlorination facility, and PRV station.

TYPE I ASSET

The first type of asset is pipe which should provide reliable service for a reasonable time frame with maintenance as needed. Essentially, all of the PVC or polyethylene pipe will be placed into this category. Allowances for replacement costs, less useful life expended will be used in the determination of the unit

value of the pipes. The estimated quantities of each size and age of pipe will then be determined and a value then calculated.

TYPE II ASSET

The second type of asset is pipe which is currently functioning, but is realistically beyond the expected useful life of the material. All iron and A.C. pipe will be considered type II assets.

An in-place Capital Improvement Plan for a public water purveyor would likely have scheduled replacement of the iron pipe based upon its age, and the frequency of operational costs such as repair, the number and frequency of customer complaints such as dirty water or low water pressure, and the reliability. Current system management practices include an annual water audit in order to identify the level of unaccounted water. This is water that is produced at the source, but is not accounted for by sales or other measured means. Systems which are considered 'tight', may have unaccounted water percentages of less than 5% of the total production. Systems in which the unaccounted water exceeds 15% or more of the production should prioritize reconciliation practices. These practices include meter testing and change out, searches for undetected leaks in the system, and unauthorized connections.

There are several characteristics of the Selleck Water System which do not lend the system to an effective evaluation of the integrity of the older sections of the system. The Selleck system does not meter the individual service connections. There is reportedly a master meter near the reservoir. This meter was not observed during the site visits. The absence of individual service meters preclude the audit process. The soil characteristics in the area of the system are very permeable. Small leaks are likely to go undetected until the leak develops into a quantity which exceeds the capability of the soil to infiltrate the leak, or a customer is completely out of water. The source is a gravity fed system. No records for such operational aspects as pump activity are possible. There is effectively no way to evaluate how much of the water that goes into the system is actually used by the customers. Accordingly, there is no way to evaluate the need to replace what are likely to be leaky pipes.

In the process of considering the value of the iron and A.C. pipe in the system, the following issues have been considered:

- The iron and A.C. pipe are still functioning, and able to provide service to those customers on these lines.
- The iron lines should not be considered solely as a liability.
- The level of repair required to keep the lines in service was not discussed in the initial meetings held with the system owner.
- The lines have been in service beyond their expected service life.

Prudent system management would include an aggressive replacement schedule in order to circumvent repair costs, limit unaccounted water, and ensure a reliable system.

Accordingly, the value of the iron and A.C. pipe is determined to be solely a vehicle in which to buy the time necessary to acquire funding, install system wide service meters evaluate priorities in replacement schedules, and complete the replacement. The dollar value of this asset is calculated based upon the

assumed interest costs saved by delaying the immediate replacement of the iron pipe with new 6 inch ductile iron lines, minus the projected inflation costs of the impact of the value of dollars at 1995.

TYPE III ASSET

The third type of asset will be that pipe which should be replaced immediately. There is an unknown quantity of wood stave pipe still in service in the distribution system. It is difficult to formulate an argument which would not identify the existing wood pipe as a true liability. There will be no value placed upon this type of asset.

TYPE IV ASSETS

The steel reservoir, although undersized for effective operation, has a value to the system. For purposes of this valuation, it is assumed that a new steel reservoir has 100 years of useful life if properly coated and maintained, and that this reservoir has a remaining 10 years of useful life. No costs have been included for maintenance of the existing reservoir, nor salvage costs included.

The PRV station should continue to function with routine maintenance. Due to the type of enclosure installed around the valve, the cost for the valve will consider the estimated replacement cost of a new hydraulic globe body valve. The valve will not be discounted for age due to the fact that these types of valves require routine replacement of some working parts, but that the valve body should last indefinitely if properly protected from corrosion.

The chlorination facility valuation will be calculated based upon assumed construction costs, less 10% for depreciation due to age. The working facilities of the chlorination system are similar to the PRV facility in that regular replacement of the parts that are subject to shorter service lives are anticipated. The building, if maintained, should last 20 years or more.

The summary calculations for the valuation of the system are included in Attachment No. 1.

**Attachment No. 1
Selleck Valuation Report
Opinion of Probable System Valuation**

Type I Asset

<u>Description</u>	<u>Quantity</u>	<u>New Value per foot</u>	<u>Adjusted Value per foot</u>	<u>Subtotal</u>
2-inch PVC and HDPE	4900 (5)	\$35.00 (1)	\$28.00 (3)	\$137,200
6-inch PVC	8750 (5)	40.00 (2)	32.00 (3)	280,000

Type II Asset

<u>Description</u>	<u>Quantity</u>	<u>Value per foot</u>	
2-inch iron pipe and 4- inch A.C. pipe	3050 (5)	10.00 (4)	30,500

Type IV Asset

Reservoir		10,000
PRV Station		5,000
Chlorination Facility		<u>18,000</u>
Opinion of Probable System Valuation		\$480,700

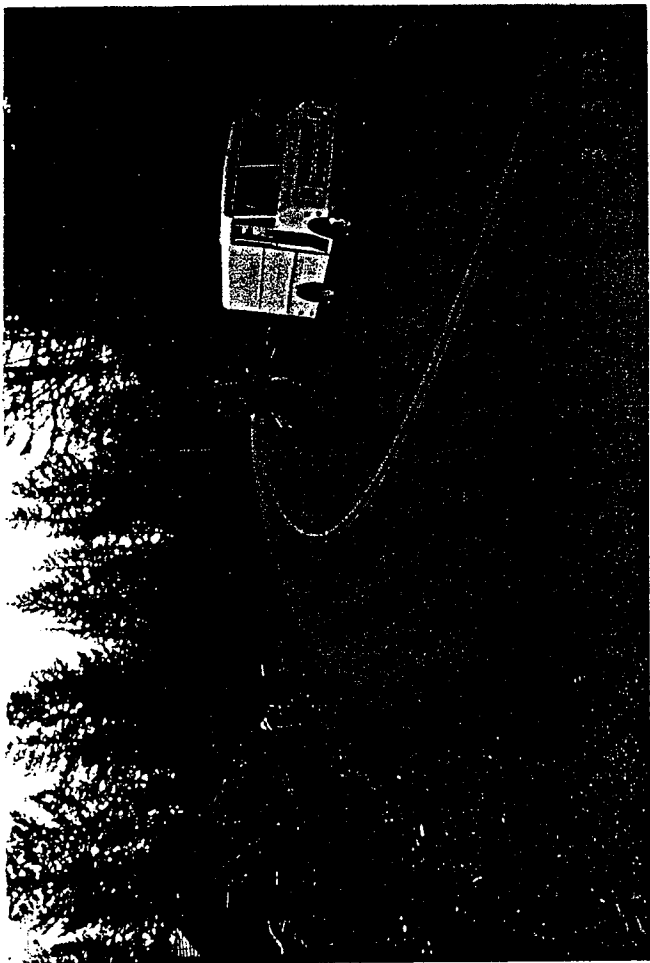
- (1) Projected replacement costs for 2-inch PVC SDR 26 Bell and Spigot with Class F bedding, native backfill and shoulder grade restoration. Allied costs estimated at 25%. Service lines excluded.
- (2) Projected replacement costs for 6-inch HDPE with Class F bedding, native material backfill and shoulder grade restoration. Allied costs estimated at 25%. Service lines excluded.
- (3) 80% of the projected replacement cost used to value the existing system.
- (4) Assume \$50 per foot project cost at 7% annual interest savings, 3% annual inflation for a net 4% value over 5 years.
- (5) Quantities of these types of material are reported by the system owner. See commentary under 'Distribution System' for additional information.

**Attachment No. 2
Selleck Valuation Report
Water System Map**

Attachment No. 3
Selleck Valuation Report
Photo Log Commentary

1. Typical excavation exploration pit. Equipment used included a 580C case backhoe, service truck, one flagger, one groundman and backhoe operator.
2. Exposed PVC water line at 34406 SE 257th.
3. Exposed PVC water line at 34225 SE 257th. A ditch pump is implemented in order to dewater the trench upon cut-in to the water line.
4. A section of pipe is removed at 34225 SE 257th. Note small rock inside of pipe.
5. Tools are sanitized whenever work is completed on a water system.
6. Repairs are effected using compression couplings and replacement pipe.
- 7 & 8. 2-inch polyethylene pipe exposed near the intersection of SE 253rd Street and 357th Avenue SE. Measurements of depth below finished grade and horizontal locations from edge of pavement are noted and recorded.
9. The excavation is backfilled and compacted. Note the reciprocating trench compactor.
10. 6-inch PVC pipe exposed at 34826 SE 268th Street. Note solvent weld joint on pipe. Lettering on pipe reads "PVC 1120 ASTM D2241 6" IPS 160 PSI @ 73°F SDR 26".
11. 6-inch PVC pipe exposed at 26340 348th Avenue SE.
12. 2-inch polyethylene pipe exposed at 35620 SE 252nd Street.
13. 3-inch iron pipe with service tap near the intersection of SE 253rd and 358th Avenue SE.
14. Valve at approximately SE 253rd and 357th Avenue SE.
15. 6-inch PVC pipe near SE 262nd Street and 353rd Avenue SE.
16. Valve and wood stave to PVC transition along SE 253rd. Note chains which are used to compress the wood pipe around the PVC pipe. Although this connection was not disturbed, the PVC pipe was likely inserted into the wood pipe and the wood pipe compressed around the PVC pipe.
17. Blow-off at SE 253rd and 358th Avenue SE.
- 18 & 19. 2-inch iron pipe above grade near transition between 352nd Avenue SE and SE 254th Street.

20. Embankment undermined near 352nd Avenue SE and SE 254th Street. Note where the four fingers of the hand coincide with the 4-foot mark on the steel tape.
21. Iron pipe that has been removed from service at a previous date recovered from the point where the pipe is above grade near the transition between 352nd Avenue SE and SE 254th Street. Note extensive pitting on the exterior of the pipe.
22. Scale removed from the interior of the abandoned iron pipe.



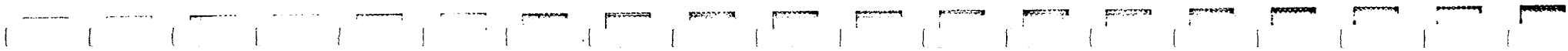
1



2



3





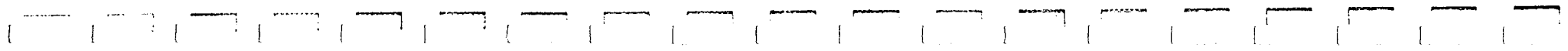
4



5

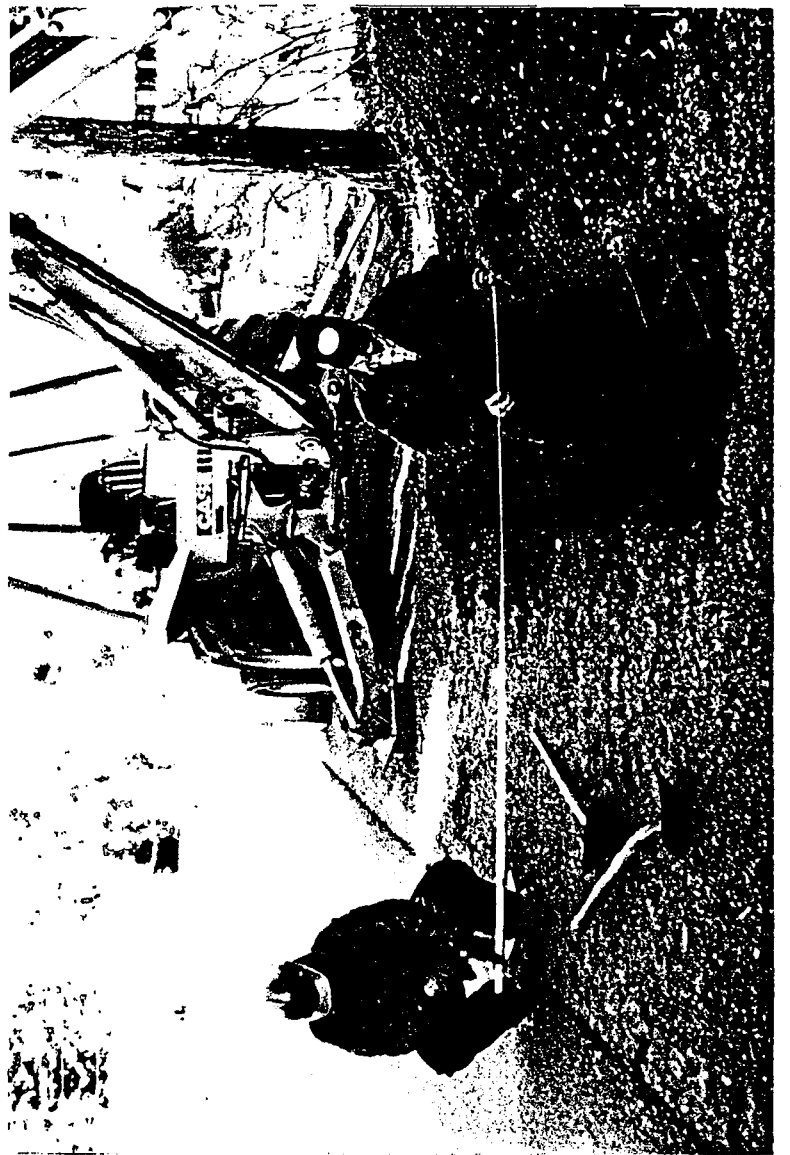


6





7



8



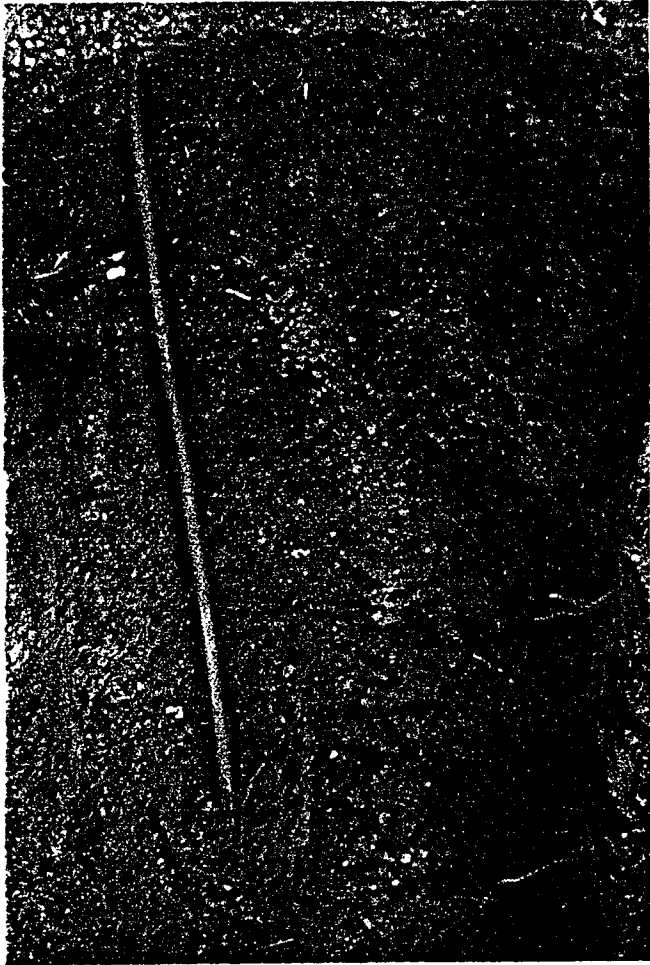
9



10



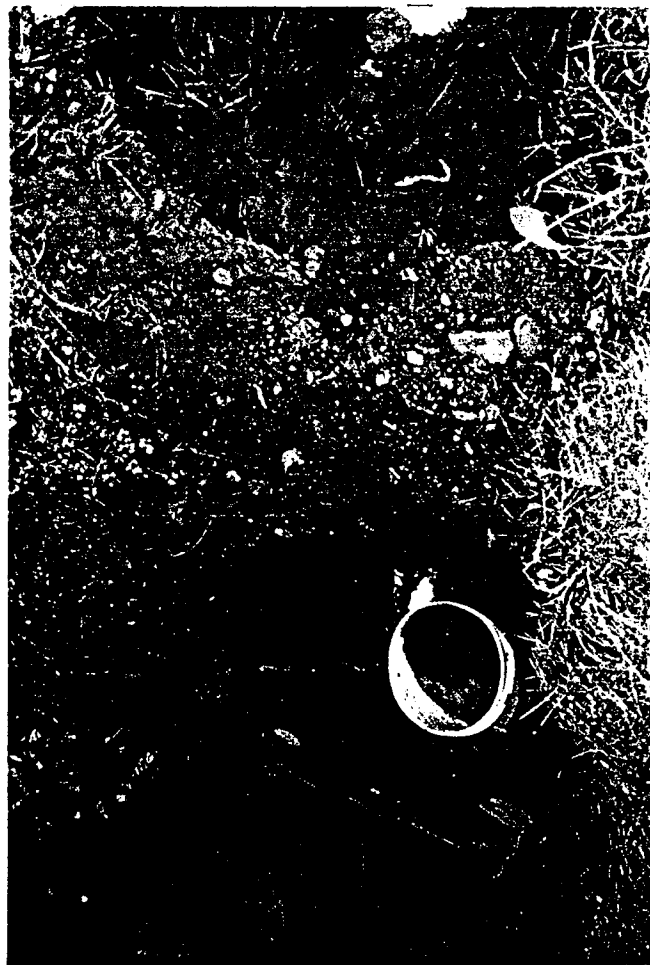
11



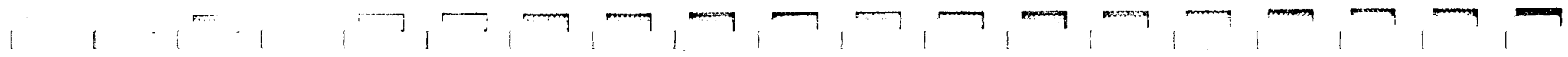
12



13



14





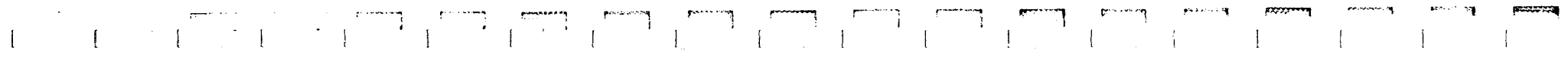
15



16

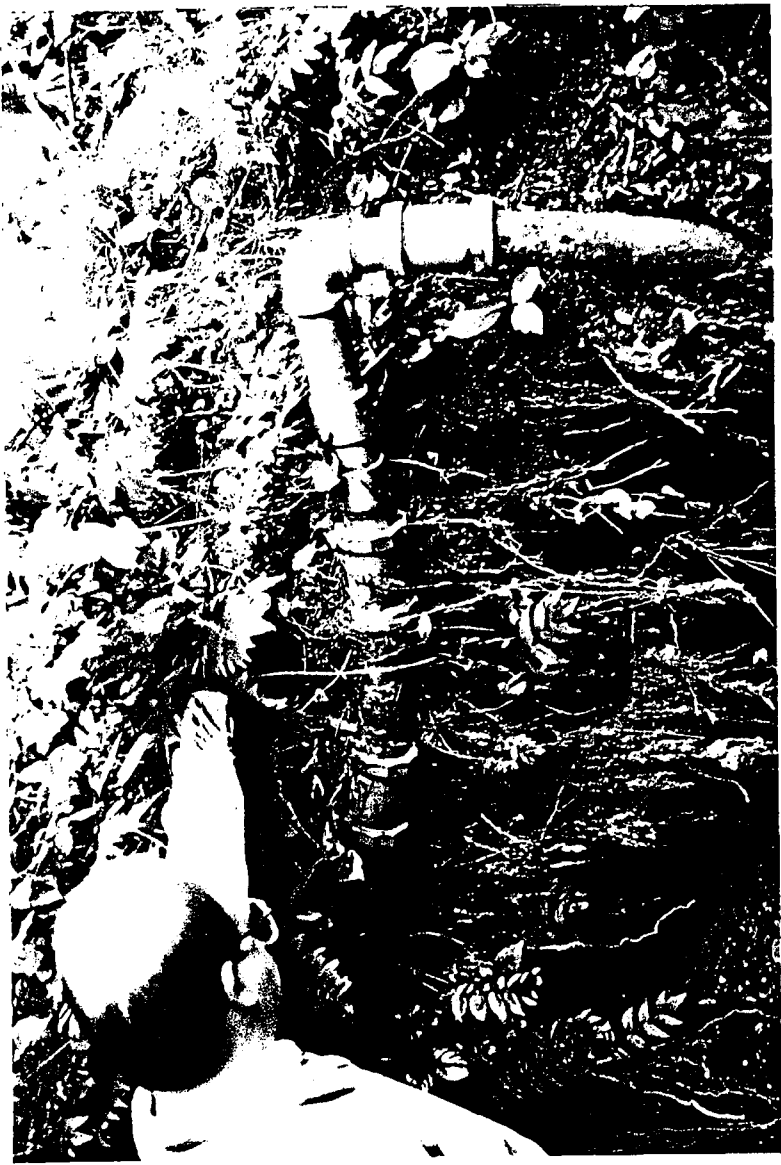


17





18



19



20



21



22

APPENDIX I

K BAR J WELL USE AGREEMENT AND EASEMENT

K BAR J WATER SYSTEM
WELL USE AGREEMENT AND EASEMENT

THIS AGREEMENT MADE AND ENTERED INTO THIS _____ DAY OF _____, 1994, BY
ROBERT M. JACOBS AND KAREN D. JACOBS, HUSBAND AND WIFE (HEREINAFTER JACOBS)
AND TOM EARL AND PENNY EARL, HUSBAND AND WIFE (HEREINAFTER EARLS) AND SCOTT LEROUX
(HEREINAFTER LEROUX).

THE PROPOSED WELL SYSTEM WILL SUPPLY THE FOLLOWING LOTS:

- LOT 1 LEROUX- 26-22-07-9134
- LOT 2 JACOBS- 26-22-07-9142
- LOT 3 JACOBS- 26-22-07-9149
- LOT 4 EARLS - 26-22-07-9141

LOT 1 DESIGNATED AS PARCEL NUMBER 26-22-07-9134 BEING OF PORTION OF NW QUARTER OF THE
NE QUARTER OF SECTION 26, TOWNSHIP 22, RANGE 7 W.M., IN KING COUNTY, WASHINGTON.

LOT 2 DESIGNATED AS PARCEL NUMBER 26-22-07-9142 BEING OF PORTION OF SW 1/4 OF NW 1/4
OF NW 1/4 OF NW 1/4 LESS N 20 FEET SECTION 26, TOWNSHIP 22 NORTH, RANGE 7 W.M., IN
KING COUNTY, WASHINGTON.

LOT 3 DESIGNATED AS PARCEL NUMBER 26-22-07-9149 BEING OF PORTION OF NORTH 30 FEET OF
SW 1/4 OF NW 1/4 OF NW 1/4 OF NW 1/4 OF SECTION 26, TOWNSHIP 22 NORTH RANGE 7 W.M.,
IN KING COUNTY WASHINGTON.

LOT 4 DESIGNATED AS PARCEL NUMBER 26-22-07-9141 BEING OF PORTION OF WEST 1/2 OF THE
WEST 1/2 OF THE WEST 1/2 OF THE NORTH 1/2 OF NORTH 1/2 OF THE NORTH 1/2 OF THE
NORTHWEST 1/4 OF SECTION 26, TOWNSHIP 22 NORTH, RANGE 7 EAST W.M. IN KING COUNTY, WA.
PURPOSE OF AGREEMENT

WHEREAS THE PARTIES HERETO DESIRE TO ENTER INTO AN AGREEMENT TO PROVIDE FOR THE
OPERATION, OWNERSHIP, AND MAINTENANCE OF A WELL AND WATER DISTRIBUTION SYSTEM,
IN ACCORDANCE WITH THE LAWS OF THE STATE OF WASHINGTON AND THE RULES AND REGULATIONS
AS ESTABLISHED BY THE KING COUNTY BOARD OF HEALTH, FOR AND ON BEHALF OF THE ABOVE
LEGALLY DESCRIBED PROPERTY.

NOW, THEREFORE, IN CONSIDERATION OF MUTUAL COVENANTS HEREINAFTER CONTAINED AND
MUTUAL BENEFITS DERIVED IN EACH OF THE PARTIES HERETO, IT IS AGREED AS FOLLOWS:

OWNERSHIP OF WELL

JACOBS OR THEIR SUCCESSORS IN INTEREST SHALL RETAIN THE RIGHT TO ALL ASPECTS OF
OWNERSHIP INCLUDING THE RIGHT TO SELL EXCESS WATER TO THIRD PARTIES SO LONG AS
ADEQUATE DOMESTIC SUPPLY IS PROVIDED TO PARTIES AND PARCELS INVOLVED IN THIS AGREEMENT.

JACOBS SHALL RETAIN THE RIGHT TO ALL ASPECTS OF OWNERSHIP AND AT THEIR OWN EXPENSE WILL PROVIDE THE WELL AND DISTRIBUTION SYSTEM, INCLUDING, BUT NOT LIMITED TO, WELL SITE APPROVAL, WELL CONSTRUCTION, INITIAL WELL WATER QUALITY TESTS, DESIGN OF THE WATER SYSTEM FOR APPROVAL OF THE HEALTH OFFICER, AND CONSTRUCTION AND/OR INSTALLATION OF WATERWORKS EQUIPMENT, THE PUMP HOUSE AND WATER DISTRIBUTION PIPES, TO FURNISH A REASONABLE SUPPLY OF WATER FOR DOMESTIC PURPOSES TO THE PROPERTY LINES OF EACH LEGALLY CREATED BUILDING LOT WITHIN THE ABOVE PROPERTY SERVED.

WELL SITE LOCATION

THE WELL SITE IS LOCATED AS FOLLOWS: KING COUNTY ASSESSORS PARCEL NUMBER 26-22-07-9136 BEING OF PORTION OF NE QUARTER OF THE NW QUARTER OF SECTION 26, TOWNSHIP 22, RANGE 7 W. IN KING COUNTY, WASHINGTON. THE AFOREDESCRIBED PROPERTY IS THE LOCATION OF WELL DRILLE 130 FEET NORTH OF SOUTH PROPERTY LINE AND 25 FEET WEST OF THE EAST PROPERTY LINE.

IRRIGATION

THE OWNERS OR USERS OF THIS WATER SYSTEM WILL NOT HAVE THE RIGHT TO UTILIZE THE WATER FROM THIS SYSTEM FOR IRRIGATION PURPOSES OR FOR ANY OTHER PURPOSES WHICH UTILIZES MORE WATER THAN THAT NORMALLY REQUIRED FOR DOMESTIC (800 GALLONS PER DAY).

PURVEYOR

K BAR J WATER SYSTEM IS OWNED BY ROBERT M. JACOBS AND KAREN D. JACOBS AND AGREE TO OPERATE AND MANAGE THE WATER SYSTEM AS FOLLOWS:

A. ARRANGE FOR THE SUBMISSION OF ALL NECESSARY WATER SAMPLES AS REQUIRED IN THE WASHINGTON ADMINISTRATIVE CODE AND RULES AND REGULATIONS AS ESTABLISHED BY THE KING COUNTY BOARD OF HEALTH UNDER WAC 246-290.

B. HANDLE ALL ROUTINE MAINTENANCE AND EMERGENCIES SUCH AS SYSTEM SHUT DOWN AND REPAIR. ANY AND ALL TEMPORARY SHUT DOWN FOR ROUTINE MAINTENANCE SHALL BE SCHEDULED SUFFICIENTLY IN ADVANCE TO AVOID UNDUE HARDSHIP.

C. PROVIDE HIS/HER NAME, ROBERT M. JACOBS AND KAREN D. JACOBS, ADDRESS: 26741 S.E. RAVENSDALE PL. RAVENSDALE, WA 98051 TELEPHONE NUMBER: (206) 432-3435 TO ALL CONSUMER CONCERNS AND SERVICE COMPLAINTS IN A TIMELY MANNER.

D. PROVIDE HIS/HER NAME, ROBERT M. JACOBS AND KAREN D. JACOBS, ADDRESS: 26741 S.E. RAVENSDALE PL. RAVENSDALE, WA 98051 AND TELEPHONE NUMBER: (206) 432-3435 TO THE HEALTH OFFICER ON AN ANNUAL BASIS AND SHALL SERVE AS A CONTACT PERSONS TO THE HEALTH OFFICER.

E. ORGANIZE AND MAINTAIN THE WATER SYSTEM RECORDS AND NOTIFY THE HEALTH OFFICER OF ALL BILLING ADDRESSES, AND ALL PERMANENT SERVICE CONNECTIONS, AND LOTS THAT ARE INCLUDED IN THIS AGREEMENT, OF THE RESULTS OF THE WATER QUALITY TESTS THAT ARE REQUIRED BY WAC 246-290 AND AS REQUIRED BY THE HEALTH OFFICER.

F. SHALL MAKE AVAILABLE FOR REVIEW AND INSPECTION WATER SYSTEM RECORDS BY ALL PARTIES IN THIS AGREEMENT AND HEALTH OFFICER.

G. IT IS AGREED AND UNDERSTOOD THAT THIS WATER SYSTEM IS FOR SALE AND WILL BE TRANSFERRED TO KING COUNTY, OR A POSSIBLE NEW WATER DISTRICT, FOR THE GOOD OF THE ENTIRE COMMUNITY.

H. INFORM AND TRAIN NEW OWNERS REGARDING THE OPERATION OF THE WATER SYSTEM.

I. SUBMIT AND UPDATE A WFI WITHIN THIRTY DAYS OF ANY CHANGE IN NAME, CLASS, OWNERSHIP OR RESPONSIBILITY FOR MANAGEMENT OF THE WATER SYSTEM.

J. ASSURE THAT THE WATER SYSTEM WATER QUALITY COMPLIES WITH THE STANDARDS SET FORTH IN WAC 246-290.

K. MAINTAIN INSURANCE ON THE SYSTEM COVERING ALL LIABILITY RELATING TO PERSONAL INJURY, DEATH OR DAMAGE TO PROPERTY THROUGH THE OPERATION OF THE WELL AND SYSTEM. IT IS AGREED BY ALL PARTIES TO HOLD HARMLESS FROM DAMAGES ARISING FROM THE OPERATION AND MAINTENANCE OF THE SYSTEM.

WATER/ELECTRICAL EASEMENTS:

AN EASEMENT, RECORDED UNDER RECORDING NUMBER 9303011015, EXISTS FOR ROADWAY AND UTILITY PURPOSES, OVER, UNDER AND ACROSS THE SOUTH 30 FEET OF THE NORTH HALF OF THE NORTH HALF OF THE NORTH HALF OF THE NORTHWEST QUARTER, AND THE NORTH 30 FEET OF THE SOUTH HALF OF THE NORTH HALF OF THE NORTH HALF OF THE NORTHWEST QUARTER, ALL IN SECTION 26, TOWNSHIP 22 NORTH, RANGE 7 EAST, W.M., IN KING COUNTY, WASHINGTON; EXCEPT THE NORTH 30 FEET OF THE EAST THREE QUARTERS OF THE SOUTH HALF OF THE NORTH HALF OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER, ALL IN SECTION 26, TOWNSHIP 22 NORTH, RANGE 7 EAST, W.M., IN KING COUNTY, WASHINGTON; EXCEPT THAT PORTION LYING WEST OF THE WEST HALF OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER, ALL IN SECTION 26, TOWNSHIP 22 NORTH, RANGE 7 W.M., IN KING COUNTY, WASHINGTON.

IN ADDITION, THERE SHALL BE AN EASEMENT FOR THE RIGHT TO INSTALL, MAINTAIN, REPLACE, AND REPAIR A WATER PIPELINE OVER, UNDER, AND ACROSS A 10 FOOT STRIP OF GROUND, THE CENTER LINE BEGINNING AT A POINT LOCATED 130 FEET NORTH OF THE SOUTH PROPERTY LINE AND 25 FEET WEST OF THE EAST PROPERTY LINE OF PARCEL NO. 262207-9136, THENCE SOUTH ON A LINE AS MEASURED PARALLEL TO THE EAST LINE OF PARCEL NUMBER 262207-9136, A DISTANCE OF 100 FEET TO THE SOUTH PROPERTY LINE OF PARCEL NUMBER 262207-9136.

AN EASEMENT FOR ELECTRICAL TRANSMISSION AND/OR DISTRIBUTION LINES FOR SAID WELL SHALL BE PROVIDED AS IS NECESSARY FOR THE OPERATION OF SAID SYSTEM.

AN EASEMENT FROM COMMON WATER DISTRIBUTION PIPING TO EACH WATER USERS HOME FOR THE RIGHT TO MAINTAIN, REPLACE, AND REPAIR WATER PIPELINE OVER, UNDER, AND ACROSS A 10 FOOT

STRIP OF GROUND STARTING AT PROPERTY LINES INVOLVED.

THERE SHALL ALSO BE AN EASEMENT FOR THE PURPOSES FOR MAINTAINING AND/OR REPAIRING THE WELL APPURTENANCES THERETO, WITHIN A 30 FOOT RADIUS OF THE WELL SITE. SAID EASEMENT SHALL ALLOW FOR THE INSTALLATION OF A WELL HOUSE, PUMPS, STORAGE TANKS, AND ANYTHING NECESSARY FOR THE OPERATION OF SAID SYSTEM.

MAINTENANCE/REPAIR COSTS:

EACH WATER USER SHALL PAY A PRORATED SHARE OF THE OPERATION AND MAINTENANCE COSTS OF THE WATER SYSTEM WHEN ACTUALLY USING WATER FROM SAID SYSTEM FOR DOMESTIC PURPOSES.

MAINTENANCE OF SAID WATER SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO THE MAINTENANCE OF ALL PIPELINES IN THE WATER SYSTEM SO THAT THERE WILL BE NO LEAKAGE, SEEPAGE, OR OTHER DEFECT WHICH MAY CAUSE CONTAMINATION OF THE WATER, OR INJURY/DAMAGE TO PERSONS OR PROPERTY.

PIPE MATERIAL USED IN REPAIRS SHALL MEET THE APPROVAL OF THE HEALTH OFFICER.

EACH INDIVIDUAL WATER USER SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR AND/OR REPLACEMENT OF PIPE SUPPLYING WATER FROM THE COMMON WATER DISTRIBUTION PIPING TO THEIR OWN PARTICULAR DWELLING AND PROPERTY.

NON-CONFORMING PARTIES:

MANAGEMENT AUTHORITY SHALL BE SUCH AS IS NECESSARY OR DESIRABLE TO PROVIDE AN ADEQUATE DEPENDABLE WATER SUPPLY AT REASONABLE COSTS, INCLUDING WITHOUT RESERVATION, THE RIGHT TO MAKE REASONABLE REGULATION FOR OPERATION OF THE SYSTEM.

IF ANY PARTY TO THIS AGREEMENT OR THEIR HEIRS, SUCCESSORS, OR ASSIGNS FAILS TO COMPLY WITH THE TERMS OF THIS AGREEMENT, INCLUDING NON-PAYMENT OF WATER BILLS, WITHIN 45 DAYS OF THE DUE DATE, THE REMAINING PARTIES AND/OR MANAGEMENT AUTHORITY FOR THE WATER SYSTEM MAY CAUSE CORRECTIVE ACTION TO BE TAKEN.

CORRECTIVE ACTION MAY INCLUDE:

- A. A LIEN AGAINST THE LOT IN WHICH THE NON-COMPLYING PARTY HAS AN OWNERSHIP INTEREST.
- B. TERMINATION OF WATER SERVICE
- C. ASSESSMENT OF CHARGES FOR ATTORNEY FEES, DISCONNECTION, AND RECONNECTION, ETC.

PROHIBITED PRACTICES/HEIRS-ASSIGNS:

THE GRANTOR(S) AGREE(S) AND COVENANTS(S) THAT SAID GRANTOR(S), HIS, HERS, THEIR HEIRS, SUCCESSORS AND ASSIGNS WILL NOT CONSTRUCT, MAINTAIN, OR SUFFER TO BE CONSTRUCTED OR MAINTAINED UPON THE SAID LAND OF THE GRANTORS AND WITHIN 100(ONE HUNDRED) FEET OF THE WELL HEREIN DESCRIBED, SO LONG AS THE SAME IS OPERATED TO FURNISH WATER FOR PUBLIC CONSUMPTI

DECLARATION OF COVENANT PUBLIC/PRIVATE WELL DATED JULY 13, 1993, RECORDING NUMBER 9307132307 IS FILED WITH KING COUNTY RECORDS.

- A. THE USE OR APPLICATION OF LIQUID OR DRY CHEMICALS, HERBICIDES OR INSECTICIDES ON OR

AROUND HOUSEHOLD FOUNDATIONS OR ANY OTHER STRUCTURAL FOUNDATIONS

- B. FUEL STORAGE TANKS
- C. CESSPOOLS
- D. SEWERS
- E. PRESSURE EFFLUENT PIPES, BUILDING SEWERS, PRIVIES, SEPTIC TANKS, DRAINFIELDS
- F. MANURE PILES
- G. BUILDING FOUNDATIONS
- H. GARBAGE OF ANY KIND OR DESCRIPTION
- I LOAFING SHED
- J. ANIMAL FEEDING STATIONS
- K. BARNs, CHICKEN HOUSES, RABBIT HUTCHES, DOG KENNELS, PIGPENS, OR OTHER ENCLOSURES OR STRUCTURES FOR KEEPING OR MAINTENANCE OF FOWL, ANIMALS
- L. ENCLOSURES OR STRUCTURES FOR THE STORAGE OF LIQUID OR DRY CHEMICALS, HERBICIDES, OR INSECTICIDES
- M. PUBLIC ROADS
- N. SURFACE WATER
- O. RAILROAD TRACTS, POWER UTILITY OR GAS LINES
- P. SANITARY AND ABANDONED LANDFILLS SHALL NOT BE LOCATED WITHIN 1000 FEET

MANGANESE/IRON:

THE OWNERS OF THE ABOVE DESCRIBED PROPERTY DO REALIZE AND CONSIDER THAT THE WATER SYSTEM DOES NOT CONTAIN EXCESS OF THE ESTABLISHED WASHINGTON LIMIT FOR MANGANESE OR IRON

CHLORINE LEVEL:

THE PURVEYOR SHALL MAINTAIN A MINIMUM FREE CHLORINE RESIDUAL OF 0.2 ppm IN ALL PARTS OF THE SYSTEM.

WATER SERVICE/RESTRICTION:

- A. THE WELL AND WATER SYSTEM IS TO BE MAINTAINED SO AS TO BE RELIABLE AND IT IS TO REMAIN IN CONTINUOUS SERVICE, IN ACCORDANCE WITH PUBLIC WATER SUPPLY REQUIREMENTS IN THE WA CODE AND RULES AND REGULATIONS AS ESTABLISHED BY THE KING COUNTY BOARD OF HEALTH UNDER WAC246=290
- B. IT SHALL BE THE RESPONSIBILITY OF THE PURVEYOR TO SCHEDULE MAINTENANCE OF THE PUMP AND WATER SYSTEM AND TO NOTIFY CONSUMERS WHEN THE SYSTEM IS TO BE SHUT DOWN.
- C. THE SYSTEM IS NOT TO REMAIN SHUT DOWN FOR MORE THAN 24 HOURS.
- D. THE WATER SYSTEM CANNOT BE TERMINATED UNLESS AN ALTERNATIVE SOURCE OF WATER, APPROVED BY THE SEATTLE/ KING COUNTY DEPARTMENT OF PUBLIC HEALTH IS AVAILABLE.
- E. IN THE EVENT THE QUANTITY OF THE WATER FROM THE WELL BECOMES UNSATISFACTORY AS DETERMINED BY THE HEALTH OFFICER, THE PARTIES SHALL DEVELOP A NEW SOURCE OF WATER. PRIOR TO DEVELOPMENT OF OR CONNECTION TO A NEW SOURCE OF WATER, THE PARTIES SHALL OBTAIN WRITTEN APPROVAL FROM THE HEALTH OFFICER.

F. IN THE EVENT THAT JACOBS WELLISSORD THE VOLUNTARY PERSON DESIGNATED HEREIN IS CHANGED, PENNY EARL WILL TAKE OVER RESPONSIBILITY, AND NOTIFY THE SEATTLE-KING COUNTY DEPT. OF HEALTH OF THE NEW PERSONS NAMED. THIS WILL BE TRMPORARY UNTIL THE CLASS A SYSTEM IS IN PLACE AND CLASS A SYSTEM. PENNY EARL WILL PROVIDE NAME AND ADDRESS TO ALL PARTIES INVOLVED.

G. THE PARTIES WILL NOT CROSS CONNECT ANY PORTION OR SEGMENT OF THE WATER SYSTEM WITH ANY OTHER WATER SOURCE WITHOUT PRIOR WRITTEN APPROVAL OF THE SEATTLE-KING COUNTY DEPARTMENT OF PUBLIC HEALTH AND/OR OTHER APPROPRIATE GOVERNMENTAL AGENCIES.

H. IT IS FURTHER AGREED BY THE PARTIES HEREIN, THAT WATER FROM JACOBS WELL AND WATER SYSTEM HEREIN DESCRIBED SHALL NOT BE SUPPLIED AT ANY OTHER PERSON'S PROPERTY OR DWELLING WITHOUT PRIOR WRITTEN CONSENT AND/OR APPROVAL AS MAY BE REQUIRED FROM THE AFFECTED PARTIES HEREIN AND WRITTEN APPROVAL FROM THE SEATTLE-KING COUNTY DEPARIMENT OF PUBLIC HEALTH.

I. ALSO, IT IS AGREED THAT WATER PIPELINES SHALL NOT BE INSTALLED WITHIN 10 FEET OF A SEPTIC TANK OR WITHIN 10 FEET OF SEWAGE DISPOSAL DRAINFIELD.LINES.

SATISFACTION OF TERMS

EACH PARTY HAS SATISFIED THE CONNECTION FEE OF \$6,500.00 TOWARDS THE CLASS B WATER SYSTEM. THIS CONNECTION FEE WILL APPLY AS CREDIT TOWARDS THE NEW CLASS "A" SYSTEM WHEN JACOBS WELL IS SOLD, AND IF THE CONNECTION FEE IS LESS IT IS AGREED THAT ALL PARTIES WILL BE REIMBURSED FOR THE DIFFERENCE, BY K BAR J WATER SYSTEM, IF JACOBS WELL IS SOLD.

LOT 1 SCOTT LEROUX 26-22-07-9134 WILL NOT INCUR ANY ADDITIONAL COST WHAT SO EVER FOR THE DEVELOPMENT OF CLASS "A" SYSTEM, IF JACOBS WELL IS SOLD.

THESE COVENANTS AND AGREEMENTS SHALL RUN WITH THE LAND AND SHALL BE BINDING ON ALL PARTIES HAVING OR ACQUIRING ANY RIGHT, TITLE, OR INTEREST IN THIS LAND DESCRIBED HEREIN OR ANY PART THEREOF, AND IT SHALL PASS TO AND BE FOR THE BENEFIT OF EACH OWNER THEREOF.

ROBERT M. JACOBS

PENNY EARL

KAREN D. JACOBS

TOM EARL

SCOTT LEROUX

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I, the undersigned, a Notary Public in and for the above-named County and State, do hereby certify that one this _____ day of _____, 1993, personally appeared before me Tom Earl and Penney Earl, to me known to be the individuals described in and who executed the within instrument, and acknowledged that they signed and sealed the same as their free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal the day and year last above written.

(Name) Notary Public in and for
the State of Washington,
residing at _____
My Commission Expires: _____

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I, the undersigned, a Notary Public in and for the above-named County and State, do hereby certify that one this _____ day of _____, 1993, personally appeared before me Scott LeRoux, to me known to be the individual described in and who executed the within instrument, and acknowledged that he signed and sealed the same as his free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal the day and year last above written.

(Name) Notary Public in and for
the State of Washington,
residing at _____
My Commission Expires: _____

The incorporators are Robert M. Jacobs and Karen D. Jacobs of 26741 SE Ravensdale Place, Ravensdale, WA 98051.

These covenants and Agreements shall run with the land and shall be binding on all parties having or acquiring any right, title, or interest in this land described herein or any part thereof, and it shall pass to and be for the benefit of each owner thereof.

ACCEPTED AND AGREED TO this _____ day of _____, 1993.

Robert M. Jacobs

Tom Earl

Karen D. Jacobs

Penney Earl

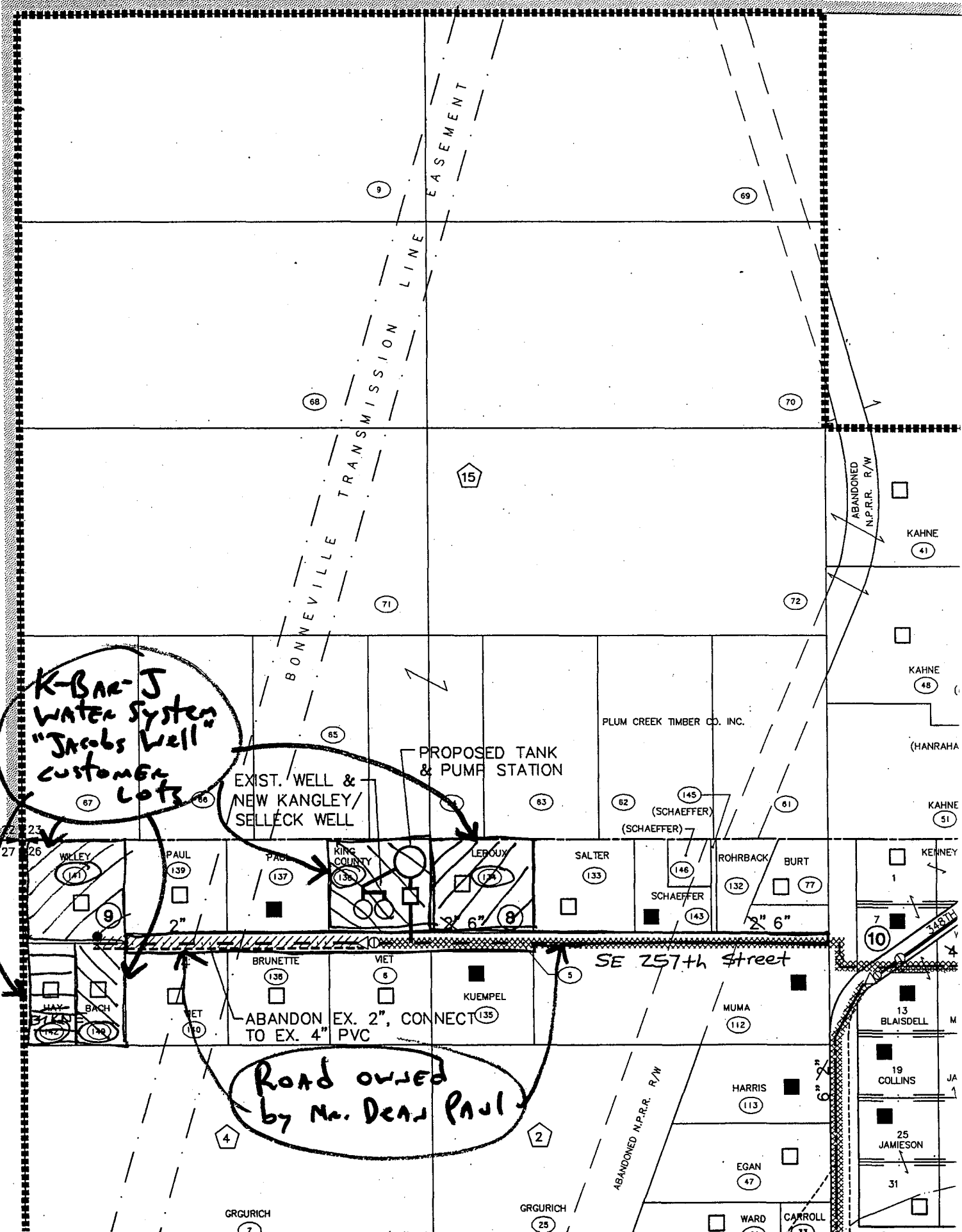
Scott LeRoux

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

I, the undersigned, a Notary Public in and for the above-named County and State, do hereby certify that one this _____ day of _____, 1993, personally appeared before me Robert J. Jacobs and Karen D. Jacobs, to me known to be the individuals described in and who executed the within instrument, and acknowledged that they signed and sealed the same as their free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal the day and year last above written.

(Name) Notary Public in and for
the State of Washington,
residing at _____
My Commission Expires: _____



K-BAR-J
Water System
"Jacobs Well"
customer
lots

PROPOSED TANK
& PUMP STATION

EXIST. WELL &
NEW KANGLEY/
SELLECK WELL

Road owned
by Mr. Dean Paul

ABANDON EX. 2", CONNECT
TO EX. 4" PVC

PLUM CREEK TIMBER CO. INC.

SE 257th Street

BONNEVILLE
TRANSMISSION
LINE
EASEMENT

ABANDONED
N.P.R.R. R/W

ABANDONED
N.P.R.R. R/W

KAHNE
41

KAHNE
48

(HANRAHA)

KAHNE
51

KENNEY
1

10

13
BLAISDELL

19
COLLINS

25
JAMIESON

31

JA

M

7

2

5

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

200

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

222

223

224

225

226

227

228

229

230

231

232

233

234

235

236

237

238

239

240

241

242

243

244

245

246

247

248

249

250

251

252

253

254

255

256

257

258

259

260

261

262

263

264

265

266

267

268

269

270

271

272

273

274

275

276

277

278

279

280

281

282

283

284

285

286

287

288

289

290

291

292

293

294

295

296

297

APPENDIX J

CURRENT OPERATING PERMITS

STATE OF WASHINGTON

Public Water System

Operating Permit

The Department of Health Division of Drinking Water issues a permit to operate

SELLECK WATER SUPPLY (ID# 77550L)

to owner: **FOOTHILLS WATER ASSOCIATION COUNTY: KING**

**FOOTHILLS WATER ASSOCIATION
PO BOX 545
RAVENSDALE WA 98051**

This permit is valid through **AUGUST 1998**

PERMIT CATEGORY: ** RED ******

The permit category may be modified or the permit revoked subject to water system compliance with applicable State of Washington drinking water rules and regulations and the following statements:

**RETURN TO COMPLIANCE OR SIGN COMPLIANCE AGREEMENT WITH THE DEPARTMENT.
OBTAIN CERTIFIED OPERATOR PER CHAPTER 246-292 WAC.
OBTAIN CONSTRUCTION DOCS APPROVAL PER WAC 246-290-120 OR WAC 246-290-140.**

NOTE: WAC 246-294 requires water system plan approval and issuance of a new operating permit before transfer of ownership of a Public Water System.

STATE OF WASHINGTON

Public Water System

Operating Permit

The Department of Health Division of Drinking Water issues a permit to operate

KANGLEY WATER SYSTEM (ID# 37640B)

to owner: **FOOTHILLS WATER ASSOCIATION** COUNTY: **KING**

**FOOTHILLS WATER ASSOCIATION
PO BOX 545
RAVENSDALE WA 98051**

This permit is valid through: **AUGUST 1998**

PERMIT CATEGORY: ** RED ******

The permit category may be modified or the permit revoked subject to water system compliance with applicable State of Washington drinking water rules and regulations and the following statements:

Department of Health

**COMPLY WITH THE FEDERAL ADMINISTRATIVE ORDER.
RETURN TO COMPLIANCE OR SIGN COMPLIANCE AGREEMENT WITH THE DEPARTMENT.
OBTAIN CONSTRUCTION DOCS APPROVAL PER WAC 246-290-120 OR WAC 246-290-140.**

NOTE: WAC 246-294 requires water system plan approval and issuance of a new operating permit before transfer of ownership of a Public Water System.

APPENDIX K

SELLECK WATER SYSTEM BILL OF SALE

BILL OF SALE

BE IT KNOWN BY ALL PRESENT that Selleck Water Corporation, a Washington corporation, Selleck, Inc., a Washington corporation, Pacific States Management Co., Robert Schaefer, and Tim Schaefer, hereinafter collectively designated "Vendors," for a valuable consideration, the receipt and sufficiency of which is hereby acknowledged, hereby quitclaim, assign and transfer unto the KANGLEY WATER ASSOCIATION, a Washington non-profit corporation, hereinafter designated as "Vendee," the following described personal property located in Sections 23, 24, 25, 26, 30 and 31, T22N, R7E, W.M., and Section 6, T21N, R7E, W.M., all in King county, Washington:

All water system source, storage, transmission and distribution facilities and appurtenances constituting the Selleck water system, including, but not limited to the following:

One concrete headworks structure located in the Seattle Water shed.

Approximately three miles of PVC and wood stave pipe transmission main

("Transmission Main")

One cast in place, open top concrete filter structure with screen and gravel

One partially buried 4,000 gallon steel storage tank

One chlorinator housed in a plywood shack located between storage tank and first service ("Chlorinator Building")

Various watermains, including approximately:

4,200 lineal feet of two inch PVC and HDPE water line

1,750 lineal feet of two inch steel water line

1,300 lineal feet of four inch A.C. water line

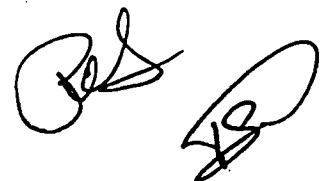
8,750 lineal feet of six inch PVC water line

Approximately eight gate valves of various sizes

Approximately eight blow-offs or yard hydrants

One six inch pressure reducing station (PRV)

Vendors further quitclaim and assign all accounts receivable as shown on Exhibit A attached hereto and incorporated by reference as if set forth in full herein.



ALSO, BE IN KNOWN BY ALL PRESENT that Vendors, for valuable consideration, the receipt of which is hereby acknowledged, provide covenants and warranties as described herein:

1. All lines are conveyed as is without warranty. Vendors warrant that they are unaware of any recorded liens or encumbrances against the property conveyed. This sale specifically excludes pipes that should be considered the property of the individual owners; to wit: service pipes installed by individual owners.

2. For the purpose of carrying out the transfer under that certain quit claim deed of the same date hereof from Vendors to Vendee of a partial water right interest, Vendors shall cooperate with Vendee by providing information and executing documents to the Washington State Department of Ecology ("DOE") to carry out the transfer of a portion, consisting of 235 gallons per minute (and the number of annual acre feet commensurate with such rate), of Water Right claim No. 005457 to Vendee pursuant to that certain Application for Change filed with DOE on August 5, 1997. Vendors and their successors or assigns shall not protest or appeal, whether to an agency or Court, any administrative or court decision to approve such transfer.

3. Vendors Tim Schaefer, Selleck Water Corporation, Selleck Inc. and Pacific States Management covenant that they shall not, directly or indirectly, construct, develop or operate any domestic water system serving two or more connections (whether residential or commercial in nature) within Sections 23, 25, 26, and 27, T22N, R7E, W.M., King county, Washington for the next three years with the exception of properties East of 353rd Ave. S.E. and located in the East half of the Northeast quarter of section 26, the Southeast ^{WEST} quarter of section 24, and the southeast quarter of the southeast quarter of section 23. Nothing in this agreement shall restrict Vendee's service area.

4. Tim Schaefer covenants that within ten days of the execution and delivery of this bill of sale, he shall provide an

Two handwritten signatures in black ink are located at the bottom right of the page. The first signature is a large, stylized cursive 'S' with a loop. The second signature is a smaller, more compact cursive signature.

on-site tour to Vendee and its representatives of the facilities herein conveyed and instruct such persons with respect to its operation and maintenance.

In consideration of the foregoing, Vendee hereby agrees as follows:

A. Vendee covenants to provide water service, to the best of its ability and subject to its rules and regulations, to the customers who were connected to the facilities herein conveyed immediately prior to the transfer; provided, however, Vendee may improve, replace or abandon such facilities in its sole discretion. Until Vendee reconstructs the water system herein conveyed, Vendors shall not interfere with the flow of water from Vendors' surface water source through such system.

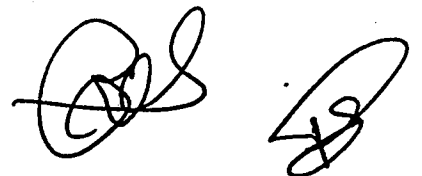
B. If Vendee abandons the Transmission Main, Selleck Inc. or its assigns is hereby granted, for a period not to exceed five (5) years from the date of abandonment, an option to purchase for a price of \$1.00, in its then condition any portion of the Transmission Main and its associated easements and appurtenances located between the locations of Vendors' surface water source to a point not more than five hundred feet to the north of the Chlorinator Building; provided, however, such main shall not be used for domestic or potable water supply unless water supply is approved by all applicable government agencies.

Vendors and Vendee mutually agree as follows:

1. The parties, and their heirs, successors, assigns, officers and directors, hereby release each other and their heirs, successors, assigns, members, officers and directors, from all claims obligations, demands and liabilities of any kind or type, known or unknown, existing or accruing prior to and up to and including the date hereof.

2. Signatories for corporations have the authority to bind the corporation for whom they are signing.

3. All of the foregoing terms and conditions shall inure to the benefit of the parties heirs, successors and assigns.



Executed this _____ day of _____ 1998.

SELLECK WATER CORP.

By: Tim Schaefer
Its PRES

KANGLEY WATER ASSOCIATION

By: Charles J. Decker
President

SELLECK, INC

By: Tim Schaefer
Its PRES

PACIFIC STATES MANAGEMENT CO.

By: Tim Schaefer
Its _____

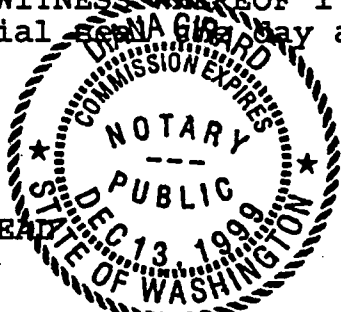
Tim Schaefer
Tim Schaefer

Robert Schaefer
Robert Schaefer

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this 17th day of March, 1998, before me personally appeared TIM SCHAEFER, to me known to be the PRESIDENT of Selleck, Inc., the corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.



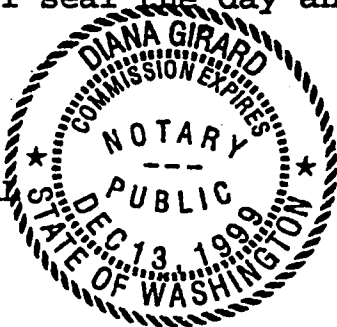
NOTARY SEAL

Diana Girard
NOTARY PUBLIC in and for the State
of Washington, residing at
Renton
My Appointment Expires 12.13.99.

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this 17th day of March, 1998, before me personally appeared TIM SCHAEFER, to me known to be the PRESIDENT of Selleck Water Corporation, the corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.



NOTARY SEAL

Diana Girard
NOTARY PUBLIC in and for the State
of Washington, residing at
Renton
My Appointment Expires 12.13.99.

Filed For Record At Request Of:

Jonson & Jonson, P.S.
701 5th Avenue, Suite 7121
Seattle, WA 98104-7016

COPY OF ORIGINAL FILED
MAR 24 1998
King County

RECEIVED

MAR 25 1998

JONSON & JONSON, P.S.

QUIT CLAIM DEED

EXCISE TAX NOT REQUIRED
King Co. Records Division

[Signature] Deputy

Reference Numbers of Related Documents Assigned or Released: _____

Additional reference numbers on page _____ of documents:

Grantors

- 1. Selleck Water Corporation
- 2. Selleck, Inc.
- 3. Robert Schaefer
- 4. Tim Schaefer

Additional names on page n/a of documents

Grantees

- 1. Kangley Water Association

Additional names on page n/a of documents

Legal description (abbreviated form, i.e., lot, block, plat or section, township, range): Sec. 23, 24, 25, 26, 30 and 31, T22N, R7E, W.M. and Sec. 6, T21N, R7E, W.M., King County, WA.

Additional legal is on page _____ of documents.

Assessor's Property Tax Parcel/Account Number: n/a

THE GRANTORS, SELLECK WATER CORPORATION, SELLECK, INC., ROBERT SCHAEFER and a single man ~~SCHAEFER~~, husband and wife, and TIM SCHAEFER and Dorie T. SCHAEFER, husband and wife, for and in consideration of one dollar (\$1.00) and other valuable consideration, conveys and quit claims to KANGLEY

5/4826-1/qcd.107

COPY

[Handwritten signatures]

980324-1514 12:55:00 PM KING COUNTY RECORDS 005 SH 12.00

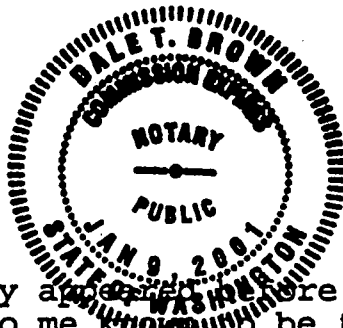
WATER ASSOCIATION, a Washington non-profit corporation, the following described real estate, situated in the County of King, State of Washington, together with all after acquired title of the grantor(s) therein:

All easements, whether express, implied or prescriptive, licenses, ~~and any other rights in real property of any kind or type~~ used in connection with the operation of the Selleck water system located in Sections 23, 24, 25, 26, 30 and 31, T22N, R7E, W.M. and Section 6, T21N, R7E, W.M., King County, WA, including but not limited to the following:

1. Permit No. 817-5.66-0070 issued by Burlington Northern Railway Company to Selleck, Inc. by Supplemental Agreement and Assignment dated August 10, 1981.
2. T. & M. Permit No. 6360 issued by Northern Pacific Railway Company dated August 27, 1966.
3. Permit issued by the City of Seattle Water Department to Selleck, Inc. dated September 20, 1971.
4. Surface Water Intake and Pipeline Easement Agreement issued by Weyerhaeuser Company to Selleck, Inc. dated January 22, 1981.
5. Pipe Line Agreement between Chicago, Milwaukee, St. Paul and Pacific Railroad Company and Powell M. Morris dated November 14, 1969.
6. Crossing Agreement between the United States of America and Selleck, Inc. dated April 25, 1975.

→ The water right as represented under Water Right Claim No. 0005457 for the water used to satisfy the needs of the Selleck domestic water system as operated by the Kangley Water Association.

STATE OF WASHINGTON)
) SS.
COUNTY OF KING)



On this day personally appeared before me Dorie T Schaeffer & Tim Schaeffer, to me known to be the individual(s) described in and who executed the within and foregoing instrument, and acknowledged that he/she/they signed the same as his/her/their free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this 16 day of April, 1998.

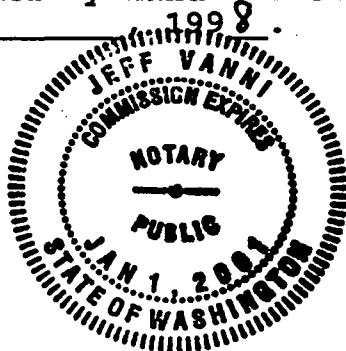
Dale T Brown
Notary Public in and for the
State of Washington, residing at
Renton WA

My commission expires on 1-9-01.

STATE OF WASHINGTON)
) SS.
COUNTY OF King)

On this day personally appeared before me Robert Schaeffer, to me known to be the individual(s) described in and who executed the within and foregoing instrument, and acknowledged that he/she/they signed the same as his/her/their free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this 16 day of March, 1998.



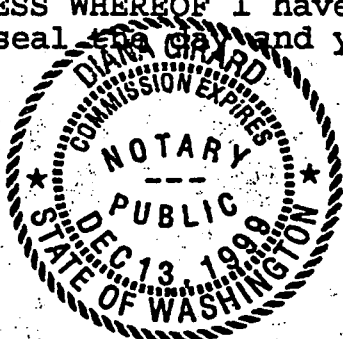
Jeff Vanni
Notary Public in and for the
State of Washington, residing at
Issaquah

My commission expires on Jan 1, 2001.

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this 17th day of March, 1998, before me personally appeared TIM SCHAEFFER, to me known to be the PRESIDENT of the corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal 1998 and year first above written.



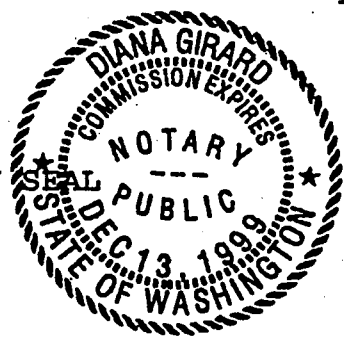
NOTARY SEAL

Diana Girard
NOTARY PUBLIC in and for the State
of Washington, residing at
Benton
My Appointment Expires 12-13-99

STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

On this 17th day of March, 1998, before me personally appeared TIM SCHAEFFER, to me known to be the PRESIDENT of the corporation that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.



NOTARY SEAL

Diana Girard
NOTARY PUBLIC in and for the State
of Washington, residing at
Benton
My Appointment Expires 12-13-99

Esd

**FOOTHILLS WATER ASSOCIATION
ORGANIZATIONAL AND POLICY DOCUMENTS**

FOOTHILLS WATER ASSOCIATION
WATER SERVICE APPLICATION AND AGREEMENT

MEMBER NAME: _____

BILLING ADDRESS: _____

PROPERTY DESCRIPTION:

TYPE OF WATER SERVICE: _____

METER SIZE: _____

THIS AGREEMENT is made and entered into as of the date of execution hereof between Foothills Water Association, a Washington nonprofit corporation ("Corporation"), and the above-named member of the Corporation ("Member").

WITNESSETH:

WHEREAS, Corporation maintains and operates a water distribution system within King County, Washington, in the unincorporated areas known as Kangley and Selleck;

WHEREAS, Member owns that certain real property described above ("property") which requires water service and is willing to enter into an agreement with Corporation for water service to the property. Member is willing to pay Corporation for certain services in regard to such service and to abide by the rules and regulations of Corporation;

IN CONSIDERATION of the premises and the mutual covenants and agreements herein set forth, it is agreed between the parties as follows:

1. Corporation's Obligations. Corporation agrees, subject to performance by Member of its obligations hereafter set forth in Section 2, to use reasonable efforts to provide a supply of potable water to the property line of Member's property.

2. Member's Obligations. Member agrees to pay all such charges as Corporation may levy and to abide by the rules and regulations of Corporation, as the same may be amended, the

receipt of which is hereby acknowledged. The terms of such rules and regulations are hereby incorporated by reference as if set forth in full herein.

3. Lien/Covenants Running With the Land. Member hereby grants Corporation a mortgage on the property described above for all amounts owing now or in the future to Corporation for services provided and any other charges including interest, attorney fees, costs and penalties. Such mortgage may be foreclosed in the manner provided by RCW 61.12. All terms, conditions and provisions hereof in respect to the obligations of Member shall be binding upon the parties, their heirs, successors, administrators and assigns, and are deemed to be covenants which shall run with the property as a whole and each tract or parcel thereof as the same may be sold and conveyed. All such covenants and obligations may be enforced by Corporation in an action at law or equity.

4. Term. This Agreement shall remain in full force and effect for as long as Corporation or its successors and assigns provides water service to the property.

5. Binding Effect. This Agreement is binding upon the parties, their executors, administrators, personal representatives, successors and assigns.

IN WITNESS WHEREOF, the parties hereto have executed this document on _____, 199__.

FOOTHILLS WATER ASSOCIATION

Member

By: _____
President

Member

By: _____
Secretary

Filed For Record At Request Of:

Jonson & Jonson, P.S.
701 5th Avenue, Suite 7121
Seattle, WA 98104-7016

Document Title: Foothills Water Association Water Service
Application and Agreement

Reference Numbers of Related Documents

Assigned or Released: _____

Additional reference numbers on page ____ of documents:

Grantors (Last, first, middle initial)

- 1.
- 2.

Additional names on page ____ of documents

Grantee

1. Foothills Water Association

Additional names on page ____ of documents

Legal description (abbreviated form, i.e., lot, block, plat or
section, township, range): _____

Additional legal is on page ____ of documents.

Assessor's Property Tax Parcel/Account Number(s): _____

PROMISSORY NOTE

\$ _____

King County, Washington
_____, 19__

FOR VALUE RECEIVED, the undersigned promises to pay to the order of the Kangley Water Association, a Washington non-profit corporation, the principal sum of _____ (\$ _____), together with interest thereon, all as hereinafter provided and upon the following agreements, terms and conditions:

1. Interest. This Note shall bear interest from the date hereof, at _____ percent per annum.

2. Payment. This Note shall be payable as follows: _____

_____ provided that the entire amount due shall be due and payable no later than _____, 19___. All payments shall be made to the holder hereof at P.O. Box 545, Ravensdale, WA 98051 or such other place that the holder may designate.

3. Late Charge. If any payment on this Note is not paid when due and remains unpaid for a period of ten days inclusive of the due date, Maker will pay Holder a late charge equal to five percent (5%) of the amount of the delinquent payment.

4. Prepayment. This Note may be prepaid at any time without penalty.

5. Default and Attorneys' Fees. In the event of any default and failure to cure, all sums owing and to become owing hereon shall become immediately due and payable. The undersigned hereby agrees to pay all costs and expenses which holder may incur by reason of any default, including without limitation, Holder's reasonable attorneys' fees.

6. Oral Agreements. Oral agreements or oral commitments to loan money, extend credit, or to forebear from enforcing repayment of a debt are not enforceable under Washington law.]

RULES AND REGULATIONS (AMENDED)
OF
FOOTHILLS WATER ASSOCIATION
A NONPROFIT CORPORATION

These rules and regulations are adopted in accordance with Article V, Section 1.e, of the Bylaws of Foothills Water Association ("Corporation") and may be revised, amended or otherwise changed at any time by action of the Board of Directors ("Board"). These rules are binding on Corporation and its members. Copies of the rules shall be available at all times at the office of Corporation.

1. Application for Service. Each member requesting water service shall sign a water service agreement. Credit references may be requested and must be given, if requested, as a condition of membership. If the application is for other than residential purposes, further information may be required from the applicant.

2. Fees/Deposit. All applicants for membership shall pay a membership and installation fee as established by the Board of Directors as a condition of becoming a member of Corporation.

A deposit may be required from new members as security for payment of water service charges. This deposit may also be required from existing members who fail to maintain a satisfactory payment record. After a six-month satisfactory payment record, the deposit may be returned to the member or be applied to his/her account.

3. Change of Occupancy. When a change of ownership or of legal responsibility for water service takes place on any property served by Corporation, notice of such change shall be given within a reasonable time prior to such change. The transferring member will be held responsible for all charges due Corporation until a transfer fee and all such charges are received.

The final bill may include a pro rata charge based on the number of days of occupancy during the month.

4. Water Service Billing. Bills for water service may be issued monthly or bimonthly as determined by the Board and are

due and payable on receipt. If charges are not paid by the end of the month in which a bill is issued, a one-time penalty of ten percent (10%) of the amount due shall be charged to the account on the first day of the first month after the bill is issued. Thereafter, beginning with the first day of the second month after the bill is issued, interest shall accrue on the unpaid balance at twelve percent (12%) per annum.

Nonusers may elect to pay in advance annually, semiannually, quarterly or monthly.

5. Other Service Charges. Service charges may be required for the following:

- a. Turning water on or off;
- b. Collecting an account;
- c. Disconnecting for nonpayment;
- d. Reconnection when payment is made;
- e. Meter check for accuracy by request from member;
- f. Transfer of membership; and
- g. Request from member for services not normally rendered by Corporation.

Service charges for the above purposes will be fixed by the Board. The Board may establish any other charges that it deems necessary.

6. Service Lines. Corporation shall determine the best location for service lines. Each member will be required to dig a ditch for the connection of the service line from the member's property line to the point of connection. Each member shall be required to purchase, install and maintain the service line.

7. Emergency Conditions. In the event Corporation's water supply is insufficient to meet all of the needs of the members, or in the event there is a shortage of water, Corporation may prorate the water available among the various members on such basis as is deemed equitable by the Board.

8. Member's Plumbing. For purposes of these rules, the term "plumbing" shall include all interior and exterior water lines, irrigation systems and appliances connected to the

plumbing of the structure or property receiving water service from Corporation.

It shall be the member's responsibility to provide booster pumps, relief valves, pressure reduction valves, turnoffs, check valves and whatever other items that may be necessary to protect his or her plumbing.

Each member shall be solely responsible for the maintenance and safety of his or her plumbing and Corporation shall not in any way be liable for accident or damages occurring to the member, or to third parties because of contact with, or failure or, any portion of a member's installation.

Corporation reserves the right to refuse or discontinue service to a member when the service could jeopardize Corporation's water system or the health of Corporation members.

9. Member's Responsibility for Corporation's Property. It shall be the responsibility of the member to take all reasonable and proper precautions to prevent damage to Corporation's water system. In the event that Corporation's water system or property is damaged because of an act or omission of a member, a member's agent or a member's independent contractor, then Corporation may collect from the member the cost of the repairs or replacements resulting from such act or omission.

10. System Disturbances. Water service shall not be utilized by any member in such a manner as to cause severe disturbances or pressure fluctuations to other members of Corporation.

11. Interruption of Service. Corporation will use reasonable diligence to provide an adequate and uninterrupted supply of water at normal pressure, but, if the supply is interrupted without notice for any cause, Corporation shall not be liable for personal injuries, loss or damage resulting therefrom, nor will such failure constitute breach of agreement for service.

Corporation shall have the right to temporarily suspend service for the purpose of making repairs or improvements to its

water system but, in such cases, when practical, those affected will be notified in advance.

12. Notice of Problems With Service. In the event that water service is interrupted or not satisfactory, or any other hazardous condition is known to exist, it shall be the obligation of the member to notify Corporation of such condition.

13. Meter Reading. For property with meters, meters may be read as the Board may determine. If for any reason a reading cannot be obtained for any particular period, the billing may be based on an estimated water use, subject to later correction.

14. Secondary Water Source. No member shall connect his or her service line or plumbing with that of any other water source.

15. Discontinuance of Service by Corporation. Corporation may refuse to connect or may discontinue service for violations of any of these rules and regulations, for failure to pay charges for water service when due, for failure to pay when due any charge set forth on Corporation's rate schedule, for theft of water or other service, for illegal diversion of water or for failure to pay any indebtedness or for damage to Corporation's property. The discontinuance of service for any of these causes does not release the member from his or her obligation to pay for water received, or for charges specified in any existing contract or rate schedule.

As a condition to the discontinuance of service, Corporation shall comply with the following procedures:

a. Corporation must first notify the member, in writing, of the following:

(i) The delinquent amount due and the nature of the charges;

(ii) The time, date and location for a hearing before the Board on the issue of whether water service to the member should be discontinued; and

(iii) That the member can appear at the hearing with counsel, witnesses and exhibits, if he or she

desires, to present facts, law and argument as to why water service should not be discontinued to the property.

b. Following the hearing, the Board shall decide whether or not to discontinue water service to the property. If the decision is to discontinue the service, Corporation may then disconnect the service.

16. Types of Members. The Board may establish different classes of members, including users and nonusers. A user is a member who is connected to the water system and uses water.

A nonuser is a member who has acquired a membership certificate in Corporation but is not presently connected to the system. Nonusers may be charged a periodic fee, as determined by the Board to recover costs of overhead, debt service and such other costs that the Board determines are allocable to nonusers.

17. Fire Hydrants. The use of fire hydrants, if any, shall be made available for the purposes of fire protection to members free of charge. Nonmembers may have emergency use of fire hydrants, subject to a fee as may be established by the Board. Fire hydrants shall not be used by anyone for training or practicing fire fighting without prior approval by the Board. Unauthorized use of fire hydrants shall result in the levy of a fee or fine as may be adopted by the Board.

ADOPTED this _____ day of _____, 199____,

ATTEST:

, Secretary

ARTICLES OF AMENDMENT TO ARTICLES OF INCORPORATION
OF KANGLEY WATER ASSOCIATION

The undersigned President and Secretary, respectively, of Kangley Water Association, a Washington nonprofit corporation, organized and existing under the laws of the State of Washington, do hereby submit the following Articles of Amendment to the Articles of Incorporation of the corporation and do certify as follows:

1. Name. The name of record of the corporation is Kangley Water Association.

2. Amendment. The amendment to the Articles of Incorporation as adopted, which is the amendment of Article I, is as follows:

ARTICLE I NAME

The name of the corporation shall be:

FOOTHILLS WATER ASSOCIATION

3. Date. The date of adoption of the amendment was March __, 1998.

4. Manner of Adoption. The amendment was adopted by resolution of the members of the corporation.

5. Number of Members. A quorum was present at the meeting to adopt the amendment. The number of members of the corporation at the time of such adoption was _____, all of whom were entitled to vote thereon.

6. Voting. The number of members that voted for the amendment was _____; and the number of members that voted against such amendment was _____.

7. Voting Rights. The corporation has only one class of members, all of whom have full voting rights.

8. Certification. The undersigned hereby certify they are the President and Secretary of the corporation, respectively, and are authorized to execute these Articles of Amendment on behalf

of the corporation.

Executed this _____ day of March, 1998.

_____, President

_____, Secretary

BYLAWS

FOOTHILLS WATER ASSOCIATION, A NONPROFIT CORPORATION

ARTICLE I. Membership

Section 1. The persons who may become members of this corporation are set forth in the Articles of Incorporation.

Section 2. Memberships shall be transferable. The transfer shall be effective only when noted on the books of the corporation. When a member sells, transfers or conveys real property which receives water service from the corporation, the transferring member's membership in the corporation shall be transferred to the new owner as part of such transaction, provided that the transferring member is free from indebtedness to the corporation. The transfer of a membership certificate shall not result in forfeiture of the transferring member's rights to receive a distribution of assets that accrued during the period in which the member held a membership.

ARTICLE II. Membership Certificates

Section 1. A membership certificate shall be issued to each owner of a parcel of property qualifying for membership under Article IV of the corporation's Articles of Incorporation who has fully paid for such membership. Each certificate shall be numbered consecutively, in accordance with the order of issuance. Each certificate shall bear on its face the following statements:

a. Membership certificates shall be issued and accepted in accordance with, and subject to, the conditions and restrictions stipulated in the Articles of Incorporation, Bylaws, rules and regulations as adopted by the Board of Directors and amendments thereto.

b. Transfers of membership certificates shall be made only upon the books of the corporation, only to persons eligible to become members and only when the member transferring is free from indebtedness to the corporation.

c. No member of this corporation shall be entitled to more than one vote at meetings of the members although it shall be

permissible for an individual member to hold more than one membership certificate.

d. Every member, as a condition of becoming a member of this corporation, shall sign such agreements for the purchase of water from the corporation as may from time to time be provided and required by the corporation.

ARTICLE III. Meeting of Members

Section 1. The annual meeting of the members of the corporation shall be set for any convenient place, date and time in King County, Washington, by the Board of Directors between the dates of March 1 and May 30 of every year, provided that notice thereof to each member of record is sent no less than ten (10) days in advance thereof.

Section 2. Special meetings of the members may be called at any time by the action of the Board of Directors and such meetings must be called whenever a petition requesting such meeting is signed by at least twenty-five percent (25%) of the members and presented to the Secretary or to the Board of Directors. The purpose of every special meeting shall be stated in the notice thereof, and no business shall be transacted thereat except as specified in the notice.

Section 3. Notice of meetings of members of the corporation may be given by a notice mailed to each member of record, and directed to the address shown upon the books of the corporation at least ten (10) days prior to the meeting. Such notice shall state the nature, time, place and purpose of the meeting.

Section 4. Fifty-one percent (51%) of the members shall constitute a quorum at any meeting of the members of the corporation for the transaction of business. A member shall be considered present for such purpose if he or she is present in person or by proxy. The voting power of each member shall be equal regardless of the number of properties or membership certificates owned; each member shall have one vote. The affirmative vote of the majority of the members represented at any meeting in which a quorum exists shall be the act of the

members, unless the vote of a greater number is required by applicable law, by the Articles of Incorporation or by these Bylaws.

a. At any meeting of the members, a member entitled to vote may vote by mail or proxy, executed in writing by the member or his duly authorized attorney-in-fact. No proxy shall be valid after sixty (60) days from the date of execution, unless otherwise provided in the proxy.

b. For any member to represent a member by proxy, such proxy holder must submit the proxy to the Secretary of the corporation before the commencement of the meeting. When the Secretary has certified the proxy to be in good order, the proxy holder shall have the right to vote in the manner set forth in the proxy.

c. Any member in attendance at a meeting may exercise one or more proxies.

Section 5. Directors of the corporation shall be elected at the annual meeting of the members.

Section 6. The order of business at annual meetings, and so far as possible at all other meetings, shall be:

1. Call to order and proof of quorum;
2. Proof of notice of meeting;
3. Reading and action on any unapproved minutes;
4. Reports of offices and committees;
5. Election of directors;
6. Unfinished business;
7. New business;
8. Adjournment.

ARTICLE IV. Board of Directors

Section 1: The Board of Directors of this corporation shall consist of seven (7) individuals. A director must be a full-time resident of a home which receives water service from the corporation or a member of the corporation. The directors shall each serve a two-year term. The initial terms may be staggered

at the discretion of the board in order that all terms will not expire at the same time.

Section 2: The Board of Directors shall meet within ten (10) days after the annual election of directors. The directors shall elect by ballot a president, vice-president, secretary, and treasurer, each of whom shall hold office until the next annual meeting or until the election and qualification of a successor, unless sooner removed by death, resignation or for cause. The Board of Directors may establish a schedule of regular meetings of the board. Any two Directors may call a special meeting of the board upon ten (10) days' written notice to the other directors.

Section 3: If the office of any director becomes vacant by reason of death, resignation, retirement, disqualification or otherwise, except by removal from office, a majority of the remaining directors, even if less than a quorum, shall, by majority vote, choose a successor who shall hold office until the next regular meeting of the members of the corporation, at which time the members shall elect a director for the unexpired term or terms, provided that in the call of such regular meeting a notice of such election shall be given.

Section 4: A majority of the Board of Directors shall constitute a quorum at any meeting of the board. A majority of the directors present at any meeting of the Board of Directors in which a quorum exists shall carry the vote on any matter.

Section 5: Compensation of officers and directors may be fixed by the members at any regular or special meeting of the members of the corporation.

Section 6: Directors may be removed from office in the following manner: Any member, officer, or director may present charges against a director by filing them in writing with the secretary of the corporation. If presented by a member, the charges must be accompanied by a petition signed by twenty-five percent (25%) of the members of the corporation. The vote on such removal shall be held at the next regular or special meeting

of the members and shall be effective, if approved, by a vote of a majority of the members. The director against whom such charges have been presented shall be informed, in writing, of such charges not less than five (5) days prior to the meeting, and shall have the opportunity at such meeting to be heard in person or by counsel and to present witnesses. The person or persons presenting such charges against him shall have the same opportunity. If the removal of a director is approved, such action shall also vacate any other office held by the removed director in the corporation. A vacancy in the board thus created shall immediately be filled by a vote of a majority of the members present and voting at such meeting.

Section 7: The directors may appoint a chairman to preside over all meetings of the Board of Directors. The chairman shall have no other duties or powers.

ARTICLE V. Duties of Directors

Section 1: The Board of Directors, subject to restrictions imposed by law, the Articles of Incorporation, and these Bylaws, shall exercise all of the powers of the corporation, and, without limitation upon its general powers, it is hereby expressly provided that the Board of Directors shall have, and is hereby given, full power and authority with respect to the matters hereinafter set forth to be exercised by resolution duly adopted by the board:

a. To approve a water service area boundary outside of which no water service shall be provided except as may be specifically approved by the board.

b. To approve membership applications in accordance with Article II, Section 1, and to cause to be issued appropriate certificates of membership.

c. To select and remove all officers, agents or employees of the corporation, prescribe such duties and designate such powers as may not be inconsistent with these Bylaws and pay for services.

d. To borrow money, goods, or services from any source, and to make and issue notes and other negotiable and transferable instruments, mortgages, deeds of trust, trust agreements and other encumbrances on the property of the corporation, and to do every act and thing necessary to effectuate the same after approval of a majority of the membership present at a meeting therefor.

e. To prescribe, adopt and amend, from time to time, such equitable uniform rules and regulations as, in its discretion, may be deemed essential or convenient for the conduct of the business and affairs of the corporation and guidance and control of its officers and employees, and to prescribe adequate penalties for the breach thereof.

f. To order, in its discretion, an audit of the books and accounts of the corporation by a committee of at least three (3) members selected by the membership or by a competent auditor or accountant. The report prepared by said committee or auditor accountant shall be submitted to the members of the corporation.

g. To fix and alter the charges to be paid by each member for memberships and services rendered by the corporation to the member, and to fix and alter the method of billing, time of payment, manner of connection and penalties for late or nonpayment of the same. The board may establish one or more types of users.

h. To require adequate bonds on all officers, agents and employees charged with responsibility for the custody of any of the funds of the corporation. The cost of the bonds shall be paid by the corporation.

i. To select one or more banks to act as depositors for the funds of the corporation. To determine the manner of receiving, depositing and disbursing such funds, the form of checks and the person or persons by whom the same shall be signed, with the power to change such banks, the person or persons signing such checks and the form thereof at will.

j. To levy assessments against the members of the corporation and to enforce the collection of such assessments in the manner provided by law, management, or by rules and regulations adopted by the Board of Directors. The Board of Directors shall have the option to suspend all rights and privileges of members holding any membership certificate on which assessment has not been paid at any time after ninety (90) days from the date the assessment was due, provided that the corporation must give the member at least thirty (30) days' written notice, at the address of the member on the books of the corporation, of its intention to suspend the certificate if the assessment is not paid. Upon payment of the assessment, the rights, privileges and services shall immediately be returned.

k. To establish reserves and to invest the funds thereof in stocks, bonds and other property as the Board of Directors may deem necessary or satisfactory.

l. To buy, lease, hold and exercise all privileges of ownership in and to all real or personal property as may be necessary or convenient for the conduct and operation of the business or the corporation or incidental thereto.

m. To authorize at least two officers to sign contracts on behalf of the corporation.

n. To execute checks, notes and drafts on behalf of the corporation or to delegate such authority to the officers hereof, provided a minimum of two directors or two officers must sign such instruments, and, provided, further, no such directors or officers having such signature authority shall be related by blood, nor shall they be husband and wife or reside in the same household.

ARTICLE VI. Officers

Section 1: President. The president shall perform all acts and duties usually performed by an executive officer, and sign all membership certificates and such other papers of the corporation as may be authorized or directed by the Board of

Directors. The president shall perform such other duties as may be prescribed by the Board of Directors.

Section 2: Vice-President. In the absence or disability of the president, the vice-president shall perform the duties of the president; provided that in case of death, resignation or disability of the president, the Board of Directors may declare the office vacant and elect a successor.

Section 3: Secretary. The secretary shall have general charge and supervision of the records of the corporation; sign all such papers pertaining to the corporation as may be authorized or directed by the Board of Directors; serve all notices required by law and by these Bylaws and make reports of all matters pertaining to this office to the members at the annual meeting of members; supervise the keeping of a proper membership certificate record showing the name of each member of the corporation, the date of issuance, sale or conveyance; supervise the making of all reports required by law and perform such other duties as may be required by the corporation or the Board of Directors. Upon the election of a successor, the secretary shall turn over all records and other property belonging to the corporation. The secretary shall also perform such other duties with respect to the finances of the corporation as may be prescribed by the Board of Directors.

Section 4: Treasurer. The treasurer shall have general charge and supervision of the books of the corporation; supervise the keeping of all financial records and the receipt of all revenues; supervise the making of quarterly financial reports to the Board of Directors; supervise the making of all financial reports required by law; and perform such duties with respect to the finances as may be prescribed by the Board of Directors. Upon the election of a successor, the treasurer shall turn over all books, records and other property belonging to the corporation.

ARTICLE VII. Benefits and Duties of Members

Section 1: Each member shall be entitled to purchase from the corporation, pursuant to such agreements as may from time to time be provided and required by the corporation, such water as may be reasonably necessary for domestic, livestock, garden, industrial and commercial purposes; subject, however, to the provisions of these Bylaws and such rules and regulations as may be prescribed by the Board of Directors. Each parcel of a member, as approved by the Board of Directors, shall receive water service through one service line.

ARTICLE VIII. Indemnification of Directors and Officers

The corporation shall indemnify any person made a party to any proceeding by reason of the fact that such person is or was a director or officer of the corporation against judgments, penalties, fines, settlements and reasonable expenses actually incurred by such person in connection with such proceeding. Such reasonable expenses may be paid or reimbursed by the corporation in advance of the final disposition of such proceeding; provided, that no such indemnity shall indemnify any director or officer from or on account of acts or omissions of such person finally adjudged to be in contravention of the standards set forth in RCW 24.06.030(15), as it may be amended. Such indemnity shall continue as to a person who has ceased to be a director or officer and shall inure to the benefit of the heirs, executors, and administrators of such person.

ARTICLE IX. Amendment

Section 1. These Bylaws may be repealed or amended by the Board of Directors.

ADOPTED the _____ day of March, 1998.

Secretary