



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

**REPORT OF EXAMINATION**  
*To Appropriate Public Waters of the State of Washington*

PRIORITY DATE	APPLICATION NO.	PERMIT NO.	CERTIFICATE NO.
July 21, 1994	S1-27521		

NAME
George and Ingrid Kanikis

ADDRESS/STREET	CITY/STATE	ZIP CODE
108 Pinneo Raod	Eastsound, WA	98245

**PUBLIC WATERS TO BE APPROPRIATED**

SOURCE
Three Ponds
TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND (cfs)	MAXIMUM GALLONS PER MINUTE (gpm)	MAXIMUM ACRE FEET PER YEAR (ac-ft/yr)
0.031		5.9

TYPE OF USE, PERIOD OF USE, QUANTITIES
Irrigation, during irrigation season, 5.9 acre feet per year

**LOCATION OF DIVERSION/WITHDRAWAL**

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
West pond diversion is located 696 ft East and 403 ft South of NW Corner of Section 10. East pond diversion is located 943 ft East and 504 ft South of NW Corner of Section 10. Future (Southwest) pond diversion to be located 557 ft East and 572 ft South of NW Corner of Section 10.
All within Township 36 North, Range 2 West, W. M. in San Juan County, Washington.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP	RANGE	WRIA	COUNTY
NW1/4 NW1/4	10	36N	2W	2	San Juan
PARCEL NUMBER					
261022004000					
261022003000					

**RECORDED PLATTED PROPERTY**

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

**LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED**

Attachment 1 shows the location of the authorized place of use and points of diversion  
Attachment 2 provides the legal description of the property on which water is to be used

**DESCRIPTION OF PROPOSED WORKS**

The Karnikis's irrigation system will consist of three ponds which will provide water to five acres located in the Westsound area of Orcas Island. Water will be diverted from the ponds through 1½ inch PVC to a pump house with jet pumps and a bladder pressure tank which distributes water to three spigots for handline irrigation. Irrigated crops will consist of two acres of nut trees, two acres of fig trees, ¾ acre of grape vines, and ¼ acre vegetable garden.

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**DEVELOPMENT SCHEDULE**

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BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	WATER PUT TO FULL USE BY THIS DATE
Already started	October 1, 2013	October 1, 2015

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**PROVISIONS**

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- An approved measuring device shall be installed and maintained in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173.
  - Water use data shall be recorded annually. Water use data shall be submitted via the Internet. To set up an Internet reporting account, access <https://fortress.wa.gov/ecy/wrx/wrx/Meteringx/>. If you do not have Internet access, data shall be maintained by the property owner and promptly submitted to Ecology upon request. Recording and retention of data by the water right holder are required to inform the water users about how much water is used, when the water is used and to assist users in efficient water management.
  - WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements".
  - Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.
- A certificate of water right will issue for only that quantity of water that has been diverted and applied to actual beneficial use. Such quantity applied to actual beneficial use shall not exceed the quantity specified in this report of exam and will be calculated based on the best information available to Ecology, including metering data and/or water duty analysis.
- A certificate of water right will not be issued until a final investigation is made.

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**FINDINGS OF FACT AND ORDER**

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Upon reviewing the investigator's report, I find all facts relevant and material to the subject application have been thoroughly investigated. Furthermore, I concur with the investigator that water is available from the sources in question, the purpose of use is beneficial, there will be no impairment of existing rights, and there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. S1-27521, subject to existing rights and the provisions listed above.

You have a right to appeal this ORDER. To appeal this you must:

- File your appeal with the Pollution Control Hearings Board within 30 days of the "date of receipt" of this document. Filing means actual receipt by the Board during regular office hours.

- Serve your appeal on the Department of Ecology within 30 days of the “date of receipt” of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). “Date of receipt” is defined at RCW 43.21B.001(2).

Be sure to do the following:

- Include a copy of this document that you are appealing with your Notice of Appeal.
- Serve and file your appeal in paper form; electronic copies are not accepted.

**1. To file your appeal with the Pollution Control Hearings Board**

Mail appeal to:

Deliver your appeal in person to:

The Pollution Control Hearings Board  
PO Box 40903  
Olympia, WA 98504-0903

OR

The Pollution Control Hearings Board  
4224 – 6th Ave SE Rowe Six, Bldg 2  
Lacey, WA 98503

**2. To serve your appeal on the Department of Ecology**

Mail appeal to:

Deliver your appeal in person to:

The Department of Ecology  
Appeals Coordinator  
P.O. Box 47608  
Olympia, WA 98504-7608

OR

The Department of Ecology  
Appeals Coordinator  
300 Desmond Dr SE  
Lacey, WA 98503

**3. And send a copy of your appeal to:**

Andrew B. Dunn, LG, LHG  
Department of Ecology  
Northwest Regional Office  
3190 160<sup>th</sup> Avenue SE  
Bellevue, WA 98008

*For additional information visit the Environmental Hearings Office Website: <http://www.eho.wa.gov>. To find laws and agency rules visit the Washington State Legislature Website: <http://www1.leg.wa.gov/CodeReviser>.*

Signed at Bellevue, Washington, this \_\_\_\_\_ day of \_\_\_\_\_, 2008.

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Andrew B. Dunn, LG, LHG  
Section Manager  
Northwest Regional Office  
Water Resources Program

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## INVESTIGATOR'S REPORT

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### **BACKGROUND**

#### **Description and Purpose of the Project**

George and Ingrid Karnikis water right application for domestic supply and irrigation was received on July 21, 1994, for 0.31 cfs. They thought one application would cover both surface water for irrigation and ground water for domestic use. Ground and surface water require separate applications, so when I performed the site exam on July 16, 2008, they indicated they will follow up with a ground water application for their domestic use.

The Karnikis's irrigation system consists of two ponds which will provide water to five acres located in the Westsound area of Orcas Island. Water will be diverted from the ponds through 1½ inch PVC to a pump house with jet pumps and a bladder pressure tank which distributes water to three spigots for handline irrigation. Irrigated crops will consist of two acres of nut trees; hazelnuts, English walnuts and chestnuts. In addition two acres of fig trees, ¾ acre of grape vines, and ¼ acre vegetable garden. There are also ten apple trees, four pear trees, three cherry trees, one apricot tree, one olive tree, and one mulberry tree on the property.

The ponds are not connected to a stream, either incoming or outgoing. Their water source is predominantly ground water; the water surface generally reflects the local water table. Some water is likely furnished by local surface water runoff in the rainy season.

#### **Legal Requirements for Application Processing**

Chapter 90.03 RCW authorize the appropriation of public water for beneficial use and describe the process for obtaining water rights. Laws governing the water right permitting process are contained in RCW 90.03.250 through 90.03.340.

The following legal requirements must be met prior to processing a water right application:

- **Public Notice**  
Public notice of the application was published in *The Journal of the San Juan Islands* on September 14 and September 21, 2005. There were no written protests during the statutory 30-day protest period.
- **State Environmental Policy Act (SEPA)**  
The subject water right application is categorically exempt under SEPA WAC 197-11-305 and WAC 197-11-800(4) because the instantaneous quantity is less than the one cubic foot per second threshold.

### **INVESTIGATION**

In considering this application, my investigation included, but was not limited to, research and/or review of:

- USGS Eastsound, Wash. 7.5 minute topographic map
- Department of Ecology (1975): Water Supply Bulletin No. 46, Geology and Water Resources of the San Juan Islands
- Geological Society of America Special Paper 221 (1988): The Late Cretaceous San Juan thrust system, San Juan Islands, Washington
- U. S. Geological Survey Water-Resources Investigations Report 02-4114 (2002): Estimates of Ground-Water Recharge from Precipitation to Glacial-Deposit and Bedrock Aquifers on Lopez, San Juan, Orcas, and Shaw Islands, San Juan County, Washington
- Washington State University, (1985 and 1992): State of Washington Irrigation Guide
- Wilkinson, Jennifer (2005): Nut Growers Guide: The Complete Handbook for Producers and Hobbyists
- Water well reports for Orcas Island
- Notes and GPS data from my site visit on July 16, 2008
- Records of existing water rights in the vicinity

#### **Geographic Setting of the Place of Use and Point of Withdrawal**

The Westsound area is located on the south-central area of the west half of Orcas Island in the San Juan Islands. The property is located about ¾ mile east of West Sound and 2½ miles north of the Orcas ferry dock (Attachment 1). Generally the area consists of relatively flat low lying areas to the west, most notably Crow Valley, and hills to

the east. The most prominent features in the area are Mt. Woolard to the east with an elevation of 1192 feet, and Turtleback Mountain to the northwest with an elevation of 1519 feet. The mountains and hills are heavily forested and the lowlands have mostly been cleared as pastureland.

### **Geological Background of the San Juan Islands**

The San Juan Islands expose a thick and regionally extensive sequence of Late Cretaceous thrust faults and nappes, referred to as the San Juan thrust system. A nappe is a fold in which the axial plane is horizontal or sub-horizontal. Nappes of the thrust system contain a diverse group of rocks ranging from early Paleozoic to middle Cretaceous in age. Based on stratigraphy, metamorphism, and geochemistry, five terranes have been identified within and peripheral to the thrust system. A terrane is a fault-bounded package composed of one or more related rock units and characterized by a distinctive geologic history. These terranes were widely separated from each other until Late Jurassic. (1) the Haro terrane, an Upper Triassic arc-volcanic sequence; (2) the Turtleback terrane, a Paleozoic arc-plutonic and volcanic unit; (3) the Deadman Bay terrane, a Permian to Lower Jurassic oceanic-island sequence containing Tethyan-fusulinid limestones; (4) the Garrison terrane, a Permo-Triassic, high-pressure metamorphic unit; and (5) the Decatur terrane, a Middle to Upper Jurassic ophiolite and superimposed arc-volcanic sequence. Thick Jura-Cretaceous clastic units are linked to these older San Juan terranes and to Wrangellia, either as directly overlapping units or by the presence of clastic material derived from the terranes. The voluminous amount of clastic material in the overlying Jura-Cretaceous units suggests a large, sub aeri ally exposed source region, presumably part of continental America.

Wrangellia is a large allochthonous terrane that underlies most of Vancouver Island and parts of Alaska. On Vancouver Island it is characterized as a coherent Paleozoic to Lower Jurassic stratigraphic sequence, dominantly volcanic. The thrust system straddles the southeastern edge of the Wrangellia terrane of Vancouver Island, contains important information on the accretionary history of Wrangellia and other, related, far-traveled terranes.

The former topography of the San Juan Islands has been greatly modified by glaciation, but the erosion beneath the glaciers was no doubt guided to a considerable extent by valleys and by the fracture zones and fault zones that were already in existence. It is probable that a fault of considerable magnitude occupies each of the major channels.

### **Orcas Island Geohydrology**

Orcas Island has an aerial extent of about 57 square miles and consists of three distinct areas. A fault of small horizontal displacement follows East Sound and divides Orcas Island into two almost equal parts. From evidence occurring on the north shore of Orcas Island the fault is post-Cretaceous in age, and the eastern side moved southward and upward with respect to the western side. This has created the mountainous east and west portions of the island. The northern narrow area connecting the east and west portions north of East Sound and south of President Channel forms the third area. The northern area consists predominantly of unconsolidated Quaternary deposits. The east and west portions of the island are predominantly composed of bedrock with areas covered by Quaternary gravels of limited thickness. The Quaternary sediments are thin and discontinuous and bedrock commonly sticks up through them on the east and west portions and are not very conducive to providing ground water. Exceptions are Quaternary deposits in the West Beach area and some areas near West Sound. The other area of Quaternary deposits is along the shoreline on the southeast tip of the island.

The geology in the vicinity of the site consists of bedrock of the Deadman Bay terrane, of the San Juan Thrust System. Water Supply Bulletin No. 46 mapped rocks within this terrane as Orcas Formation, consisting of Permian to Lower Jurassic oceanic-island sequence containing limestone and ribbon chert of the Orcas Formation, and Deadman Bay basaltic volcanics. The bedrock in the immediate area of the applicant's property is overlain by a veneer of Pleistocene glacial deposits. Ponds and shallow wells are completed in the glacial deposits whereas deeper wells in the area are completed within the bedrock. Fractures within the bedrock supply water to the bedrock wells.

Mean annual precipitation in the area is from 34 to less than 36 inches per year. Recharge to the ground water system on Orcas Island occurs from percolation of precipitation. Recharge in the area varies from approximately 3 to less than 6.5 inch per year (USGS, 2002). Once infiltrated, ground water generally flows westerly toward West Sound.

### **Site Visit**

On July 16, 2008, Noel Philip and I met with the applicants who gave us a tour of the irrigation system. It is located approximately 2½ miles north of the Orcas Island ferry landing on the south side of Pinneo Road. We observed the ponds, diversion plumbing, pumps, pressure tank, faucets for handline irrigation and the irrigation area.

## Irrigation Water System Details

There are two man-made ponds on the property, one on the west five acre parcel and one on the adjacent east five acre parcel (Attachment 1). The west pond is approximately 75 feet by 105 feet with a maximum depth less than 10 feet in the center. 1½ inch PVC diverts water to a pump house with a ¾ HP Craftsman jet pump. Water is pumped into a 120 gallon Craftsman 40/60 psi bladder pressure tank which distributes water via 1½ inch PVC to three outside spigots for handline irrigation. The east pond is approximately 80 feet by 150 feet with a maximum depth less than 10 feet in the center. The east pond is not in use at this time but similar piping and pump will be installed. A third smaller pond may be constructed in the future to the southwest of the west pond. This pond will use the same pump as the west pond. The ¾ HP Craftsman jet pump is capable of pumping 7 gpm or 0.0156 cfs. When both pumps are installed the system will be capable of pumping a maximum instantaneous quantity of 0.031 cfs. At this time there is no water meter on the system.

## Other Water Rights in the Vicinity

The Department of Ecology Water Right Tracking System (WRTS) database was queried to determine the number of existing water rights within one-half mile of Karnikis' ponds. An arbitrarily, yet conservatively chosen area of one-half mile is used to define "close proximity". This value is justified experimentally based on current and historical pump test data that show negligible drawdown, and therefore unlikely impairment to wells or surface water diversions, induced by groundwater withdrawal from wells at a distance of 1000 feet in most cases. Since this is a surface water diversion the effect will be less than expected from a ground water withdrawal. Four ground water certificates were found to be located within this vicinity. The water rights are summarized in Table 1 below:

Water Right	Priority Date	Type	Qi (gpm)	Qa (afy)	Purpose of Use
G1-24480CWRIS	04/19/1984	Certificate	5	0.5	Single Domestic
G1-*07598CWRIS	04/30/1965	Certificate	10	3	Irrigation, Single Domestic
G1-*07718CWRIS	07/28/1965	Certificate	10	1	Single Domestic
G1-*06795CWRIS	06/21/1963	Certificate	25	40	Multiple Domestic

In addition to the water rights listed in Table 1, there are ten ground water claims and three surface water claims within the ½ mile radius. A water right claim is a statement of the beneficial use of water that occurred prior to the adoption of the water right codes and is not authorized by a state-issued permit or certificate. The Department of Ecology cannot verify the validity of these claims, as water right claims can only be confirmed in an adjudication by the Washington State Superior Court. Many of the claims represent use under the ground water exemption (RCW 90.44.050) for single domestic use.

Ecology's well log database shows fifty water wells within one-half mile of the Karnikis' ponds. Some of these belong to the certificated and claimed water rights mentioned above. The remainder fall under the ground water exemption.

## FINDINGS

Under state law the following four criteria must be met for an application to be approved:

- Water must be available
- There must be no impairment of existing rights
- The water use must be beneficial
- The water use must not be detrimental to the public interest

## **Water Availability**

There are no regulatory closures or restrictions affecting water availability on Orcas Island, therefore I find water is legally available for this appropriation. The ponds are not connected to a stream or other surface water source but are supplied by ground water with minor local surface water runoff. The ponds reflect the upper portion of the water table aquifer and will not impair local wells; therefore the instantaneous quantity of 0.31 cfs is physically available for appropriation.

The annual quantity of water available for appropriation was calculated using Crop Irrigation Requirement (CIR) data from the State of Washington Irrigation Guide (WAIG) 1985 and 1992. The CIR used was based on the Olga rain gage on Orcas Island. This gave inches of irrigation water needed above average rainfall observed for this location. However the CIR formula does not take into account the loss in conveyance from seepage, evaporation and

surface runoff. Consequently, Irrigation Efficiency percentages were used from Ecology Water Resources Guidance 1210. For handline sprinkler systems used on the Karnikis property, estimates for efficiency are assigned 75%. Adjusting the Crop Irrigation Requirement (CIR) by the efficiency of the irrigation system, the Total Irrigation Requirement (TIR) for the five acres would be approximately 5.9 acre-feet per year. The formula used to account for this is:

$$TIR = \# \text{ acres} \times CIR / CONV / EFF\%$$

Where:  $TIR = \text{total irrigation requirement in acre-feet per year}$

$\# \text{ acres} = \text{area irrigated in acres}$

$CIR = \text{crop irrigation requirement needed above precipitation}$

$CONV = \text{conversion factor to change units (12, inches to feet)}$

$EFF\% = \text{application efficiency of irrigation system}$

There is no CIR data available for nut trees or fig trees in the WAIG. Walnuts are considered the most thirsty nut tree and irrigation is essential for production of commercially viable nuts, even with mature trees. Peak water demand in a mature nut orchard occurs during kernel development and oil accumulation, but also during budding and flowering. These crops are considered fruits; therefore I used irrigation requirements for apple trees in the calculations.

Four acres of fruit trees (2 acres nut trees + 2 acres fig trees) require 4.9 acre-feet per year.

Three quarter acre of grapes require 0.7 acre-feet per year.

One quarter acre of vegetables require 0.3 acre-feet per year.

Total irrigation requirement for all crops:  $4.9 + 0.7 + 0.3 = 5.9$  acre-feet per year.

### **Impairment Considerations**

There are four ground water rights, ten ground water claims, three surface water claims and fifty water wells within one-half mile of Karnikis ponds. The diversions for this application are from ponds that are not connected to a stream or other surface water source. Therefore there will be no impact or impairment to other surface water rights. The ponds receive much of their water from ground water which reflects the upper portion of the water table aquifer. Any impact to the aquifer will be shallow and localized which will not impair any wells in the vicinity.

### **Beneficial Use**

Irrigation is considered to be beneficial under RCW 90.54.020(1).

### **Public Interest Considerations**

No potential for detriment to the public interest could be identified during the investigation of this application.

### **Consideration of Protests and Comments**

No protests were filed against this application.

## **RECOMMENDATIONS**

Based on the above investigation and findings, I recommend the request for a surface water permit be approved in the quantities and within the limitations listed below and subject to the provisions on page 2.

### **Purpose of Use and Authorized Quantities**

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial:

- 0.31 cfs (14 gpm)
- 5.9 acre-feet per year for irrigation



## Attachment 2

### Karnikis Legal Description's

That portion of the West 65 acres of the North half of the Northwest Quarter of Section 10, Township 36 North, Range 2 West, W.M., described as follows:

Beginning at a point on the North boundary of said Northwest Quarter a distance of 1148.25 feet East of the Northwest corner of said Northwest Quarter; thence South parallel to the West boundary of said Northwest Quarter a distance of 660 feet; thence West parallel to the North boundary of said Northwest Quarter a distance of 330 feet; thence North parallel to the West boundary thereof 660 feet to North boundary of said Northwest Quarter; thence East along said North boundary 330 feet to the point of beginning.

Except that portion thereof along the North boundary thereof lying with the County Road. Situate in San Juan County, Washington.

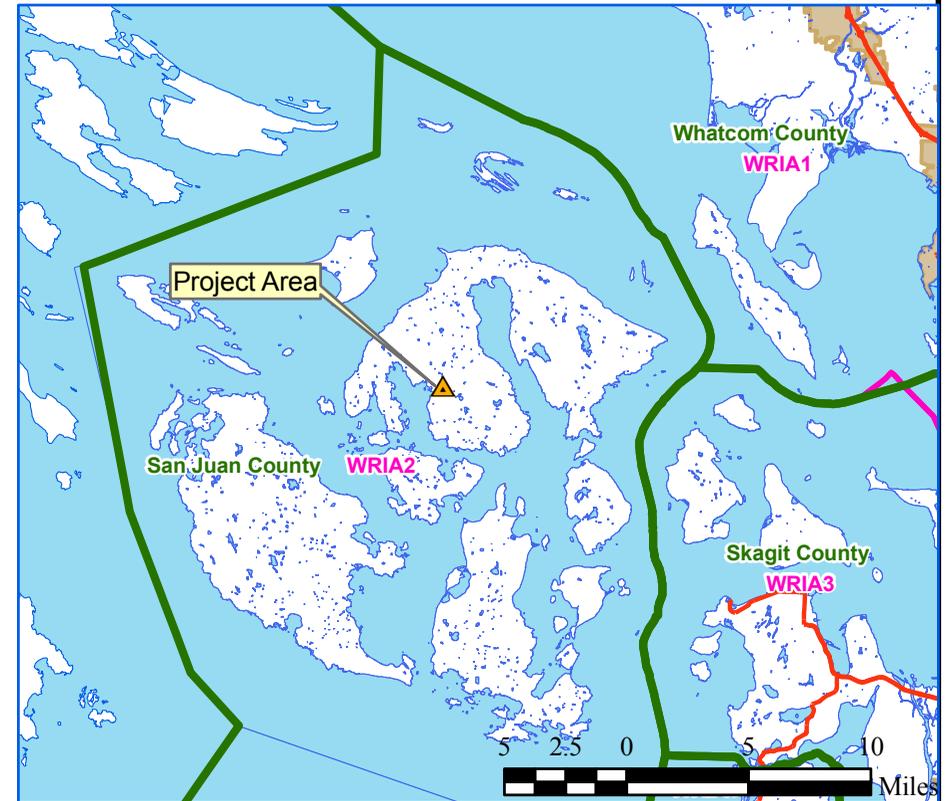
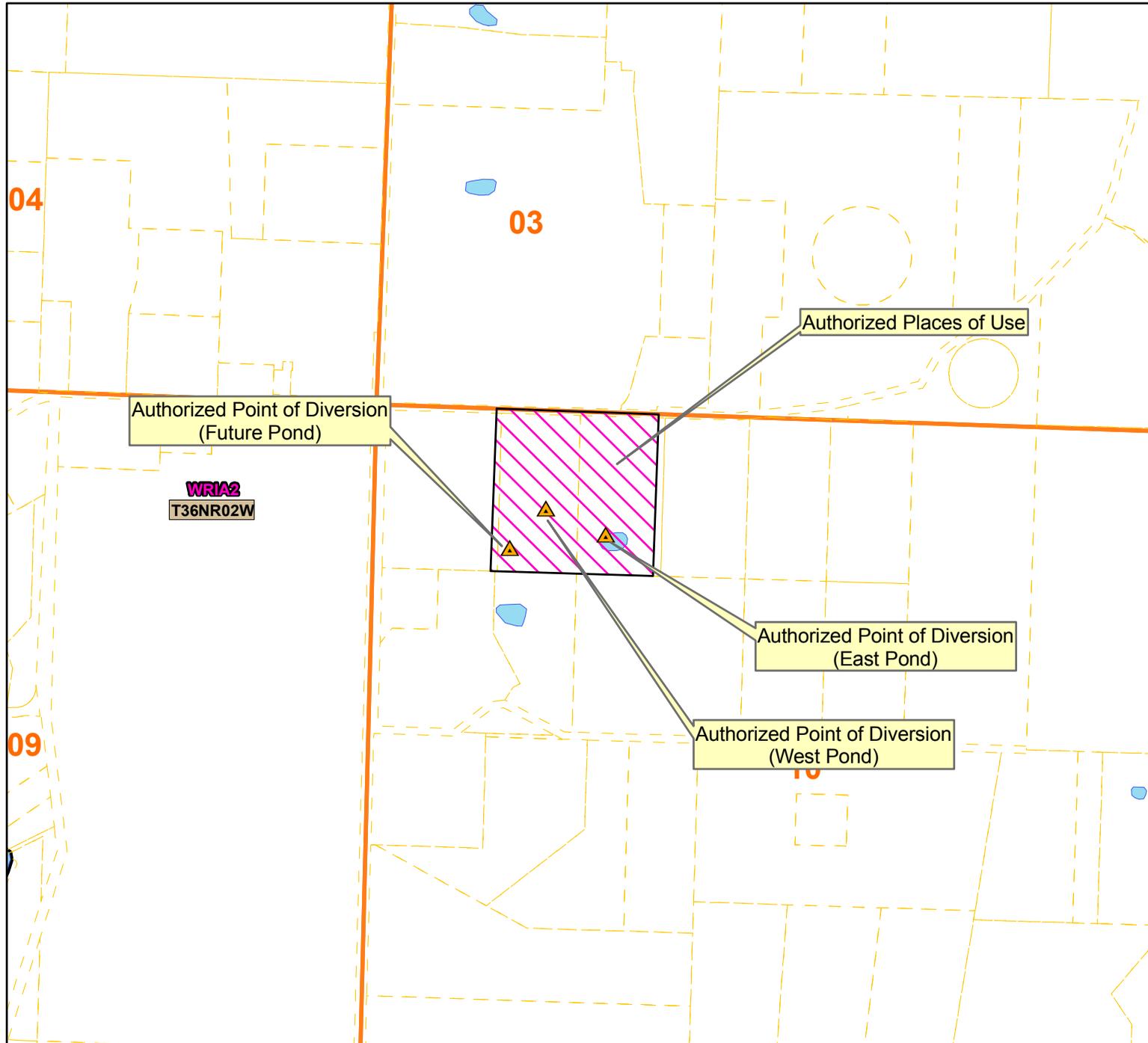
That portion of the west 65 acres of the north half of the northwest quarter of Section 10, Township 36 North, Range 2 West, W.M., described as follows:

Beginning at a point on the north boundary of said northwest quarter a distance of 818.25 feet east of the northwest corner thereof; thence south parallel to the west boundary of said northwest quarter 660 feet; thence west parallel to the north boundary of said northwest quarter 330 feet; thence north parallel to the west boundary of said northwest quarter 660 feet to the north boundary of said northwest quarter; thence east along said north boundary 330 feet to the point of beginning.

EXCEPT portion along the north boundary thereof lying within the County Road No. 45. Situate in San Juan County, Washington.



George & Ingrid Karnikis  
 Water Right Number S1-27521  
 Sec. 10, T 36N, R 02W. W.M.  
 WRIA 2 - San Juan County



**Legend**

- County
- WRIA
- cities
- Highways
- Local Roads
- Townships
- Sections
- Parcels
- Authorized Point of Diversion
- Authorized Place of Use

Place of use and point(s) of diversion/withdrawal are as defined on the cover sheet under the headings, 'LOCATION OF DIVERSION/WITHDRAWAL' and 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'

Attachment 1