

**INTERLOCAL AGREEMENT  
FOR GROUNDWATER PROTECTION AND MANAGEMENT ACTIVITIES**

**15081**

This Agreement is entered into by King County, Washington, hereinafter referred to as "King County" or the "County," the City of Issaquah, hereinafter referred to as "Issaquah," the City of Sammamish, hereinafter referred to as "Sammamish," and the Sammamish Plateau Water and Sewer District, hereinafter referred to as the "District," collectively referred to as the "Parties," for the purpose of cooperatively conducting activities related to groundwater protection and management in the Issaquah Creek Valley Groundwater Management area.

WHEREAS, the Washington State Department of Ecology (DOE) has been authorized by RCW 90.44.400 and its implementing regulations, WAC 173-100, to identify and designate groundwater management areas for the purposes of protection of water quality, assurance of quantity, and efficient management of water resources to meet future needs, and;

WHEREAS, in 1986 DOE designated the Issaquah Creek Valley Groundwater Management Area (hereinafter "Management Area"), which includes the Issaquah Valley Aquifer, and established the Issaquah Creek Groundwater Advisory Committee to oversee development of a groundwater management plan, and;

WHEREAS, DOE designated the Seattle/King County Department of Public Health as the lead agency to work with stakeholders and potential implementing agencies to develop the Issaquah Creek Valley Groundwater Management Plan (hereinafter "Management Plan"), and;

WHEREAS, in 1996 the King County Department of Natural Resources replaced the Seattle/King County Department of Public Health as the lead agency in connection with the development of the Management Plan;

WHEREAS, the Management Plan, after completion of a review and concurrence process by local stakeholders, governments and service providers, was submitted to DOE in March 1999 for review and certification, and;

WHEREAS, the Management Plan was certified by the DOE in 2000 as consistent with the intent of WAC 173-100, and;

WHEREAS, under the provisions of RCW 90.44.420, affected local governments are charged with adopting regulations, ordinances and/or programs for implementing those provisions of the Management Plan which are within their respective jurisdictional authorities, and;

WHEREAS, in 2001, the King County Council in Ordinance 14214, codified as King County Code 9.14, formally authorized the County's Groundwater Protection Program and provided for the creation of the Issaquah Creek Valley Groundwater Protection Committee (hereinafter "Committee"), and;

WHEREAS, the current members of the Committee were appointed by the King County executive and confirmed by the King County Council in 2002, and have been routinely meeting since January 2003 to participate in implementation of the Management Plan, and;

WHEREAS, the Management Area lies within all or portions of the City of Sammamish, the City of Issaquah, unincorporated King County, and the Sammamish Plateau Water and Sewer District, each of which is a Party to this Agreement, and;

WHEREAS, the Parties are each considered to be an implementing agency for the Management Plan and for the specific management strategies identified within the Plan, and;

WHEREAS, each of the Parties has a role and responsibility in addressing groundwater issues and concerns in the Management Area, and;

WHEREAS, the current Committee has identified its top priorities for implementation of the Management Plan and for groundwater protection generally within the Management Area; and

WHEREAS, the Parties wish to work together to address and implement the Committee's priorities and to protect groundwater in general, and wish to use King County's services to conduct specific groundwater protection activities, including increased monitoring, enhanced coordination among the Parties, and improved policies and regulations, and;

WHEREAS, the Parties intend that by working cooperatively to conduct the activities provided for in this Agreement they will be taking important steps on behalf of the public to protect the quantity and quality of groundwater in the Management Area, which is threatened by contaminant sources and increasing water supply demand, and;

WHEREAS, pursuant to RCW 39.34, the Interlocal Cooperation Act, each of the Parties is authorized to enter into an agreement for cooperative action;

NOW THEREFORE, the Parties hereto agree as follows:

**I. Purpose of the Agreement**

The purpose of this Agreement is to provide the means by which the Parties will cooperatively conduct and fund groundwater protection activities. These activities are listed below in four general subject matter areas and will be conducted in the years 2005 through 2007. They are more specifically described in the Scope of Work attached to this Agreement as Exhibit One and incorporated herein and are collectively referred to herein as the "Project." The four activities include:

1. providing staff support to the Committee;
2. evaluating land use and other policies affecting groundwater quality and quantity, and recommending appropriate policy changes or additions to implementing agencies for adoption;
3. developing a steady-state groundwater model of the Management Area; and
4. conducting community education and outreach activities aimed at promoting groundwater awareness and protection.

**II. Project Management**

- A. Project oversight will be conducted by a Project Management Team (hereinafter "PMT") consisting of one representative each from King County, Issaquah, Sammamish and the District. Each Party will designate its respective PMT representative.
- B. The PMT will meet at least three times per year as part of meetings of the Committee and will conduct additional meetings as needed to review Project progress, solicit and consider input on the Project from the Committee, and review Project expenditures per the Project budget, and consider possible changes to the Project Scope of Work.
- C. The PMT may make needed changes to the Scope of Work to reflect emerging Project results and findings and to better meet Project objectives. Such changes

shall not cause total annual Project costs as provided for in Exhibit One to be exceeded.

- D. King County will perform day-to-day project management and direction and communicate with other PMT members as needed to conduct Project activities.
- E. King County will schedule, facilitate, and provide summaries of all PMT meetings during implementation of the Project.
- F. The PMT will reach its decisions by consensus, considering input from the Committee where appropriate. Issues that cannot be resolved by the PMT will be referred to the Division Director of the King County Water and Land Resources Division, the appropriate City Managers, and the District Manager for final resolution.

### **III. Responsibilities**

Each of the Parties shall:

- A. Designate one representative to serve on the PMT and participate in PMT meetings.
  - B. Maintain its appointed representation on the Committee.
  - C. Provide for use in the Project any groundwater-related data it has that would be appropriate to share and would facilitate accomplishment of the Project goals.
  - D. Participate in Groundwater Policy Working Group activities as outlined in the Scope of Work.
  - E. Consider revising its groundwater protection policies and regulations to increase groundwater protection when and where it deems appropriate as recommended by the Committee.
  - F. Where appropriate, utilize public outreach tools developed as part of the Project to increase public awareness of groundwater issues.
  - G. Pay for its share of Project costs as provided for below and in Exhibit One.
- King County shall have the following additional responsibilities:
- A. Provide day-to-day Project management.
  - B. Perform Project tasks as provided for in Exhibit One, including providing for subcontracted services where needed.

## **IV. Costs**

- A. The Parties agree to share costs incurred by King County to conduct Project activities as described in Exhibit One. Total estimated Project costs are \$360,000 for the years 2005-2007.
- B. Estimated Project costs for each year, by activity, are described in Exhibit One.
- C. The Parties agree to pay for Project costs according to the percentages specified in Exhibit One on page ten. Project cost shares will not exceed amounts indicated without written agreement of the Parties.
- D. Total Project costs shall include all those costs incurred by King County in completing the Project, including costs for staff persons, overhead, supplies, contractors, and equipment.

## **V. Billing and Payment**

- A. King County shall bill each of the other Parties quarterly on itemized invoices for that Party's share of Project costs.
- B. The Parties shall review and approve of the invoices and forward payment to King County within 60 days of receipt of invoice.
- C. The Parties represent that funds for service provision under this Agreement have been appropriated and made available. To the extent that such service provision requires future appropriations beyond current appropriation authority, the Parties' obligations are contingent upon the appropriation of sufficient funds to complete the activities described herein. If no such appropriation is made, this Agreement will terminate.

## **VI. Duration, Termination, and Amendment**

- A. This Agreement is effective upon signature by the Parties and remains in effect until June 30, 2008.
- B. A Party may end its participation in the Project and withdraw from this Agreement upon 90 days' written notice to the other Parties, and paying its share of costs for the Project to the end of the quarter in which termination occurs.

- C. This Agreement may be amended, altered, clarified, or extended only by the written agreement of the Parties hereto.
- D. This Agreement is not assignable by any Party, either in whole or in part.
- E. This Agreement is a complete expression of the terms hereto and any oral or written representations or understandings not incorporated herein are excluded. The Parties recognize that time is of the essence in the performance of the provisions of this Agreement. Waiver of any default shall not be deemed to be a waiver of any subsequent default. Waiver of breach of any provision of this Agreement shall not be deemed to be a waiver of any other or subsequent breach and shall not be construed to be a modification of the terms of the Agreement unless stated to be such through written approval by the Parties which shall be attached to the original Agreement.

## **VII. Counterparts**

This Agreement may be executed in counterparts.

## **VIII. Indemnification and Hold Harmless**

The Parties agree to the following:

Each Party shall protect, defend, indemnify, and save harmless the other Parties, their officers, officials, employees, and agents, while acting within the scope of their employment as such, from any and all costs, claims, judgments, and/or awards of damages, arising out of, or in any way resulting from, that Party's own negligent acts or omissions. Each Party agrees that its obligations under this subparagraph extend to any claim, demand, and/or cause of action brought by, or on behalf of, any of its employees or agents. For this purpose, each Party, by mutual negotiation, hereby waives, with respect to the other Parties only, any immunity that would otherwise be available against such claims under the Industrial Insurance provisions of Title 51 RCW. In the event that any Party incurs any judgment, award, and/or cost arising therefrom, including attorneys'

fees, to enforce the provisions of this Article, all such fees, expenses, and costs shall be recoverable from the responsible Party to the extent of that Party's culpability.

IN WITNESS WHEREOF, the Parties hereto have executed this amendment on the \_\_\_\_\_ day of \_\_\_\_\_, 2004.

Approved as to Form

**King County:**

By: \_\_\_\_\_  
Title: Deputy Prosecuting Attorney

By: \_\_\_\_\_  
Title: King County Executive

Approved as to Form

**Sammamish Plateau Water  
and Sewer District:**

By: \_\_\_\_\_  
Title: \_\_\_\_\_

By: \_\_\_\_\_  
Title: \_\_\_\_\_

Approved as to Form

**City of Issaquah:**

By: \_\_\_\_\_  
Title: \_\_\_\_\_

By: \_\_\_\_\_  
Title: \_\_\_\_\_

Approved as to Form

**City of Sammamish:**

By: \_\_\_\_\_  
Title: \_\_\_\_\_

By: \_\_\_\_\_  
Title: \_\_\_\_\_

**15081**

# ISSAQUAH CREEK VALLEY GROUNDWATER MANAGEMENT AREA

## PROPOSED SCOPE OF WORK FOR GROUNDWATER PROTECTION SERVICES, 2005-2007

### SUMMARY OF SERVICES AND ESTIMATED COSTS

#### I. WATER RESOURCES EVALUATION

##### THREE-DIMENSIONAL HYDROGEOLOGIC MAPPING

This effort will be contracted to GeoMapNW at the University of Washington (formerly the Seattle-Area Geologic Mapping Project); DNRP will provide project management and oversight. Only a portion of the Issaquah Creek Valley Groundwater Management Area will be mapped – it is anticipated that the mapping area will be an area south of the City of Issaquah including the “Gap” and upper basin of Issaquah Creek.

- Compile existing boring data for the study area.
- Enter data for the study area into a georeferenced database.
- Estimate hydrogeologic data and susceptibility factors for the study area.

|   |          |
|---|----------|
| Estimated Cost – Hydrogeologic Mapping: | \$82,390 |
|---|----------|

##### ISSAQUAH CREEK VALLEY GROUNDWATER DATA WEB PAGES

- Compile available groundwater data for the Issaquah Creek Valley Groundwater Management Area (GWMA) from all available sources.
- Develop GWMA groundwater data Web pages on the King County Web site.
- Update the Web pages when new information becomes available.

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| Estimated Cost – Web Site: | \$22,400 |
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##### EXEMPT WELL IMPACT ASSESSMENT

- Develop data and approach.
- Apply approach for exempt wells.
- Apply similar approach for larger (permitted) wells.

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| Estimated Cost – Exempt Well Impact: | \$21,000 |
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##### GROUNDWATER MODEL VALIDATION, COMPARISON, AND EXTENSION

- Compile data and conduct initial model assessment.
- Validate models and planning.
- Develop plans for further modeling and monitoring.

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| Estimated Cost – Groundwater Model: | \$33,600 |
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| <b>Water Resources Evaluation Total Estimated Cost, 2005-2007:</b> | <b>\$159,390</b> |
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**II. POLICY AND PLAN IMPLEMENTATION**

**GROUNDWATER PROTECTION COMMITTEE AND ILA MANAGEMENT**

- Maintain an East King County Groundwater Protection Committee membership roster.
- Facilitate appointments for vacant committee seats.
- Handle committee logistics such as scheduling meetings and guest speakers, securing facilities, and posting public notices.
- Staff and support regular meetings of the committee.
- Develop meeting agendas in partnership with committee chairs.
- Produce meeting notes.
- Distribute notes, agendas, and other communications to committee members and interested parties.
- Serve as the liaison between the committee and the groundwater protection service providers.
- Manage and oversee completion of ILA services.
- Convene an ILA management group as needed.
- Coordinate routine status reports of progress on the ILA scope of work.
- Facilitate committee review of work performed under the ILA.

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| Estimated Cost – Committee and ILA Management (\$25,435/year) | \$76,305 |
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**GROUNDWATER POLICY WORK GROUP**

- Convene a multi-agency work group to research and draft groundwater protection policy and model legislation.
- Handle logistics for the work group, such as scheduling meetings, securing facilities, and posting public notices.
- Set agendas; track work group goals, schedule and progress; maintain a mailing list.
- Research and analyze groundwater policy issues identified by the Issaquah Creek Valley Groundwater Protection Committee, such as exempt wells, stormwater, Low Impact Development, and cross-jurisdictional coordination on aquifer protection.
- Develop policy guidance for implementing agencies in topical areas of interest to the committee.

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| Estimated Cost – Policy Work Group (\$25,435/year) | \$76,305 |
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| <b>Policy and Plan Implementation Total Estimated Cost, 2005-2007:</b> | <b>\$152,610</b> |
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**15081****III. EDUCATION AND OUTREACH****PUBLIC AWARENESS**

- Expand public awareness of key groundwater issues identified by the Issaquah Creek Valley Groundwater Protection Committee and/or the Issaquah Creek Valley Policy Work Group.
- Utilize a variety of mediums – such as public events, newsletter articles, brochures, information sheets, Web-based information, and workshops – to convey key messages.

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| Estimated Cost – Public Awareness (\$10,000/year) | \$30,000 |
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**NATURAL YARD CARE**

- Select neighborhood(s) in partnership with the Issaquah Creek Valley Groundwater Protection Committee.
- Solicit participants.
- Conduct training workshops on Natural Yard Care, plus added GWMA-specific topics like Low Impact Development or stormwater.
- Conduct participant surveys both before and after training.
- Share survey results with the Issaquah Creek Valley Groundwater Protection Committee.

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| Estimated Cost (one series/year) – Natural Yard Care (\$6,000/series) | \$18,000 |
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|--|-----------------|
| <b>Education and Outreach Total Estimated Cost, 2005-2007:</b> | <b>\$48,000</b> |
|--|-----------------|

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| <b>TOTAL FOR ALL SERVICES 2005-2007:</b> | <b>\$312,000</b> |
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## ISSAQUAH CREEK VALLEY GROUNDWATER MANAGEMENT AREA

### PROPOSED SCOPE OF WORK FOR GROUNDWATER PROTECTION SERVICES, 2005-2007

#### DETAIL OF SERVICES AND ESTIMATED COSTS

Groundwater is important to the Issaquah Creek Valley Groundwater Management Area (GWMA) for the following two key reasons:

- Almost the entire population of the GWMA relies to a great extent on groundwater as its source of drinking water supply. Of the 10 Group A purveyors with defined service areas, all but two (KCWD 90 and Cedar River Water and Sewer, both along the edges of the Groundwater Management area) use mostly or solely groundwater. However, some large sections of the management area have no water service providers designated. Residences outside of these defined water system service areas must obtain supplies from groundwater via approximately 16 other Group A systems, 245 Group B systems, or individual exempt wells.
- Groundwater is essential for sustaining habitat in the area's rivers and wetlands.

Groundwater supplies can be precarious. For example, when drought conditions reduced the flow in the North Fork Issaquah Creek, flows needed to be diverted from water supply wells to restore some flow to the system. In addition, a large part of the area is designated rural and uses on-site sewage treatment (septic) systems, which discharge directly to groundwater.

All the rivers in the GWMA depend completely on groundwater storage (rather than snowmelt) to continue their flows through the dry summer months. Fish need the cold water from groundwater to migrate and spawn.

The Issaquah Creek Valley Groundwater Protection Committee has been discussing priorities for the King County Groundwater Protection Program in its GWMA. The committee has worked to identify top priorities with the expectation that implementing agencies will use these priority statements to guide their provision of groundwater protection services.

Key implementing agencies are the City of Issaquah, the City of Sammamish, the King County Department of Natural Resources and Parks (DNRP), the King County Department of Development and Environmental Services, Public Health - Seattle & King County, water purveyors, and the Washington State Department of Ecology.

Based on direction from the groundwater protection committee, King County proposes a water resources evaluation, policy and plan implementation services, and education and outreach to help protect this groundwater in the Issaquah Creek Valley Groundwater Management Area.

## I. WATER RESOURCES EVALUATION

### PRIORITIES AND OBJECTIVES

The Issaquah Creek Valley Groundwater Protection Committee identified the following as some of the most important groundwater data issues:

- Characterize area geology/hydrogeology.
- Assess possible interactions among different aquifers, such as across the "gap" between the upper and lower Issaquah Creek Basins, and between surface water and groundwater.

- Update, link, validate, and extend separate previous groundwater models already developed for purveyors.
- Estimate numbers of exempt wells and their impact.
- Develop updated CARA maps.

A major limitation with the existing data is its fragmentation – data that has been developed for one purveyor has generally not been available to others. A second constraint is that data have been compiled mostly in limited areas, such as in the main Issaquah Valley where the largest water supply wells are located. DNRP will compile groundwater/geologic data from previous studies, including modeling studies. While it will ultimately be valuable to gather new data through monitoring, and to develop new groundwater models, such efforts will be delayed until later years.

The compilation will include use of three-dimensional mapping techniques developed by the University of Washington research group GeoMapNW. It will also include use of data from purveyors, GeoMapNW, and the Washington State Department of Ecology to estimate numbers and distribution of, and consumption by, exempt wells and other (permitted) groundwater users. The existing groundwater models will be assessed against new data and understandings in order to develop combined and more comprehensive model applications. Finally, all the data will be made available to the public via technical Web pages on the King County Web site.

### **EXISTING SOURCES OF GROUNDWATER DATA**

There are a number of existing sources of groundwater data for the GWMA:

- The Area Characterization work for the Issaquah Creek Valley Groundwater Management Plan provides the overall basis of the hydrogeology of the GWMA, although the data for variable conditions (water levels and water quality) are not current.
- Ambient groundwater monitoring by DNRP has updated the water quality and water level data for many of the wells covered by the management plan, but there are many other wells that might not be included in this update.
- A limited number of hydrogeologic studies have been conducted in the GWMA, mainly for purveyors such as the Northeast Sammamish Sewer and Water District. Hydrogeologic wellhead protection plans have been developed for the Northeast Sammamish Sewer and Water District as well as for other purveyors, although it is uncertain how many of these plans were based on recently acquired information. The large systems (City of Issaquah, and Northeast Sammamish Sewer and Water District) have electronic data compilation systems that record flows and water levels at frequent intervals. A solicitation to the purveyors may provide some new reports on the hydrogeology of the GWMA.
- Groundwater flow models have been developed for the City of Issaquah (Golder Associates, 1997) and for the the Sammamish Plateau Water and Sewer District (CDM consultants). Newer data since the models were developed will allow the existing models to be reassessed and validated.
- The Issaquah Highlands development has had a number of monitoring wells installed to assure that groundwater impacts are minimized. Recent slope stability problems have required reassessment of some of the parameters or analyses done for this existing development.
- The Washington State Department of Ecology has made its well log data available via the Internet, a capability that was not possible at the time of the previous studies. Other data sets are also available, including topographic mapping using LiDAR.

These data are not comprehensive or completely up to date. More significantly, the data are fragmented and have not been assessed in their totality. While it would be valuable to collect new data in order to address the priorities listed above and meet the stated objectives, it appears more important to first compile and assess the existing data.

### **PROPOSED SERVICES**

To address the Issaquah Creek Valley Groundwater Protection Committee's data priorities, King County proposes that the committee invest in a three-year water resources evaluation for the groundwater management area ("study area"). This evaluation would ultimately provide data to inform decision-makers about the impact of land-use changes, water withdrawals, and climate change on groundwater supplies within the study area. This data set could

be used to help develop a long-term monitoring strategy for groundwater in the area and identify future needs for modeling.

To deal with the GWMA's disparate groundwater issues, it is necessary to re-evaluate all previous data in a critical way, using new methodologies where applicable. DNRP has the advantage, as does the University of Washington, of being an independent technical agency without regulatory threat to users. As such, DNRP can bridge the various authorities and data sources.

By first compiling data from the multiple sources into a single database location, DNRP will be able to reassess new approaches for the issues discussed above. The existing groundwater models can be validated using the newer data and methods, such as LiDAR mapping, that were not available when the models were initially developed. Data for the upper Issaquah Creek basin can be used to see what sort of groundwater flow regime may exist through the "Gap," and allow new boundary conditions to be applied to models in the main Issaquah valley.

DNRP will contract with the University of Washington research group GeoMapNW (formerly the Seattle-Area Geologic Mapping Project) to create three-dimensional (surface and subsurface) geologic mappings to characterize the mapping area's hydrogeology. This study provides the basis for eventual new groundwater modeling within the study area and can also be used to develop new susceptibility maps for CARA.

Because of limitations in funding, GeoMapNW will focus on updating the geologic data in an area south of the City of Issaquah including the "Gap" and upper basin of Issaquah Creek. Mapping of the other areas will be left for subsequent years. Because of the costs involved and the large areas of the GWMA without previous studies, it is necessary to break out these mapping efforts over several years. If additional partners or funding sources can be developed, the mapping effort will be accelerated and the geographic area extended. DNRP will work with the University of Washington to further prioritize and schedule their efforts.

Other sources of data compiled in the first year of the water resources evaluation (2005) will be used to develop an approach to estimate the number of exempt wells in the GWMA and to estimate their impact on the groundwater resources. This approach will be applied in the second year (2006). Similar estimates will be conducted on the larger, permitted groundwater withdrawals in 2007.

All the data that is developed in this water resources evaluation will be made available to the public via Web pages on the King County Web site. This will allow purveyors, members of the consulting community, and the interested public to utilize the data as it becomes available.

### THREE-DIMENSIONAL HYDROGEOLOGIC MAPPING

This effort will be contracted to GeoMapNW at the University of Washington (formerly the Seattle-Area Geologic Mapping Project); DNRP will provide project management and oversight. Only a portion of the Issaquah Creek Valley Groundwater Management Area will be mapped – it is anticipated that the mapping area will involve an area south of the City of Issaquah including the "Gap" and upper basin of Issaquah Creek. The three main tasks required to complete the mapping are described below.

#### Task 1: Compile Data

Compile existing boring data for the mapping area.

#### Task 2: Enter Data

Enter data for the mapping area into a georeferenced database.

#### Task 3: Make Estimations

Estimate hydrogeologic data and susceptibility factors for the mapping area.

## ISSAQUAH CREEK VALLEY GROUNDWATER DATA WEB PAGES

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The three main tasks required to complete the Web pages are described below.

### Task 1: Compile Data (2005)

Compile existing data for the Issaquah Creek Valley Groundwater Management Area from all available sources – purveyors, the Washington State Department of Health, the Washington State Department of Ecology, and others. Input the data into a georeferenced database.

### Task 2: Develop the Web Site (2005)

Develop GWMA groundwater data Web pages on the King County Web site, which will provide public access to data and other information about the water resources evaluation.

### Task 3: Update the Web Site (2006, 2007)

Update the Web pages when new information becomes available.

## EXEMPT WELL IMPACT ASSESSMENT

The three main tasks required to complete the well assessment are described below.

### Task 1: Develop Data and Approach (2005)

Pilot subareas for the assessment that are deemed to have the greatest informational value will be identified by King County staff and approved by the PMT. After compiling data from purveyors, the state departments of Ecology and Health, and earlier-developed data from GeoMapNW, the numbers of exempt wells in pilot subareas will be calculated. Data for each subarea will include the following (at a minimum):

- historic numbers of exempt wells installed, on an annual basis
- sizes of systems (number of connections) and consumption rates, both exempt and permitted
- numbers/locations of users on systems
- total number of residences
- residences with no identified water supply.

Field surveys may be necessary to validate this approach.

Data will be organized via GIS, using King County GIS coverages, to estimate the total number of developed residential parcels.

### Task 2: Apply Approach for Exempt Wells (2006)

Apply methods developed in Task 1 to additional representative subareas, chosen on availability of data (e.g., billing lists) and results of pilot applications. Extrapolate to entire basins.

### Task 3: Apply Similar Approach for Larger (Permitted) Wells (2007)

Data developed will allow estimation of actual consumption of larger Group B systems. Data from metered Group A systems, and users of irrigation, industrial, and agricultural water supplies will be included in this process.

## GROUNDWATER MODEL VALIDATION, COMPARISON, AND EXTENSION

The two existing groundwater models (City of Issaquah, and Northeast Sammamish Sewer and Water District) will be assessed against newer data and hydrogeologic understanding. The three main tasks required to complete the modeling are described below.

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**Task 1: Compile Data and Conduct Initial Model Assessment (2005)**

- Obtain and assess information about existing models. Data and concepts for the models will be compiled as part of the overall data compilation.
- Compare results and assumptions against newer data. New information from the areas surrounding the existing model areas (for example Issaquah and Sammamish Plateau model areas), including LiDAR topography, will be reviewed to assess model assumptions.
- Investigate flow conditions in adjacent geographic areas into the existing models, including along the Issaquah Creek “gap.”

**Task 2: Validate Models and Planning (2006)**

The data and concepts for the models will be pared against actual data. Validation runs of the models will probably be required. Because models have proprietary components, additional consultant costs may be incurred as part of this task.

**Task 3: Develop Plans for Further Modeling and Monitoring (2007)**

Based on the results of Task 2, a plan will be developed for additional modeling in subsequent years. According to the data gaps that will (undoubtedly) be found, a monitoring plan will be prepared to fill in the necessary information.

**WATER RESOURCES EVALUATION DELIVERABLES**

**Table 1. Water Resources Evaluation Proposed Deliverables by Year**

| Year | Deliverables  |
|------|---|
| 2005 | <ul style="list-style-type: none"> <li>• Compilation report for groundwater data from previous studies, including assessment of existing models</li> <li>• Initiation of geologic mapping (3-D database)</li> <li>• GWMA groundwater data Web pages</li> <li>• Approach to exempt well questions</li> </ul>   |
| 2006 | <ul style="list-style-type: none"> <li>• Continuation of geologic mapping</li> <li>• Report of application of exempt well approach, and estimates of numbers and impacts</li> <li>• Validation report for existing groundwater models, and plan for combination and extension</li> </ul>  |
| 2007 | <ul style="list-style-type: none"> <li>• 3-D geologic database of North and East Fork basins (including the Issaquah Highlands area) and the Sammamish Plateau to allow update of Sammamish Plateau models and allow City of Sammamish CARA development</li> <li>• Estimation of impacts from larger (permitted) withdrawals</li> <li>• Modeling and monitoring plan</li> </ul> |

**WATER RESOURCES EVALUATION ESTIMATED COSTS**

The total estimated cost for the Water Resources Evaluation is \$159,390 over three years.

**Table 2. Water Resources Evaluation Estimated Costs by Work Item**

| Work Item   | Labor (FTE)* | Material, Lab, or Consultant Costs | Total Cost          |
|---|--------------|------------------------------------|---------------------|
| Geologic Mapping  | 0.10         | \$68,390                           | \$82,390            |
| Groundwater Data Web Pages                              | 0.16         | ----                               | \$22,400            |
| Exempt Wells Impact Assessment                          | 0.15         | ----                               | \$21,000            |
| Groundwater Model Validation, Comparison, and Extension | 0.24         | ----                               | \$33,600            |
| <b>TOTAL</b>  | <b>0.65</b>  | <b>\$68,390</b>                    | <b>\$159,390.00</b> |

\*Labor costs are based on \$140,000 per FTE per year; labor costs may vary.

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Table 3. Water Resources Evaluation Estimated Costs by Year

| Year | Work Item/Task  | Labor (FTE)* | Material, Lab, or Consultant Costs | Total Cost         |
|------|---|--------------|------------------------------------|--------------------|
| 2005 | Geologic mapping – upper Issaquah Creek valley                  | 0.05         | \$45,130                           | \$52,130           |
| 2005 | Compilation of data; initial Web pages                          | 0.10         | ----                               | \$14,000           |
| 2005 | Exempt well approach  | 0.05         | ----                               | \$7,000            |
|      | <b>2005 Total</b>   | <b>0.20</b>  | <b>\$45,130</b>                    | <b>\$73,130.00</b> |
| 2006 | Geologic mapping – North and East Forks, East Sammamish Plateau | 0.0          | \$8,130                            | \$8,130            |
| 2006 | Web pages update and maintenance                                | 0.03         | ----                               | \$4,200            |
| 2006 | Application of exempt well approach                             | 0.10         | ----                               | \$14,000           |
| 2006 | Validation of existing model                                    | 0.12         | ----                               | \$16,800           |
|      | <b>2006 Total</b>   | <b>0.25</b>  | <b>\$8,130</b>                     | <b>\$43,130.00</b> |
| 2007 | Geologic mapping – Lower Issaquah Basin                         | 0.05         | \$15,130                           | \$22,130           |
| 2007 | Web pages update and maintenance                                | 0.03         | ----                               | \$4,200            |
| 2007 | Development of modeling/monitoring plans                        | 0.12         | ----                               | \$16,800           |
|      | <b>2007 Total</b>   | <b>0.20</b>  | <b>\$15,130</b>                    | <b>\$43,130.00</b> |
|      | <b>TOTAL</b>  | <b>0.65</b>  | <b>\$68,390</b>                    | <b>\$159,390</b>   |

\*Labor costs are based on \$140,000 per FTE per year; labor costs may vary.



Total ICV Groundwater Program three-year financial overview

**ICV Groundwater ILA Services Budget**

| Year:                                      | 2005               | 2006               | 2007               | annual      |                      |
|--|--------------------|--------------------|--------------------|-------------|----------------------|
| <b>Water Resources Evaluation</b>          |                    |                    |                    | <b>FTE</b>  |                      |
| Geologic Mapping                           | \$52,130           | \$8,130            | \$22,130           | 0.05        | (.0 in '06)          |
| Web Pages                                  | \$14,000           | \$4,200            | \$4,200            | 0.1         | (.03 in '06, '07)    |
| Exempt Wells Impact Assessment             | \$7,000            | \$14,000           | \$0                | 0.05        | (.10 in '06) plus UW |
| Model Validation                           | \$0                | \$16,800           | \$16,800           | 0.12        |                      |
| <b>Water Resources Evaluation subtotal</b> | <b>\$73,130.00</b> | <b>\$43,130.00</b> | <b>\$43,130.00</b> | <b>0.32</b> |                      |
| <b>Policy and Plan Implementation</b>      |                    |                    |                    |             |                      |
| GWPC & ILA Management                      | \$25,435           | \$25,435           | \$25,435           | 0.15        |                      |
| Policy Work Group                          | \$25,435           | \$25,435           | \$25,435           | 0.15        |                      |
| <b>Policy/Plan subtotal</b>                | <b>\$50,870.00</b> | <b>\$50,870.00</b> | <b>\$50,870.00</b> | <b>0.3</b>  |                      |
| <b>Education and Outreach</b>              |                    |                    |                    |             |                      |
| Public Awareness                           | \$10,000           | \$10,000           | \$10,000           | 0.06        |                      |
| Natural Yard Care                          | \$6,000            | \$6,000            | \$6,000            | 0.04        |                      |
| <b>Education subtotal</b>                  | <b>\$16,000.00</b> | <b>\$16,000.00</b> | <b>\$16,000.00</b> | <b>0.1</b>  |                      |
| <b>Total ICV Program Budget</b>            | <b>\$140,000</b>   | <b>\$110,000</b>   | <b>\$110,000</b>   | <b>0.72</b> |                      |

**Project Cost Shares**

| Partner                                    | 2005 Cost Share Percentage | 2005 Estimated Cost (\$) | 2006 Cost Share Percentage | 2006 Estimated Cost (\$) | 2007 Cost Share Percentage | 2007 Estimated Cost (\$) | TOTAL ESTIMATED COST (\$) |
|--|----------------------------|--------------------------|----------------------------|--------------------------|----------------------------|--------------------------|---------------------------|
| King County                                | 36%                        | 50,000                   | 45%                        | 50,000                   | 45%                        | 50,000                   | 150,000                   |
| City of Sammamish                          | 7%                         | 10,000                   | 9%                         | 10,000                   | 9%                         | 10,000                   | 30,000                    |
| City of Issaquah                           | 36%                        | 50,000                   | 32%                        | 35,000                   | 32%                        | 35,000                   | 120,000                   |
| Sammamish Plateau Water and Sewer District | 21%                        | 30,000                   | 14%                        | 15,000                   | 14%                        | 15,000                   | 60,000                    |
| <b>Totals</b>                              | <b>100%</b>                | <b>140,000</b>           | <b>100%</b>                | <b>\$110,000</b>         | <b>100%</b>                | <b>\$110,000</b>         | <b>\$360,000</b>          |