File NR CS1-*05117C@1
WR Doc ID 5600909

State of Washington
DRAFT PROTESTED
REPORT OF EXAMINATION
FOR WATER RIGHT CHANGE

Changed Place of Use
Added Irrigated Acres

PRIORITY DATE	WATER RIGHT NUMBER
March 28, 1940	SWC 1384 [S1-*05117C]

MAILING ADDRESS	SITE ADDRESS (IF DIFFERENT)
ENFIELD FARMS INC 1064 BIRCH BAY LYNDEN ROAD LYNDEN WA 98264	

Total Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
0.67	CFS	86.3

Total withdrawals or diversions from all sources must not exceed the total quantity authorized for withdrawal or diversion listed above.

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Irrigation	0.67	0	CFS	86.3	0	04/15 - 10/1

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM ID	CONNECTIONS
81.3	179.7		

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
WHATCOM	BERTRAND CREEK	NOOKSACK RIVER	1-NOOKSACK

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
SD-1	400222437066	NA	40N	02E	22	SE SE	48.93785	-122.53474

Datum: NAD83/WGS84

Place of Use (See Attached Map)

PARCELS
400221456167, 400221522186, 400221469097, 400221460037, 400222334134, 400222206332, 400222136219, 400222015202, 400222021162, 400222210076, 400222065318, 400222077282, 400222200400, and 400227282462

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

Section 21, Township 40 North, Range 2 East

- S ½ NE ¼ SE ¼, Section 21, Township 40 North, Range 2 East W.M.; EXCEPT a tract beginning at the NE corner of the described property and running west 297 feet, thence south 110 feet, thence east 297 feet to the section line and thence north 110 feet to the point of beginning; AND EXCEPT a tract beginning at the NE corner of the described property thence south 230 feet to the true point of beginning, thence west 317 feet, thence south 206 feet, thence east 317 feet to the section line, thence north 206 feet to the true point of beginning.
- N ½ SE ¼ SE ¼, Section 21, Township 40 North, Range 2 East W.M.; EXCEPT the east 299.5 feet of the south 728 feet.
- S ½ SE ¼ SE ¼, Section 21, Township 40 North, Range 2 East W.M.; EXCEPT the east 299.5 feet; AND EXCEPT a tract beginning at the southeast corner of the section thence west 299.5 feet to the true point of beginning, thence 220.5 feet west, thence 520 feet north, thence 299.5 feet east, thence 520 feet south to the true point of beginning.

Section 22, Township 40 North, Range 2 East

- N ½ SW ¼, Section 22, Township 40 North, Range 2 East W.M.
- NW ¼ SE ¼, Section 22, Township 40 North, Range 2 East W.M.
- N ½ S ½ SW ¼ NW ¼, Section 22, Township 40 North, Range 2 East W.M.; EXCEPT south 182.26 feet of west 239 feet.
- S ½ S ½ SW ¼ NW ¼, Section 22, Township 40 North, Range 2 East W.M.; EXCEPT north 188 feet of west 463.41 feet.
- SW ¼ SE ¼, Section 22, Township 40 North, Range 2 East W.M.; EXCEPT 1 acre in the SE corner southerly of Bertrand Creek; ALSO EXCEPT a tract described as follows, beginning at the south quarter corner thence running east along section line 350 feet to the true point of beginning, thence north 208.7 feet, thence east 208.7 feet, thence south 208.7 feet, thence west along the section line 208.7 feet to the true point of beginning.
- SE ¼ SW ¼, Section 22, Township 40 North, Range 2 East W.M.; EXCEPT the west 100 feet of the north 310 feet; AND EXCEPT the west 400 feet of the south 300 feet; AND EXCEPT the east 427 feet of the south 371.25 feet.
- East 130 feet of the south 290 feet of the N ½ SW ¼ SW ¼, Section 22, Township 40 North, Range 2 East W.M.
- Beginning at the northwest corner of the SE ¼ NW ¼, thence north 44 feet thence east 1320 feet more or less to a point on the east line of the NE ¼ NW ¼ which lies 38 feet north of the northeast corner of the SE ¼ NW ¼ thence south 38 feet to the northeast corner of SE ¼ NW ¼ thence west 1320 feet more or less to the point of beginning.

Section 27, Township 40 North, Range 2 East

- Lot 1 Maberry Short Plat as recorded in book 3 short plats page 149 within the NW ¼ NE ¼, Section 27, Township 40 North, Range 2 East W.M.

ALL except roads.

Proposed Works

One surface water diversion from Bertrand Creek (SD-1). The irrigation system consists of 4 to 8-inch mainlines with 3 to 4-inch sub-mains serving approximately 20 irrigation zones covering a total of 261 irrigated acres. Two pumphouse facilities contain sand filters for particle removal and a meter for fertigation. Water is delivered to berries using drip irrigation. When crops are irrigated with travelling big gun sprinklers, the reels are connected to the mainlines with flexible hoses.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Started	April 1, 2015	December 31, 2019

Measurement of Water Use	
How often must water use be measured?	Weekly
How often must water use data be reported to Ecology?	Annually (Jan 31)
What volume should be reported?	Total Annual Volume
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm)

Provisions

Relationship to Other Water Rights
SWC 1384, SWC 4435, SWC 9177, GWC 1300, GWC 3986(C), G1-00502C, G1-20922C, G1-21213C, G1-21356C, and water right claim G1-030294CL are authorized for a combined total of 1,589.82 gpm and 293.4 af/yr (277.0 af/yr for the irrigation of 261 acres and 16.4 af/yr for industrial use) within the same place of use.

Measurements, Monitoring, Metering and Reporting
An approved measuring device must be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC, which describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

Recorded water use data shall be submitted via the Internet. To set up an Internet reporting account, contact the Bellingham Field Office. If you do not have Internet access, you can still submit hard copies by contacting the Bellingham Field Office for forms to submit your water use data.

Proof of Appropriation
The water right holder must file the notice of Proof of Appropriation of water (under which the superseding certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. Once Ecology has accepted the Proof of Appropriation form, the applicant shall retain the services of a Certified Water Rights Examiner (CWRE) to verify the extent of the perfected right and prepare the necessary documentation to allow Ecology to issue a water right certificate for this project. The certificate will reflect the extent of the project perfected within the limitations of this authorization. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions. Information on hiring a CWRE is available on Ecology's website at:
http://www.ecy.wa.gov/programs/wr/rights/cwrep.html or by calling the appropriate Ecology regional office.

Schedule and Inspections
Department of Ecology personnel, upon presentation of proper credentials, will have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

Findings of Facts
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 the water right is eligible for change and there will be no impairment of existing rights.

Therefore, I ORDER partial approval of Application No. CS1-*05117C subject to existing rights and the provisions specified above.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order.

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

- You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW Ste 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Signed at Bellevue, Washington, this _____ day of _____ 2014.

_____
Jerry Liszak, Acting Section Manager

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.

INVESTIGATOR'S REPORT

Water Right Control Number CS1-*05117C@1
Enfield Farms, Inc.

BACKGROUND

This report serves as the written findings of fact concerning Water Right Application Number CS1-*05117C@1.

Ten water right change applications were filed by Enfield Farms, Inc. (Enfield Farms) associated with their Home Fields operation. RH2 Engineering, Inc. (RH2) was chosen to process eight of these water right change applications (CG1-030294CL, CG1-*05902C, CG1-00502C@1, CG1-21356C, CG1-21213C@1, CG1-*02351C@1, CG1-20922C@1, and CS1-*05117C@1) through the cost reimbursement program. The remaining two change applications will be processed by the Department of Ecology (CS1-*17211C@1 and CS1-*09876C).

Out of the eight applications to be processed by RH2, only six of these applications request changes to points of withdrawal (CG1-030294CL, CG1-*05902C, CG1-00502C@1, CG1-21356C, CG1-21213C@1, and CG1-20922C@1). The two change applications to be processed by the Department of Ecology (CS1-*17211C@1 and CS1-*09876C) request to change the points of diversion from surface water to points of withdrawal from groundwater.

The remaining two applications to be processed by RH2 are CG1-*02351C@1 (which seeks to add industrial as a purpose of use, change the place of use, and increase the number of irrigated acres) and CS1-*05117C@1 (which seeks to change the place of use and increase the number of irrigated acres.)

The original and proposed place of use under these ten water rights are located within Sections 21, 22, and 27, Township 40 North, Range 2 East, W.M., in Whatcom County, Washington, Water Resources Inventory Area (WRIA) 1.

These changes are intended to give Enfield Farms increased flexibility and water right coverage with respect to operation of their business on these fields without increasing the quantity of water actually used.

Under these ten water right changes, Enfield Farms wants to be able to irrigate up to 261 acres. It also wants to be able to use some of the water in their processing plant for industrial purposes. On nine of the change applications (excluding CS1-*05117C@1), they have requested to include most existing and all future wells as points of withdrawal.

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EXISTING Water Right Attributes

Water Right Owner:	**Enfield Farms, Inc.**
Priority Date:	3/28/1940
Place of Use	W ½ of SE ¼, except 17 acres in the SE corner of said tract, Sec. 22, Twp. 40 N., Rge. 2 E.W.M.

County	Waterbody	Tributary To	WRIA
Whatcom	Bertrand Creek	Nooksack River	1-Nooksack

Purpose	Rate	Unit	Af/yr	Begin Season	End Season
Irrigation of 62 acres	0.67	CFS	Not Specified	Not Specified	

Source Name	Parcel	Well Tag	Twp	Rng	Sec	QQ Q	Latitude	Longitude
SD-1	400222437066	NA	40N	02E	22	SE SE	48.93785	-122.53474

CFS = Cubic feet per second; Af/yr = Acre-feet per year; Sec. = Section; QQ Q = Quarter-quarter of a section; WRIA = Water Resource Inventory Area; W.M. = Willamette Meridian; Datum in NAD83/WGS84.

DRAFT

REQUESTED Water Right Attributes

Applicant Name:	**Enfield Farms, Inc.**
Date of Application:	1/7/2013
Place of Use	**Section 21, Township 40 North, Range 2 East** • S ½ NE ¼ SE ¼, Section 21, Township 40 North, Range 2 East W.M.; EXCEPT a tract beginning at the NE corner of the described property and running west 297 feet, thence south 110 feet, thence east 297 feet to the section line and thence north 110 feet to the point of beginning; AND EXCEPT a tract beginning at the NE corner of the described property thence south 230 feet to the true point of beginning, thence west 317 feet, thence south 206 feet, thence east 317 feet to the section line, thence north 206 feet to the true point of beginning. • N ½ SE ¼ SE ¼, Section 21, Township 40 North, Range 2 East W.M.; EXCEPT the east 299.5 feet of the south 728 feet. • S ½ SE ¼ SE ¼, Section 21, Township 40 North, Range 2 East W.M.; EXCEPT the east 299.5 feet; AND EXCEPT a tract beginning at the southeast corner of the section thence west 299.5 feet to the true point of beginning, thence 220.5 feet west, thence 520 feet north, thence 299.5 feet east, thence 520 feet south to the true point of beginning. **Section 22, Township 40 North, Range 2 East** • N ½ SW ¼, Section 22, Township 40 North, Range 2 East W.M. • NW ¼ SE ¼, Section 22, Township 40 North, Range 2 East W.M. • N ½ S ½ SW ¼ NW ¼, Section 22, Township 40 North, Range 2 East W.M.; EXCEPT south 182.26 feet of west 239 feet. • S ½ S ½ SW ¼ NW ¼, Section 22, Township 40 North, Range 2 East W.M.; EXCEPT north 188 feet of west 463.41 feet. • SW ¼ SE ¼, Section 22, Township 40 North, Range 2 East W.M.; EXCEPT 1 acre in the SE corner southerly of Bertrand Creek; ALSO EXCEPT a tract described as follows, beginning at the south quarter corner thence running east along section line 350 feet to the true point of beginning, thence north 208.7 feet, thence east 208.7 feet, thence south 208.7 feet, thence west along the section line 208.7 feet to the true point of beginning. • SE ¼ SW ¼, Section 22, Township 40 North, Range 2 East W.M.; EXCEPT the west 100 feet of the north 310 feet; AND EXCEPT the west 400 feet of the south 300 feet; AND EXCEPT the east 427 feet of the south 371.25 feet. • East 130 feet of the south 290 feet of the N ½ SW ¼ SW ¼, Section 22, Township 40 North, Range 2 East W.M.; • Beginning at the northwest corner of the SE ¼ NW ¼, thence north 44 feet thence east 1320 feet more or less to a point on the east line of the NE ¼ NW ¼ which lies 38 feet north of the northeast corner of the SE ¼ NW ¼ thence south 38 feet to the northeast corner of SE ¼ NW ¼ thence west 1320 feet more or less to the point of beginning. **Section 27, Township 40 North, Range 2 East** • Lot 1 Maberry Short Plat as recorded in book 3 short plats page 149 within the NW ¼ NE ¼, Section 27, Township 40 North, Range 2 East W.M. All except roads.

County	Waterbody	Tributary To	WRIA
Whatcom	Bertrand Creek	Nooksack River	1-Nooksack

Purpose	Rate	Unit	Af/yr	Begin Season	End Season
Irrigation	0.67	CFS	124.3	April 15	October 1

Source Name	Parcel	Well Tag	Twp	Rng	Sec	QQ Q	Latitude	Longitude
SD-1	400222437066	NA	40N	02E	22	SE SE	48.93785	-122.53474

CFS = Cubic feet per second; Af/yr = Acre-feet per year; Sec. = Section; QQ Q = Quarter-quarter of a section; WRIA = Water Resource Inventory Area; W.M. = Willamette Meridian; Datum in NAD83/WGS84; NA = Not Available.

Legal Requirements for Requested Change

The following is a list of requirements that must be met prior to authorizing the proposed change in the place of use and the number of irrigated acres.

Public Notice

RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the county or counties where the water is to be stored, diverted and used. Notice of this application was published in *THE BELLINGHAM HERALD* on May 13 and May 20, 2013.

Consultation with the Department of Fish and Wildlife

The Department must give notice to the Department of Fish and Wildlife (WDFW) of applications to divert, withdraw or store water. On September 10, 2013, Andrew B. Dunn of RH2 Engineering notified Mr. Steven Boessow of WDFW of the 8 pending water right change applications related to the Enfield Farms Home Fields properties. Mr. Boessow was provided with the applications and supporting documents. On March 10, 2014 a summary of the proposed decision was provided to Mr. Boessow and on April 2, 2014, he provided a letter stating that WDFW does not oppose the approval of this and the related change applications related to the Enfield Home Fields properties. The letter emphasizes the importance of fish in Bertrand Creek and in the Nooksack River downstream and acknowledges that these changes will not increase the quantity of water being used nor will it change the impacts on stream flows and fish that result from this irrigation. The letter also expresses support for the transparency to the water use by requiring metering and reflecting the actual acreage irrigated.

Consultation with the Lummi Nation and Nooksack Tribe

The Lummi Nation and Nooksack Tribe were notified of the water right change applications by Ecology. The Lummi Indian Business Council (LIBC) sent a letter dated January 29, 2013. In that letter the LIBC identified that it was concerned about the existing and future potential impacts on instream flows in Bertrand Creek. It indicated that all withdrawals within WRIA-1 have the capacity to adversely impact the rights of the Lummi Nation. The Nooksack Tribe did not provide comments.

State Environmental Policy Act (SEPA)

A water right application is subject to a SEPA threshold determination (i.e., an evaluation of whether there are likely to be significant adverse environmental impacts) if any one of the following conditions are met.

(a) It is a surface water right application for more than 1 cubic foot per second, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cubic feet per second, so long as that irrigation project will not receive public subsidies;
(b) It is a groundwater right application for more than 2,250 gallons per minute;
(c) It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
(d) It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);
(e) It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

Because this application does not meet any of these conditions, it is categorically exempt from SEPA and a threshold determination is not required.

Water Resources Statutes and Case Law

RCW 90.03.380(1) states that a water right that has been put to beneficial use may be changed. The point of diversion, place of use, and purpose of use may be changed if it would not result in harm or injury to other water rights.

The Washington Supreme Court has held that Ecology, when processing an application for change to a water right, is required to make a tentative determination of extent and validity of the claim or right. This is necessary to establish whether the claim or right is eligible for change. *R.D. Merrill v. PCHB* and *Okanogan Wilderness League v. Town of Twisp.*

RCW 90.03.380(1) states that the acreage irrigated under a water right may be enlarged if the annual consumptive quantity is not increased. The annual consumptive quantity is the average of the highest two years, of the most recent five-year period of ongoing beneficial use of the water right.

Cost Reimbursement Processing

This application is being processed under a Cost Reimbursement Agreement between the applicant and the Department of Ecology. The applicant selected RH2 Engineering, Inc. to process its applications on Ecology's behalf. These change applications are being processed without requiring processing of previously filed water right change applications, as allowed under RCW 90.03.265, since the transfers will not diminish the water available to earlier pending applicants for changes or transfers from the same source of supply.

INVESTIGATION

Site Visit/Site Description

On September 18, 2013, Mr. Andrew B. Dunn from RH2 and Mr. Tom Buroker from Ecology met with Mr. Andy Enfield and Mr. Dan Lambert from Enfield Farms and Mr. Chuck Lindsay their consultant from Associated Earth Sciences, Inc. (AESI) to perform the site visit. Before traveling to the proposed place of use, we met at their office and discussed general and specific farm operations and the proposed transfers.

Mr. Enfield confirmed that over the past two irrigation seasons (2012 and 2013), which occurred after submittal of the change application and associated supporting documentation prepared by AESI (2013), only raspberries and blueberries have been grown on the Home Fields property. Raspberries had been recently removed from a number of the fields and wheat had been planted as part of the farm's planned crop rotation. At the time of the site visit, the wheat had sprouted and was just starting to emerge from the soil.

With respect to crop rotation, Mr. Enfield indicated that raspberries are often grown on a field for 5 to 10 years before being removed. After removal, the fields are usually planted with either potatoes or wheat for one to three seasons before being replanted in raspberries. In the past, Enfield Farms has also planted strawberries in the rotation, but it has not done that since the mid-1990s. Enfield Farms also grows blueberries on this farm and these plants can remain commercially viable for as long as 60 years. When wheat is grown, it does not need to be irrigated. When potatoes are grown, they are irrigated with traveling big gun sprinklers. When strawberries were grown, they were irrigated with traveling big gun, but they might use drip tape if planted in the future. Blueberries are irrigated primarily with hanging drip tape, but there are a few acres irrigated with overhead impact sprinklers.

Mr. Enfield provided RH2 with a map showing the pumphouses, mainlines, lines feeding the drip systems, and the approximately 20 irrigation zones on the property. Piping on the farm ranges from 8-inch 3-inch diameter. In addition to the pumps associated with the 14 points of withdrawal/diversion, there are also 4 pumphouses that contain sand filters for particle removal, plumbing to allow for introduction of fertilizer into the irrigation system (fertigation), and some contain water flow meters. Mr. Enfield also provided RH2 a map showing the layout of the industrial packing plant area.

All of the points of diversion/withdrawal that serve water to this farm can be turned on or off to meet the irrigation need and demand. The irrigation season is weather dependent, but is typically from May through September, although this also depends on water right limitations. However, they have started irrigation in April and continued into October when weather conditions have dictated. Enfield Farms utilizes staff with soil moisture probes to determine when each field needs to be irrigated. Enfield Farms also employs a full-time irrigation specialist and a full-time agronomist that visit each acre being irrigated approximately twice a week during the irrigation season to check soil moisture and to look for system leaks. All irrigation is demand-based as opposed to simply being on a regular schedule. No irrigation was occurring during the site visit due to recent rains.

For all raspberries on this property, water is delivered through drip irrigation. The placement of the drip tape depends on which cultivar of raspberry is being grown in a particular field. For fields with the Meeker cultivar, T-tape is buried and drip irrigation is provided subsurface. This irrigation method is easier to install and more protected than hanging drip tape. However, for fields with the newer Wakefield cultivar, hanging drip tape is utilized because the roots are so aggressive they will infiltrate into and clog the drip system if it is buried. Enfield Farms is moving toward planting all fields with Wakefield raspberries and so hanging drip tape will be the water delivery method in the near future.

One older, small, field of blueberries is irrigated with fixed overhead impact sprinklers. This field had turf between the rows that would also utilize the provided irrigation water. The remaining blueberry fields were irrigated with hanging drip line.

Each proposed well, infiltration trench, and surface water diversion was visited to confirm the location and establish GPS coordinates. Depth to water measurements were taken at all wells during the site visit

using a water level probe. The measurements obtained are discussed in the hydrogeology section of this investigation. Rows are typically spaced at 10-foot centers to allow for mechanical harvesting.

One of the two processing plants was toured to better understand water use within the facilities. Water within these facilities is used exclusively for washdown within the plant with water from the city of Lynden used for all berry-contact and domestic water. Enfield Farms operates one seasonal processing plant and one year round plant. Most of the processing plant water comes from IW-4, IW-5, IW-6, and HW-5. Originally, the plant operated under the groundwater permit exemption for industrial use but, over the years, water use has grown beyond the 5,000 gpd maximum. Washdown water from the plants is routed to a holding tank and then land applied to a neighboring property. A septic system is used for disposal of the domestic portion of the wastewater.

Homes located within the proposed place of use have their own private wells, some of which appear to be identified through water right claims and some of which are permit-exempt for residential use.

History of Water Use

Information on the history of water use under this water right was pieced together from a variety of sources including two affidavits, pump curves, aerial photos, Landsat imagery, irrigation guides, the site visit, and weather records.

Since the place of use for SWC 1384 is completely contained within the place of use for GWC 1300, and both water rights are identified as being for irrigation, the discussion in this section will consider both water rights so that the water use is not double-counted.

Affidavits

Two affidavits relating to knowledge of farming and irrigation practices on the Home Fields under water right GWC 1300 and SWC 1384 were provided with the change application. One affidavit, by Mr. Marvin Enfield, was signed and notarized on December 27, 2012. In that affidavit, Mr. Enfield indicates that he has been familiar with the farming operations on the property associated with this water right since the mid to late 1960's. The second affidavit, by Mr. Andy Enfield, was signed and notarized on December 27, 2012. In that affidavit, Mr. Enfield indicates that he has been familiar with the farming operations on the property associated with this water right since the early 1980's. Both affidavits state that the information provided in the AESI reports dated December 28, 2012, regarding the farming, irrigation, and general water use practices associated with this water right, is true and correct to the best of their knowledge.

Instantaneous Rate

AESI (2013) indicates that the pumping capacity of the surface water diversion SD-1 is 1,000 gpm. This diversion currently utilizes two portable centrifugal pumps. Pump curves for each pump were examined and the combined pumping rate at the highest efficiency point was calculated to be 875 gpm (**Table 1**).

Table 1. Pumping Rate of Points of Withdrawal Authorized Under SWC 1384

Point of Withdrawal	Pump Horsepower	Pump Model	Pumping Rate at Highest Efficiency (gpm)
SD-1	10	Berkeley B4ZPKS	400
SD-1	20	Berkeley B3TPM	475
		Total	*875*

The authorized diversion rate of 0.67 cfs (300 gpm) is well below the installed capacity of the diversion.

Therefore, it is reasonable to conclude that the full instantaneous rate under this water right has been maintained through beneficial use and is available for transfer.

Irrigated Acres

The place of use for SWC 1384 is fully contained within the place of use identified on water right GWC 1300. This surface water certificate is for irrigation of 62 acres, while the groundwater certificate is for irrigation of 70 acres. The split in beneficial use between the two water rights was determined in consultation with the water right holder such that the acres are not double-counted.

Aerial photos of the Enfield Farms Home Fields property were provided with the application packet. These aerial photos were labeled with the following dates: 1951, 1961, 1975, 07/15/1998, 07/15/2004, 07/31/2005, 09/6/2006, 06/25/2009, and 09/25/2011. The aerial photos from 1998 to present were viewed using Google Earth™.

Landsat imagery was spot-checked for the following dates: 08/01/1986, 08/04/1987, 08/12/1990, 07/27/1996, 08/02/1998, 08/21/2005, 07/10/2007, and 07/05/2011. The Landsat imagery shows different colors of red through the irrigation season and from year to year, which suggests that crops are rotated on the farm. This is consistent with the observed aerial photos and discussion with Mr. Andy Enfield, as well as his affidavit. Vigorous plant growth shows as bright red when viewed in color infrared (band 4-3-2).

The aerial imagery shows that the acreage irrigated has declined over the years with expansion of the buildings in the vicinity of the present processing plants and associated reduction in irrigated acres. The lowest number of acres irrigated within the place of use has been from 2009 to present. The areas irrigated include agricultural irrigation of crops, irrigation of lawn planted in the processing plant area, and irrigation of grass along the buffer between the agricultural area and the processing plant.

Geographic Information Systems (GIS) was used with the 2011 aerial photos to measure the area where irrigation has occurred. These calculations indicate that there are 54.3 acres of crops, 1.0 acre of fully-irrigated lawn (bright green color on photos), and 1.9 acres of deficit irrigated lawn (light green/tan color) between the crops and the processing plant area. The total irrigated acreage equals 57.2 acres, which is less than the irrigated acres identified on GWC 1300 and SWC 1384.

Annual Volume

Based on review of the aerial photos and Landsat imagery, it is determined that 57.2 acres has been irrigated under GWC 1300 and SWC 1384.

Historically, crops such as strawberries, raspberries, wheat, and potatoes have been grown on this property. **Table 2** lists the crops grown and irrigation method used for the most recent 5-year period of 2009 through 2013.

Table 2. Crops Grown and Irrigation Method Under GWC 1300 and SWC 1384

	Agricultural Fields		Lawn		Buffer Grass	
Year	**Crop**	**Irrigation Method**	**Crop**	**Irrigation Method**	**Crop**	**Irrigation Method**
2009	Raspberries Wheat	Trickle/Drip Unirrigated	Pasture/Turf	Pop-up Impact	Pasture/Turf	Tanker Truck
2010	Raspberries	Trickle/Drip	Pasture/Turf	Pop-up Impact	Pasture/Turf	Tanker Truck
2011	Raspberries	Trickle/Drip	Pasture/Turf	Pop-up Impact	Pasture/Turf	Tanker Truck
2012	Raspberries	Trickle/Drip	Pasture/Turf	Pop-up Impact	Pasture/Turf	Tanker Truck
2013	Raspberries	Trickle/Drip	Pasture/Turf	Pop-up Impact	Pasture/Turf	Tanker Truck
• Crops grown and irrigation method provided by Mr. Andy Enfield • Crops grown confirmed through aerial photos when available.						

There are currently no water meters installed on the point of diversion. Therefore, we relied on the Washington Irrigation Guide (WIG, 1985), older irrigation guides (1982 and 1969), weather data, and Water Resources Guidance GUID-1210 to estimate the highest annual volume of water pumped under this water right.

The first thing to be determined is the crop irrigation requirement (CIR). This is the amount of water that the crop would need to not experience any stress due to water availability. AESI (2012) proposed averaging the crop irrigation requirements for the two closest stations (Blaine and Clearbrook) since the Home Fields are approximately equidistant between them. We agree that this is a reasonable assumption. The average of the data from the WIG (1985) suggests that, with a 2-year return interval, the crop irrigation requirement for a raspberry crop is 16.53 inches and for pasture/turf is 13.74 inches. From the WIG data, it is apparent that the highest water use during the lowest five consecutive years of beneficial use within the place of use would have been between 2010 and 2013.

The WIG (1985) CIR estimates are for an average year and are based on almost 30 years of weather data collected from 1951 to 1980. The University of Washington – Climate Impacts Group has predicted that over the next 10 to 30 years, average air temperatures in the Pacific Northwest will be 2 to 3 degrees Fahrenheit higher than the 1970 to 1999 averages and that less precipitation will occur during the summer months due to global climate changes in Washington State. The available weather data shows that the period of May through September was on average 1.6 degrees Fahrenheit warmer from 2009 through 2013, than the average temperature from the Blaine and Clearbrook stations provided in the WIG (**Table 3**). Therefore, it is apparent that, because the WIG values are based on weather data from 1951 to 1980, utilizing the WIG estimated CIR would result in underestimating the amount of irrigation water an irrigator has actually been using over at least the last five years.

Station Circular 512 (Irrigation Water Requirements Estimates for Washington, November 1969) and EB1513 (Irrigation Requirements for Washington Estimates and Methodology, 1982) show that, for the Bellingham station (closest location to the site), the crop irrigation requirement will increase as the return period increases. These documents show an increase of 1 to 3 inches going from the 2-year to the 5-year and 10-year return intervals.

Table 3. Weather Comparison of WIG Averages to Actual Data

	Temperature (degrees F)			Precipitation (inches)		
Irrigation Season	**WIG Average**	**Actual**	**Difference (Actual - WIG)**	**WIG Average**	**Actual**	**Difference (Actual - WIG)**
2009	58.65	61.01	2.36	10.42	8.02	-2.40
2010		59.37	0.72		14.35	3.93
2011		59.23	0.58		11.05	0.63
2012		59.91	1.26		8.64	-1.78
2013		61.90	3.25		11.70	1.28

- Irrigation season is considered to be May through September.
- Annual data is average of the Clearbrook and Blaine weather stations.
- Weather data from 2007 through 2011 was provided with the change applications (AESI, 2013) and data for the 2012 and 2013 irrigation seasons was obtained from www.wrcc.dri.edu

Publication EB1513 presents CIR estimates for various crops (based on average weather data from 1948 through 1973) and 2-, 5-, 10-, and 20-year return intervals to account for climatic variability. Publication EB1513 states that the CIR 2-year return period values will be adequate on the average, once each 2 years. Similarly, the 5-year CIR values, 10-year CIR values and 20-year CIR values will be adequate on the average, 4 of 5 years, 9 of 10 years and 19 of 20 years, respectively. Again, it should be noted that these CIR values and return periods are based on weather data collected from 1948 through 1973 and, as discussed above, likely underestimate the current CIR values and return interval time periods due to ongoing global climate change.

Publication EB1513 indicates that, for Bellingham (closest location to site), the raspberry CIR increased by approximately 17 percent, while the pasture/turf CIR increased by approximately 23 percent, going from the 2-year to the 10-year return interval. Increasing the WIG raspberry CIR by 17 percent results in a 19.34 inch CIR for raspberries and increasing the WIG pasture/turf CIR by 23 percent results in a 16.90 inch CIR for pasture/turf. RH2 has assumed that increasing the WIG values to represent the anticipated 10-year return interval for the crop is a reasonable way to estimate the actual CIR over the past five years.

Ecology guidance document 1210 indicates that the efficiency of the trickle/drip micro-irrigation methods utilized by Enfield Farms to irrigate raspberries ranges between 70% and 95%, with an average of 88%. Guidance document 1210 indicates that farmers that operate systems near the higher end of the range often exhibit the following:

- Newer system infrastructure
- Active maintenance program
- Knowledge of seasonal crop evapotranspiration rates
- Scheduling irrigation in response to crop demand

- Ground-truthing of soil moisture.

Enfield Farms is a family-owned business that has been in operation in Whatcom County for over 40 years. Their system exhibits each of these characteristics. They replace their irrigation system infrastructure on a routine schedule or when they observe signs of wear that could lead to a loss of water. They operate a research facility and routinely develop new strains of raspberries and other crops that require less water and are more resistant to disease. They are recognized experts regarding farming practices in Whatcom County. For these reasons, the efficiency of trickle/drip micro-irrigation systems used in the Enfield Farms fields is assumed to be average to high.

Ecology guidance document 1210 indicates that the efficiency of the trickle/drip micro-irrigation method utilized by Enfield Farms to irrigate raspberries ranges between 70 percent and 95 percent, with an average of 88 percent. Efficiency of the pop-up impact sprinkler method used by Enfield Farms to irrigate lawn ranges between 60 percent and 85 percent, with an average of 75 percent. Efficiency of the tanker truck irrigation method is assumed to be 100 percent since it is being applied at rates lower than what the crop will utilize.

Since the irrigation method used for the raspberry irrigation is trickle/drip irrigation, it is assumed that the application efficiency averages 88 percent and the consumptive use averages 93 percent (Ecology Guidance 1210). Since the irrigation method used for the lawn is pop-up impact irrigation, it is assumed that the application efficiency averages 75 percent and the consumptive use averages 85 percent (Ecology Guidance 1210). As mentioned above, the tanker truck application efficiency is assumed to be 100 percent. The irrigation method and application efficiency used in the calculations are provided in **Table 4**.

Table 4. Total Irrigation Requirement and Consumptive Use Variables Utilized

Crop	Irrigation Method	Application Efficiency	Percent Consumptive Use
Raspberries	Trickle/Drip	88%	93%
Pasture/turf	Pop-up Impact	75%	85%
Pasture/turf	Tanker Truck	100%	100%
• Application efficiency and percent consumptive use equal to the average values provided in Ecology Guidance 1210. • Application by the tanker truck is assumed to be at a rate of approximately half of the CIR. For this reason, all of the water will be consumed and there will be no return flow.			

Based on the crop grown and irrigation pattern, irrigation use would have been the same for each year between 2010 and 2013. Dividing the raspberry CIR of 19.34 inches by 88 percent calculates to a total irrigation requirement (TIR) of 21.98 inches (1.83 feet). Therefore, the TIR for raspberries is 1.83 feet times 54.3 acres, which is equal to 99.4 af/yr. Dividing the pasture/turf CIR of 16.90 inches by 75 percent calculates to a total irrigation requirement (TIR) of 22.53 inches (1.88 feet). Therefore, the TIR for the lawn is 1.88 feet times 1 acres, which is equal to 1.9 af/yr. Dividing the pasture/turf CIR of 16.90 inches in half to represent the estimated application to the buffer area equals a total irrigation requirement (TIR) of 8.45 inches (0.70 feet). Therefore, the TIR for the buffer area is 0.70 feet times 1.9 acres, which is equal to 1.3 af/yr. Adding the three irrigation components together suggests that the total irrigation use is 102.7 af/yr. (99.4 af/yr + 1.9 af/yr + 1.3 af/yr = 102.7 af/yr: Note that round-off error leads to the

answer being 102.7 as opposed to 102.6) This annual volume is lower than the water right limit on GWC 1300, which is 105 afy.

Based on these calculations, the combined total tentative determination for both GWC 1300 and SWC 1384 is 102.7 afy/yr.

Proposed Use

The overall goal of this water right change application is to change the water right Place of Use (POU) and to increase the number of irrigated acres. The proposed POU for S1-*05117C is the same area as the proposed POU for Change Applications associated with nine other water rights (G1-21356C, G1-00502C, S1-*17211C, G1-*05902C(C), G1-20922C, S1-*09876C, G1-*02351C, G1-030294CL, and G1-21213C), which are also owned by Enfield Farms Inc. The primary purposes of the these Enfield Farms Change/Transfer Applications is to consolidate the water rights onto agricultural property owned by Enfield Farms and to make the existing points of withdrawal common to the water rights.

The proposed POU is comprised of 14 parcels, all owned by representatives of Enfield Farms. The proposed POU is approximately 305 acres in size and includes roughly 261 acres of irrigable land as indicated in **Table 5**.

Table 5. Parcels Requested for Inclusion in the Place of Use

Parcel No.	Parcel Owner	Gross Acres	Approximate Irrigable Acres
400221456167	M. Enfield	18.52	17.50
400221522186	Enfield Farms, Inc.	0.80	0.50
400221469097	M. Enfield	13.87	13.30
400221460037	M. Enfield	11.97	11.50
400222334134	M. Enfield	77.24	57.00
400222206332	M. Enfield	40.00	36.40
400222136219	Enfield Family LLC	65.25	59.00
402222015202	Enfield Family LLC	0.96	0.30
400222021162	M. Enfield	5.07	2.50
400222210076	Enfield Family LLC	42.94	40.00
400222200400	M. Enfield	1.33	1.25
400222065318	Enfield Family II LLC	8.77	8.50
400222077282	Enfield Family II LLC	7.78	7.50
400227282462	M. Enfield	10.49	5.75
Totals		305	261

The primary commercial crops to be grown will be raspberries and blueberries with the occasional crop rotation of potatoes, wheat, and strawberries. The berries will be irrigated using trickle/drip irrigation methods and the potatoes and wheat will be irrigated using traveling big gun irrigation. The lawns and grass in the buffer area will still be irrigated using the same irrigation methods after the change. This water right change application is being proposed in conjunction with nine other water right change applications that will also include spreading their available annual quantity of water over the available irrigable land. The applicant plans to use deficit irrigation methods.

Annual Consumptive Quantity (ACQ)

A change in the place of use, point of diversion, and or purpose of use of a water right to enable irrigation of additional acreage or the addition of new uses may be permitted if the change results in no increase in the annual consumptive quantity of water used under the water right (See RCW 90.03.380).

Annual Consumptive Quantity means the estimated or actual amount of water diverted in a year, allowed under a water right, reduced by the estimated annual amount of return flows. This quantity is then averaged using the greatest two years of use within the most recent five-year period of continuous beneficial use of the water right.

The ACQ analysis for this change application will be performed on the 2009 through 2013 irrigation seasons. Based on the data available, it is reasonable to use 2012 and 2013 to represent the years when the crops grown and weather conditions would require application of the most irrigation water. Therefore, based on this data, these two years will be used as the two highest years of use within the last five years of consecutive water use.

As was discussed in the history of water use section of this report of examination, raspberries, lawn, and buffer grass were grown on a total of 57.2 acres during the 2012 and 2013 irrigation seasons (**Table 2**).

Table 6. Annual Consumptive Quantity Calculation

Year	Estimated CIR (inches)	Actual CIR (feet)	WR Limit (feet)	Application Efficiency (%)	Cons. Use Efficiency (%)	Actual Cons. Use (feet)	TIR (af/yr)	Cons. Use (af/yr)	Return Flow (af/yr)
2012	19.34	1.61	1.83	88	93	1.70	99.4	92.5	7.0
	16.90	1.41		75	85	1.60	1.9	1.6	0.3
	8.45	0.70		100	100	0.70	1.3	1.3	0
2013	19.34	1.61	1.83	88	93	1.70	99.4	92.5	7.0
	16.90	1.41		75	85	1.60	1.9	1.6	0.3
	8.45	0.70		100	100	0.70	1.3	1.3	0
Average Total							102.7	95.4	7.3

Estimated CIR = Washington irrigation guide (average of Blaine and Clearbrook stations) multiplied by 117% for raspberries and 123% for pasture/turf to account for current climatic conditions.
CIR = Crop irrigation requirement (buffer grass is taken as half of CIR provided in literature due to deficit irrigation).
WR Limit = Additive annual volume of 105 af/yr divided by 57.2 acres
Application Efficiency from Ecology GUID-1210, except buffer grass is assumed to be 100 percent consumptive due to deficit irrigation.
af/yr = acre-feet per year
Cons. = Consumptive
Crop Grown: Raspberries
Area: 54.3 acres for raspberries, 1.0 acres for lawn, 1.9 acres for buffer grass.
Irrigation Method: Trickle/drip, pop-up impact, and tanker truck.
Cons. Use Efficiency = Application Efficiency + 5% Total Evaporated from Ecology GUID-1210.
Actual Cons. Use = WR Limit x Cons. Use Efficiency

Table 6 shows that based on the irrigation requirement for 2012 and 2013, the consumptive use to irrigate the 57.2 acres of raspberries, lawn, and grass is 95.4 af/yr, which is less than the combined water right limit of 105 af/yr and less than the total beneficial use of 102.7 af/yr.

The proposed use under GWC 1300 and SWC 1384 is to add industrial as a purpose of use and spread the number of irrigated acres to cover additional irrigated acres. The anticipated annual consumptive quantity of both the industrial and irrigation portions of the post-change right will be reviewed to determine if the annual consumptive quantity will remain at or below existing levels.

The applicant has requested that 16.4 af/yr be changed to industrial use with the remainder being used for irrigation. The industrial purpose of use is intended as washdown water within the processing plant. The water is used to clean the plant, but is not used for fruit-contact or domestic uses, as the city of Lynden provides this water. After the water is used it is collected in a below-ground storage tank. It has been estimated that 10 percent of the water used would be consumed due to evaporation, which is equal to 1.6 af/yr. The water is then pumped to a fixed big gun sprinkler for land application disposal. The big gun sprinkler spreads the water out over approximately 1.5 acres of pasture/turf-covered ground that is to the east of the processing plant on a neighboring property. If a similar adjusted CIR is used for pasture/turf of 16.90 inches and it is assumed that the fixed big gun sprinkler has an application efficiency of 65 percent, then the total irrigation requirement is 26 inches or 2.17 feet. So, the volume of water needed to irrigate the 1.5 acres is 3.3 af/yr. Multiplying this volume by the consumptive use percentage of 75 percent (Ecology Guidance 1210) calculates that 2.5 afy of the 3.3 afy applied will be consumed. The remaining water applied will all infiltrate and return to the aquifer. So, out of the 16.4 af/yr that will be put to industrial use, approximately 4.1 af/yr (1.6 + 2.5) will be consumptive and 12.3 af/yr will be nonconsumptive and will return back to the aquifer.

The spreading to additional irrigated acres will be done such that the crop will be deficit irrigated. Under this scenario all water used for irrigation will be consumed.

Due to the return flows from the disposal of the industrial portion of the water right, there will be less consumptive use under the proposed uses than under the existing use (**Table 7**). Therefore, this change passes the annual consumptive quantity test and can be approved.

Table 7. Comparison of Current and Future Annual Consumptive Quantity

Scenario	Total Annual Volume (af/yr)	Consumptive (af/yr)	Return Flow (af/yr)
Existing Irrigation	102.7	95.4	7.3
Future Industrial	16.4	4.1	12.3
Future Irrigation	86.3	86.3	0
Subtotal	102.7	90.4	12.3
Difference (Future - Existing)	0	-5.0	5.0

In his affidavit (dated December 27, 2012), Mr. Andy Enfield acknowledged that if the change is approved, Enfield Farms will be deficit irrigating its crops (applying less water than the crop can

consume) and that the deficit irrigation practices are reasonable and adequate for growing the crops they plan to grow on these fields.

Therefore, the amount of water that can be changed includes a total of 102.7 af/yr (16.4 af/yr industrial and 86.3 af/yr irrigation) under GWC 1300 and SWC 1384. At the applicant's request, the apportionment of the additive water under these two water rights will be broken out as specified in **Table 8**.

Period of Use

The water right record for SWC 1384 identifies the period of use as being during the irrigation season. The change application has not requested a change to the period of use, but it will be clarified as being from April 15 to October 1.

Other Rights Appurtenant to the Place of Use

Relying on Ecology's Water Resources Explorer (accessed in December 2013), we have identified the following three water rights as being appurtenant to both the original and proposed place of use, in addition to GWC 1300 and SWC 1384.

Permit S1-28116P
- Name: City of Lynden
- Instantaneous Rate: 0.57 cfs
- Annual Quantity: 70 af/yr
- Purpose: Domestic Supply
- Source: Nooksack River

Water Right Claim G1-002744CL
- Name: Winfred Maberry
- Quantity of Water Claimed: 20 gpm
- Annual Quantity Claimed: 2 af/yr
- Date of First Putting Water to Use: 1945
- Purpose for Which Water is Used: Domestic

Water Right Claim G1-301104CL
- Name: Marvin Enfield
- Quantity of Water Claimed: 100 gpm
- Annual Quantity Claimed: 25 af/yr
- Irrigation Acres Claimed: 5
- Date of First Putting Water to Use: May 1925
- Purpose for Which Water is Used: Irrigation, Domestic, and Ag accessory

The permit and Maberry claim are for domestic use and are not related to the agricultural irrigation occurring under the water right being changed. Water right claim G1-301104CL submitted by Marvin Enfield appears to identify irrigation water use that is covered by ground water certificate GWC 1300-A (G1-*02351C) and also industrial and domestic use that is covered under the groundwater permit-exemption. In an e-mail dated December 31, 2013, Enfield Farms confirmed that this was correct. Therefore, all beneficial use will be assigned to the groundwater certificate and permit-exemption and the quantities under the claim will not be considered to be additive.

In addition to the 10 water right change applications currently being processed for Enfield Farms, the following 11 water rights are appurtenant to the proposed place of use.

Water Right Claim G1-020987CL
Name: Grant Chilton
Quantity of Water Claimed: 20 gpm
Annual Quantity Claimed: 16 af/yr
Date of First Putting Water to Use: June 1949
Purpose for Which Water is Used: Domestic

Water Right Claim G1-030293CL
Name: Charles Gray
Quantity of Water Claimed: 10 gpm
Annual Quantity Claimed: 2 af/yr
Date of First Putting Water to Use: June 1952
Purpose for Which Water is Used: Domestic

Water Right Claim G1-033405CL
Name: Robert and Lorette Bauman
Quantity of Water Claimed: 10 gpm
Annual Quantity Claimed: 1 af/yr
Date of First Putting Water to Use: Prior to 1892
Purpose for Which Water is Used: Domestic, Garden/Lawn, Livestock

Water Right Claim G1-033406CL
Name: Robert and Lorette Bauman
Quantity of Water Claimed: 10 gpm
Annual Quantity Claimed: 1 af/yr
Date of First Putting Water to Use: Prior to 1892
Purpose for Which Water is Used: Domestic, Garden/Lawn, Livestock

Water Right Claim S1-034684CL
Name: Mike Harmon
Quantity of Water Claimed: NA
Annual Quantity Claimed: NA
Irrigation Acres Claimed: NA
Date of First Putting Water to Use: NA
Purpose for Which Water is Used: Irrigation (lawn and garden)
Source: West Bertrand Creek or Bertrand Slough

Water Right Claim G1-034685CL
Name: Mike Harmon
Quantity of Water Claimed: NA
Annual Quantity Claimed: NA
Date of First Putting Water to Use: NA
Purpose for Which Water is Used: Domestic

Water Right Claim G1-065512CL

Name: Dale Sheets
Quantity of Water Claimed: NA
Annual Quantity Claimed: NA
Date of First Putting Water to Use: NA
Purpose for Which Water is Used: Domestic

Water Right Claim G1-074659CL
Name: J. B. Wakefield
Quantity of Water Claimed: NA
Annual Quantity Claimed: NA
Irrigation Acres Claimed: NA
Date of First Putting Water to Use: NA
Purpose for Which Water is Used: Domestic and Irrigation (lawn and garden)

Water Right Claim G1-080973CL
Name: Juan and Virginia Perez
Quantity of Water Claimed: NA
Annual Quantity Claimed: NA
Irrigation Acres Claimed: NA
Date of First Putting Water to Use: NA
Purpose for Which Water is Used: Domestic

Water Right Claim G1-090542CL
Name: Blanche Brockmeyer – (Earl Brockmeyer)
Quantity of Water Claimed: NA
Annual Quantity Claimed: NA
Irrigation Acres Claimed: NA
Date of First Putting Water to Use: NA
Purpose for Which Water is Used: Domestic, Stockwatering, and Irrigation (lawn and garden)

Water Right Claim G1-301118CL
Name: Marvin Enfield
Quantity of Water Claimed: 200 gpm
Annual Quantity Claimed: 80 af/yr
Irrigation Acres Claimed: 20
Date of First Putting Water to Use: August 1938
Purpose for Which Water is Used: Irrigation

Water right claim G1-301118CL submitted by Marvin Enfield appears to be a duplication of water right claim G1-030294CL submitted by Charles Gray, and which is one of the water rights being changed by Enfield Farms. In an e-mail dated December 31, 2013, Enfield Farms confirmed that this was correct. For this reason, water right claim G1-301118CL has been tentatively determined to not represent an additional water right beyond what may have been established and maintained through beneficial use under G1-030294CL.

The remainder of the water right claims identified appear to be for residential domestic, stockwatering, and lawn and garden irrigation use as opposed to agricultural irrigation. Therefore, these additional

water rights within the proposed place of use are not pertinent when reviewing beneficial use under the water rights being changed since the uses are different.

Impairment Considerations

Impairment of Instream Flow Water Rights

Since the point of diversion is not being changed and the use after the change will be less consumptive than the use before the change, there will be no greater impacts on Bertrand Creek and therefore no potential for impairment.

Public Interest Considerations

The changes proposed by the applicant will not be detrimental to the public welfare.

Consideration of Protests and Comments

The January 29, 2013, protest letter from the Lummi Indian Business Council indicates that all of the change applications are for points of withdrawal located within the WRIA 1/Bertrand Creek/Nooksack River watershed. The protest is based on concerns over current and future potential impacts on instream flows. However, these are change applications and not applications for new (consumptive) water use. Because the quantities of water involved will remain unchanged and because each of the sources pumps from the same body of public water, no additional or new impacts are associated with the changes being recommended for approval. The pumping of water from any of the subject wells will not change stream flows from current conditions.

On April 2, 2014, WDFW provided a letter stating they do not oppose the approval of this and the related change applications related the Enfield Home Fields properties. The letter emphasizes the importance of fish in Bertrand Creek and in the Nooksack River downstream and acknowledges that these changes will not increase the quantity of water being used nor will it change the impacts on stream flows and fish that result from this irrigation. The letter also expresses support for the transparency to the water use by requiring metering and reflecting the actual acreage irrigated.

Therefore, the protest and comments do not justify denial of the change application.

Conclusions

The changes requested will not impair existing rights nor be detrimental to the public welfare. Given that comments from the Lummi Indian Business Council have been addressed and WDFW has stated that it does not oppose the approval of this and the related applications, the change should be approved as recommended below.

Summary

Table 8 contains a summary of all of the Enfield Farms – Home Fields water rights, after the current batch of change applications are processed. From this table it can be seen that there will be 277 af/yr of water available to irrigate 261 acres, which is equal to a total of 1.061 feet or 12.74 inches. This depth is lower than the crop irrigation requirement and that is because only the consumptive portion was able to be carried through the change application process for the future irrigation use. The additive irrigated acres for each water right was determined by dividing the amount of additive water carried through the

annual consumptive quantity test for irrigation use by 1.061 feet or 12.74 inches (for this water right 86.3 af/yr divided by 1.061 feet equals 81.3 acres).

Table 8. Summary of Recommended Water Right Change Decisions, Enfield Farms, Home Fields

Water Right	Qi (gpm)	Total Qa (af/yr)	Additive Irrigated Acres	Industrial Use (af/yr)	Irrigation Use (af/yr)	Season of Use	Place of Use	Points of Withdrawal
G1-030294CL (Gray)	200	30.6	28.9	0	30.6	05/01 – 10/01	Home Fields	IW-1, IW-2, IW-3, HW-1, HW-3, HW-4, HW-6, and future wells in West Branch Bertrand Body of Public Groundwater
G1-21213C (Chilton)	180	9 NA	0	0	9 NA	04/15 – 10/01		
G1-00502C (Chilton)	250	67	63.1	0	67	06/15 – 09/15		
G1-21356C (Perez)	50	12	11.3	0	12	04/15 – 10/01		
SWC 4435 (Wakefield)	45	14.5	13.7	0	14.5	04/15 – 10/01		
GWC 3986 Record C (Enfield Family LLC)	54.82	16.92	15.9	0	16.92	04/15 – 10/01		
SWC 9177 (Brockmeyer)	90	29.28 + 16.92 NA	27.6	0	29.28 + 16.92 NA	04/15 – 10/01		
G1-20922C (Bauman)	100	20.4	19.2	0	20.4	04/15 – 10/01		
GWC 1300 (Maberry)	320	16.4 + 86.3 NA	0	16.4	86.3 NA	04/15 – 10/01		IW-4, IW-5, IW-6, HW-2, HW-5, and future wells in Mainstem Bertrand Body of Public Groundwater
SWC 1384 (Brown)	**300**	**86.3**	**81.3**	**0**	**86.3**	**04/15 – 10/01**		SD-1 (Mainstem Bertrand Creek)
Total	1,589.82	293.4	261	16.4	277			
NA = Non-additive								

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Table 9 summarizes the breakdown of the cumulative instantaneous pumping rate authorized at the Home Fields over the course of the year. The difference in the pumping rate allowed at different times throughout the year is based on slightly different definitions for the period of use on the original water rights. No changes to any water right's period of use was made through this batch of change applications.

Table 9. Summary of Cumulative Peak Instantaneous Rate of Water Rights in Table 8 Based on Period of Use, Enfield Farms, Home Fields

Date Range	Combined Pumping Rate (gpm)
January 1 through April 14	0
April 15 through April 30	1,139.82
May 1 through June 14	1,339.82
June 15 through September 14	1,589.82
September 15 through September 30	1,339.82
October 1 through December 31	0

RECOMMENDATIONS

Based on the above investigation and conclusions included in this Report of Examination, RH2 recommends that this request for a water right change be approved in the amounts and within the limitations listed below and subject to the provisions listed above

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:

0.67 cfs
Irrigation use for 86.3 af/yr (additive)
Irrigation of 81.3 acres (additive) and 179.7 acres (non-additive)
April 15 to October 1

Point of Diversion

SD-1 - SE¼ SE¼, Section 22, Township 40 North, Range 2 E.W.M.

Place of Use

As described on Page 2 and 3 of this Report of Examination.

Report by: _____

Jim Bucknell – RH2 Engineering, Inc. Date

Report by: _____

Andrew B. Dunn, L.G., L.HG., CWRE – RH2 Engineering, Inc. Date

Reviewed by: _____

Buck Smith, L.G., L.HG. - Water Resources Program Date

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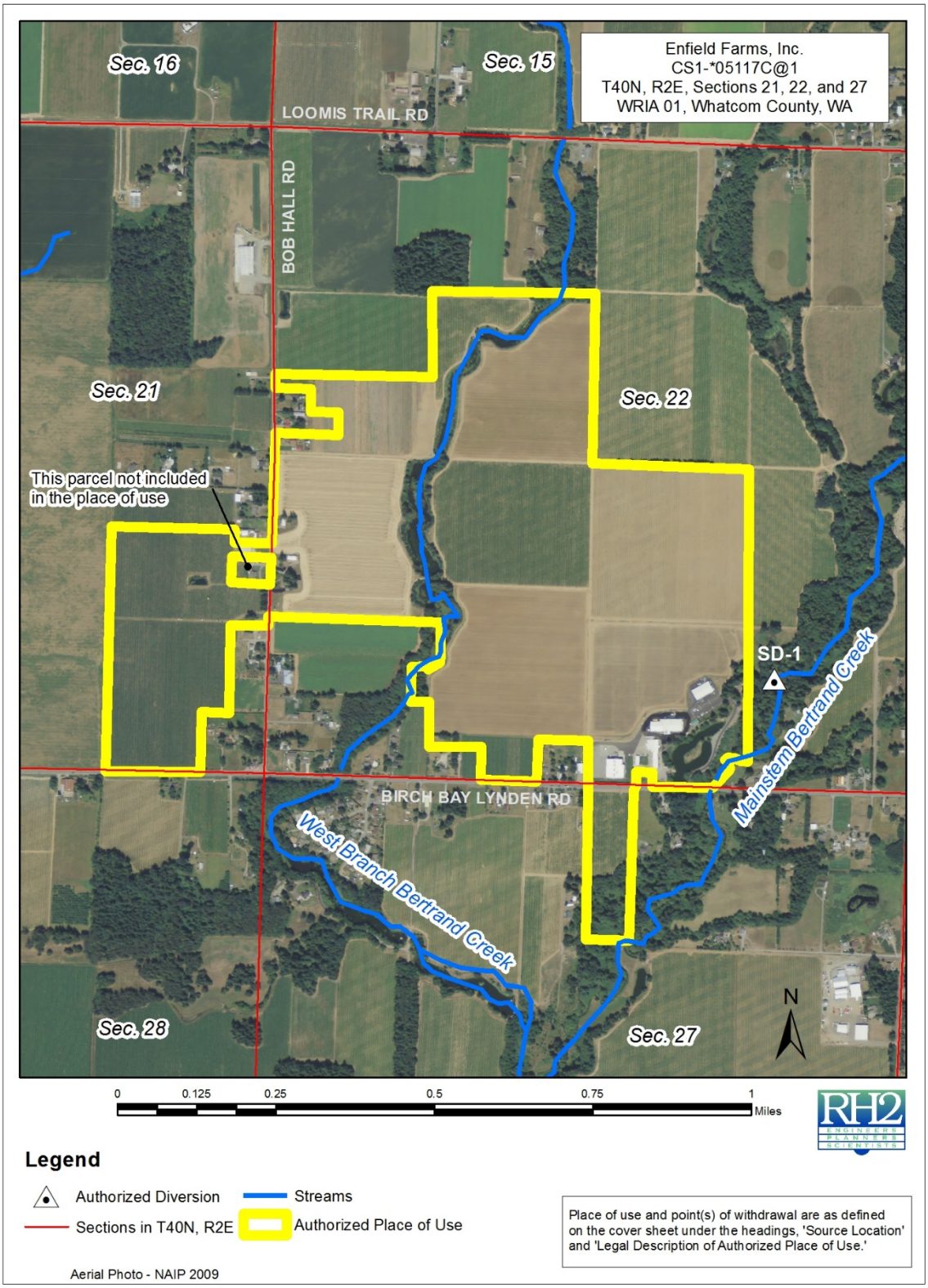
ATTACHMENT


Enfield Farms, Inc.
CS1-*05117C@1
T40N, R2E, Sections 21, 22, and 27
WRIA 01, Whatcom County, WA
Sec. 16
Sec. 15
LOOMIS TRAIL RD
BOB HALL RD
Sec. 21
Sec. 22
This parcel not included in the place of use
SD-1
Mainstem Bertrand Creek
BIRCH BAY LYNDEN RD
West Branch Bertrand Creek
Sec. 28
Sec. 27
N
0
0.125
0.25
0.5
0.75
1
Miles
RH2 ENGINEERS PLANNERS SCIENTISTS
Legend
Authorized Diversion
Streams
Sections in T40N, R2E
Authorized Place of Use
Place of use and point(s) of withdrawal are as defined on the cover sheet under the headings, 'Source Location' and 'Legal Description of Authorized Place of Use.'
Aerial Photo - NAIP 2009