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MR. DARREN MCCANNA
1570 SWISS VALLEY ROAD
ADDY, WA 99101

PS Form 3800, August 2006

See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

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1. Article Addressed to:

MR. DARREN MCCANNA
1570 SWISS VALLEY ROAD
ADDY, WA 99101



9590 9403 0583 5183 2137 09

2. Article Number (Transfer from service label)

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x *Debra Lotze*

- Agent
 Addressee

B. Received by (Printed Name)

Debra Lotze

C. Date of Delivery

12/21/15

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| <input type="checkbox"/> Certified Mail Restricted Delivery | <input type="checkbox"/> Return Receipt for Merchandise |
| <input type="checkbox"/> Collect on Delivery | <input type="checkbox"/> Signature Confirmation™ |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Insured Mail | |
| <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500) | |

PS Form 3811, April 2015 PSN 7530-02-000-9053

Domestic Return Receipt



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

4601 N Monroe Street • Spokane, Washington 99205-1295 • (509)329-3400

December 18, 2015

Mr. Darrin McCanna
1570 Swiss Valley Road
Addy, WA 99101

Re: Trust Water Applications for Claims: #152980 and #152976

Dear Mr. McCanna:

We have received your two trust water applications as referenced above. We appreciate your intention and effort of considering donating your claims into the State Trust Water Program. However, these two short form claims that were filed in 1974 are considered containing no more than exempt uses (RCW 90.44.050 and Yakima Adjudication). And exempt uses cannot be transferred based on the Supreme Court decision (RD Merrill vs. Pollution Control Hearings Board (PCHB)) case. Putting a water right into trust is changing/transferring the purpose of use of a water right.

Your applications are thereby rejected.

You have a right to appeal this action to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this letter. 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 this document:

- File your appeal and a copy of this document 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 document on Ecology in paper form - by mail or in person. (See addresses below.) Email 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	Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Road SW Suite 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

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>.

If you have any questions, please contact Ying Fu at 509 329-3451.

Sincerely,



Keith L. Stoffel
 Section Manager
 Water Resources Program

KLS:YF:ka

Enclosure: Your Right to Be Heard

By Certified Mail 7012 3050 0000 1095 0517

cc: Ying Fu, DOE/ERO

RECEIVED

FEB 11 2015

Water Resources Program
**Donation of a Water Right to the
State Trust Water Rights Program**

Department of Ecology
Eastern Regional Office

This form is used only when a water right is proposed to be donated to the State Trust Water Right Program and there are no other modifications to the water right being proposed. No fee is required with this form for a donation to the State Trust Water Right Program.

FOR OFFICIAL USE ONLY	
WATER RIGHT NO.:	_____
FILE (CONTRACT) NO.:	_____
WRIA NO.:	_____
WRTS CONTROL NO.:	_____

IMPORTANT: This form will not be considered complete without proper documentation.

1. Water Right Holder Information: Identify the name and contact information for the donor who is filing the proposal to enter a water right into trust. Provide contact/authorized representative information if it differs from the donor.

Name/Business Name: <u>Darrin McCanna</u>	Primary Phone: <u>935-8185</u>	Other Phone No: <u>680-0186</u>
Address: <u>1570 Swiss Valley Rd.</u>		
City: <u>Addy</u>	State: <u>WA.</u>	Zip: <u>99101</u>
Email Address: <u>Gregory.McCanna@gmail.com</u>		

2. Contact Information (if different from above)(Attorney, Agent, etc.):

Name: <u>Steve</u>	Primary Phone:	Other Phone No:
Relationship to Donor (i.e., authorized representative, family member, etc.):		
Address:		
City:	State:	Zip:
Email Address:		

3. Duration of Donation: Check the one that applies; if temporary, define donation period.

<input checked="" type="checkbox"/> Temporary	Start Date: <u>2-11-15</u>	End Date: <u>2-11-20</u>
<input type="checkbox"/> Permanent (If accepted, Ecology will request a quit claim deed in accordance with RCW 64.04.010.)		

4. Water Right Information: Provide the water right document number (i.e., Certificate, Claim, etc.) and the name(s) of the individual(s) as identified on the water right document. If you are not the owner of the water right, identify the owner/partial owner and their contact information.

Water Right or Claim No. (required) <u>152950</u>	Recorded Name(s): <u>Ray Rausca</u>
Do you own the entire water right? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial Owner	

If not, provide information for the other owner(s):

Partial Owner Name(s):	Address:	Phone:

Water Source (e.g., stream name or well):

Location of Diversion or Withdrawal:

¼ ¼	¼	Section	Township	Range	County	Parcel #	# of Acres
	SE	B	33	39	Stevens	240800	See Attached

5. Purpose of Donation: Check the one that applies

- Instream flow
 Groundwater Preservation
 Other (e.g., Wetland Enhancement, etc.) Explain:

6. Donation Quantity:

Full or Partial: Check the one that applies	Purpose of Use	Annual Quantity (QA):	Instantaneous Quantity (Qi):	Number of acres:
<input type="checkbox"/> Full Donation (100%)		See Attached		
<input type="checkbox"/> Partial Donation				
A. Donation Quantity				
B. Retained Quantity				

7. How is Water to Be Made Available For Trust: How do you intend to make all or a portion of the water right available for entry into the Trust Water Right Program? Check all boxes that may apply and provide a detailed explanation in the last box.

- Non-use of all the named water right
 Non-use of a portion of the named water right
- Change in method of delivery/conveyance
 Change in method of diversion
- Change in method of water application
 Change in crop type
- Change in water use/irrigated acreage
 Non-use of point(s) of diversion/withdrawal
- Change in water duty
 Other; explain below

Explanation:

8. Documentation: Provide evidence of water use in the last five years.

Has the water right been exercised/used during the past five years?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Provide the date of the most recent beneficial water use under this water right:	2012	
Is the point at which water is taken under this water right metered or measured?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Along with this form, you must provide evidence of use in the last 5 years (ex. air photos, photographs, metering records, power records). *see Attached*

If this water right has not been used in whole or in part for five or more years it may not be eligible for donation to the trust water right program unless the non-use may be excused under RCW 90.14.140. If you believe that any or all of your non-use may be excused under any of the exceptions listed under RCW 90.14.140, please explain in an attachment to this form.

9. Supporting Documentation for this Water Right: Check which of the below items you have included in your form package. Use additional pages to elaborate where necessary. Check all boxes that may apply. *see Attached*

<input type="checkbox"/> Aerial photos, or other photos (include dates)	<input type="checkbox"/> Metering information (include dates)
<input type="checkbox"/> Power Records (include dates)	<input type="checkbox"/> Water Well Report(s)
<input type="checkbox"/> Conservation Plan	<input type="checkbox"/> Map(s) (fallowed acres, place of use, point of diversion, other)
<input type="checkbox"/> Place of use information	<input type="checkbox"/> Water Right documents

Other (Additional information that demonstrates use in the last five years or evidence of an exemption from relinquishment under RCW 90.14.140 or 90.44.520):

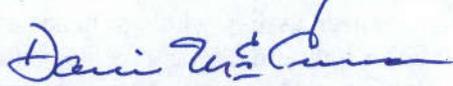
10. Remarks and Other Relevant Information: Please describe the purpose of your trust water right donation in detail and any other information that you believe Ecology needs in order to evaluate your donation.

Explain:

Note: The above section may also be used to prescribe the terms of the donation into Trust as described in RCW 90.42.080(1)(b)

11. Signatures: This form must be signed by the donor, the water right holder, and the landowner of the existing place of water use, if different from the water right holder. Additionally, if the water right is within an irrigation district, this form must be signed by a representative with signature authority for the irrigation district.

I certify that the information above is true and accurate to the best of my knowledge. I hereby grant staff from the Department of Ecology access to the above site(s) for inspection and monitoring purposes. If assisted in the preparation of the above application, I understand that all responsibility for accuracy of the information rests with me.

2-11-15	DAKWIN McCalina		
Date	Printed Name	Signature	
<input type="checkbox"/> Donor	<input type="checkbox"/> Authorized Representative	<input type="checkbox"/> Water Right Holder	<input type="checkbox"/> Land Owner of Existing Place of Use

Date	Printed Name	Signature	
<input type="checkbox"/> Donor	<input type="checkbox"/> Authorized Representative	<input type="checkbox"/> Water Right Holder	<input type="checkbox"/> Land Owner of Existing Place of Use

Date	Printed Name	Signature	
<input type="checkbox"/> Donor	<input type="checkbox"/> Authorized Representative	<input type="checkbox"/> Water Right Holder	<input type="checkbox"/> Land Owner of Existing Place of Use

Date	Printed Name	Signature	
<input type="checkbox"/> Donor	<input type="checkbox"/> Authorized Representative	<input type="checkbox"/> Water Right Holder	<input type="checkbox"/> Land Owner of Existing Place of Use

Permanent donations may incur a Real Estate Excise Tax liability for the water right holder. The Department of Revenue has requested notification of potential taxable water right related actions and therefore may be provided with a copy of this request.

Please contact the State Department of Revenue for further information. The phone number is (360) 570-3265. The address is: Department of Revenue, Real Estate Excise Tax, PO Box 47477, Olympia, WA 98504-7477.



"Solutions to water quality, quantity, permitting & planning issues"

November 5th, 2013

Darren McCanna
1570 Swiss Valley Road
Addy, WA 99101

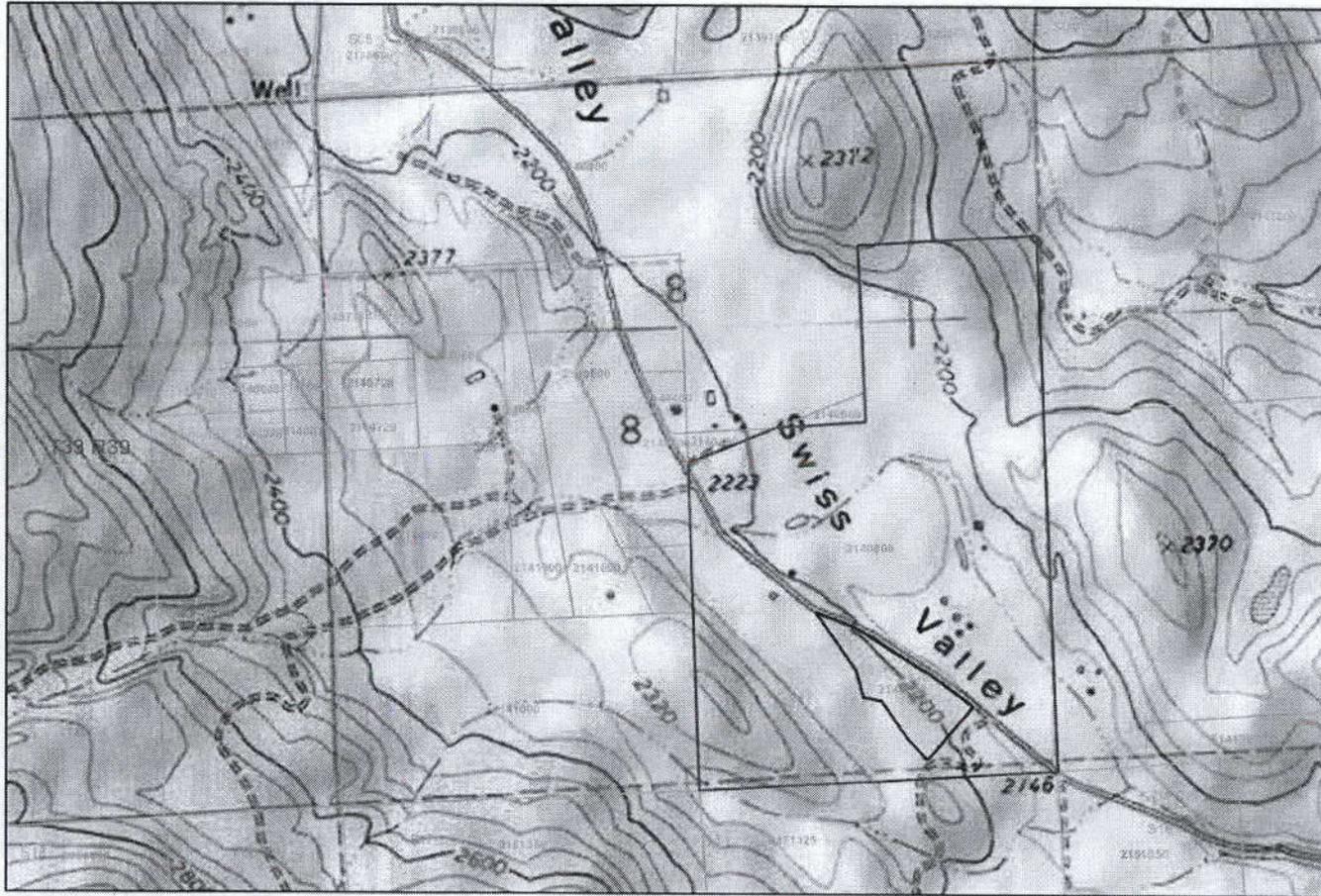
Subject: Preliminary Evaluation for Extent and Validity
Of Water Right Nos. G3-05041 (4606A), G3-04446 (2980A), G3-25276,
and Claim Nos. G3-152976CL and G3-152980CL

This letter report documents Water & Natural Resource Group's (WNR Group) review of Water Right Certificate Water Right Certificate Nos. G3-05041 (4606A), G3-04446 (2980A), G3-25276, and Claim Nos. G3-152976CL and G3-152980CL which are currently appurtenant to a property located at 1898 Swiss Valley Road, near Addy, Washington in Stevens County. This report was prepared to provide a preliminary judgment into the validity and extent of the water rights which are appurtenant to the property being considered for purchase (parcel No. 2140800 and to an adjacent property which was irrigated with the rights which were expressly withheld (parcel No. 2140500).

1.0 INTRODUCTION

The WNR Group was retained to perform a water right evaluation for water rights appurtenant to lands currently being considered for purchase by Mr. Darren McCanna which is located approximately 4- miles west of the Town of Addy in the Swiss Valley drainage (see Figure 1). The subject property evaluated for Water Right Certificate Nos. 5152A, 3670A, G3-25276C, G3-152976CL and G3-152980CL is located approximately in Section 8, Township 33 North, Range 39 East and henceforth called the Site. The Site is presently used as rural agriculture land and prior to 2012 was also operated as a dairy with over 200 head of production cows.

Parcel No. 2140800 was the primary focus of this study. This property is currently going through bankruptcy. The parcel comprises approximately 196.37 acres according to Stevens County tax assessor records, of which approximately 112 acres is irrigated and farmed. The remaining portions of the property consists of homes, barns, and dairy production facilities. Four diversion points for water rights are located on the property. The former farm also irrigated lands on Parcel No. 2140500, which was sold and the water rights were withheld. This parcel was sold to Robert Swartwout on February 26, 2013 and consists of 41.52 acres of which approximately 31 acres were irrigated. An aerial photograph from 2012 showing irrigated lands on the parcels is visible on Figure 2.



Actual distances and relationships may be different than those depicted on this map. This map is for graphical purposes only.

USGS Topo
BING



FIGURE 1: Location of Site (outlined in Red). Black outlined parcel in center of property is not included in survey. (USGS, 1977).



Actual distances and relationships may be different than those depicted on this map. This map is for graphical purposes only.

USGS Topo
BING

0 330 660 1,320 Feet



1 inch = 660 feet



FIGURE 2: Aerial Photograph showing irrigated lands and points of diversion.

2.0 PURPOSE OF STUDY/SCOPE OF SERVICES

This letter report was prepared to assist Mr. McCanna in evaluating the validity and extent of the water rights appurtenant to the property west of Addy, Washington in the Swiss Valley drainage which was formerly operated as the Rausch farm and dairy. This evaluation is presented as a preliminary screening of the five water rights (3 certificates and 2 claims), and is not an exhaustive study and analysis. Upon initiation of any proposed transferring of the water rights, a more exhaustive study will be completed in order to support any water right change application. In order to assist with the evaluation, our specific scope of services consisted of the following:

1. Review of existing water right information for Certificate No. 4606A
2. Review of existing water right information for Certificate No. 2980A.
3. Review of existing water right information for Certificate No. G3-25276C.
4. Review of existing water right Claim information for G3-152976CL.
5. Review of existing water right Claim information for G3-152980CL.
6. Estimate total water use diverted/withdrawn under the water rights which were put to beneficial use.
7. Estimate water use of the irrigated lands based on readily available information and crop consumptive use calculations.
8. Develop an opinion regarding extent and validity of the appropriated water rights.

3.0 WATER RIGHT DESCRIPTION

The WNR Group conducted a search of the Ecology WRTS database for water rights and claims within the area of the Site. Table 1 presents the water rights listed in the database within Section 8, T33N, R39EWM. A summary of the water rights is presented below and the certificates and claims forms are included in Attachments 1 through 5.

Water Right Certificate No. 4606A

The Certificate allows for a "groundwater" withdrawal from and unnamed creek/spring which flows through the subject property. The water is pumped from a 160 ft x 60 ft x 8 ft deep trench which was developed on springs which directly fed the creek. The trench is located immediately north of the creek and holds approximately 1.5 acre-feet of water. Overflow from the trench is directly into the creek from an overflow culvert. Water is pumped from the pond with a 10 hp GE pump. A copy of the certificate is attached to this report. This diversion is known as the "fish pond" diversion. A summary of water right Certificate conditions is as follows:

- Certificate of Water Right No. 4606A (Ecology File #G3-05041).
- Right to use "ground" waters within Stevens County, State of Washington.
- Original certificate granted to Ray Rausch of Addy, Washington.
- Point of diversion located within NW¼-SE¼ Section 8, T33N, R39E.W.M.
- Purpose (beneficial use) of diversion is for irrigation of 10-acres.
- No Period of Use referenced on certificate.
- Right has a confirmed priority date of October 16, 1958.
- Right is granted to not exceed 60 gallons per minute. An annual allocation of 30 acre-feet is noted on the certificate.

- Beneficial use is to be used in W $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ less following described tract: Beginning at the center of Sec. 8, thence east 40 rods; thence southwesterly to the north-south centerline of Section 8; thence north 3 $\frac{1}{2}$ chains, to point of beginning; this tract being within Sec. 8, T.33 N., R.39 E.W.M. (see Figure 3).

Water Right Certificate No. 2980A

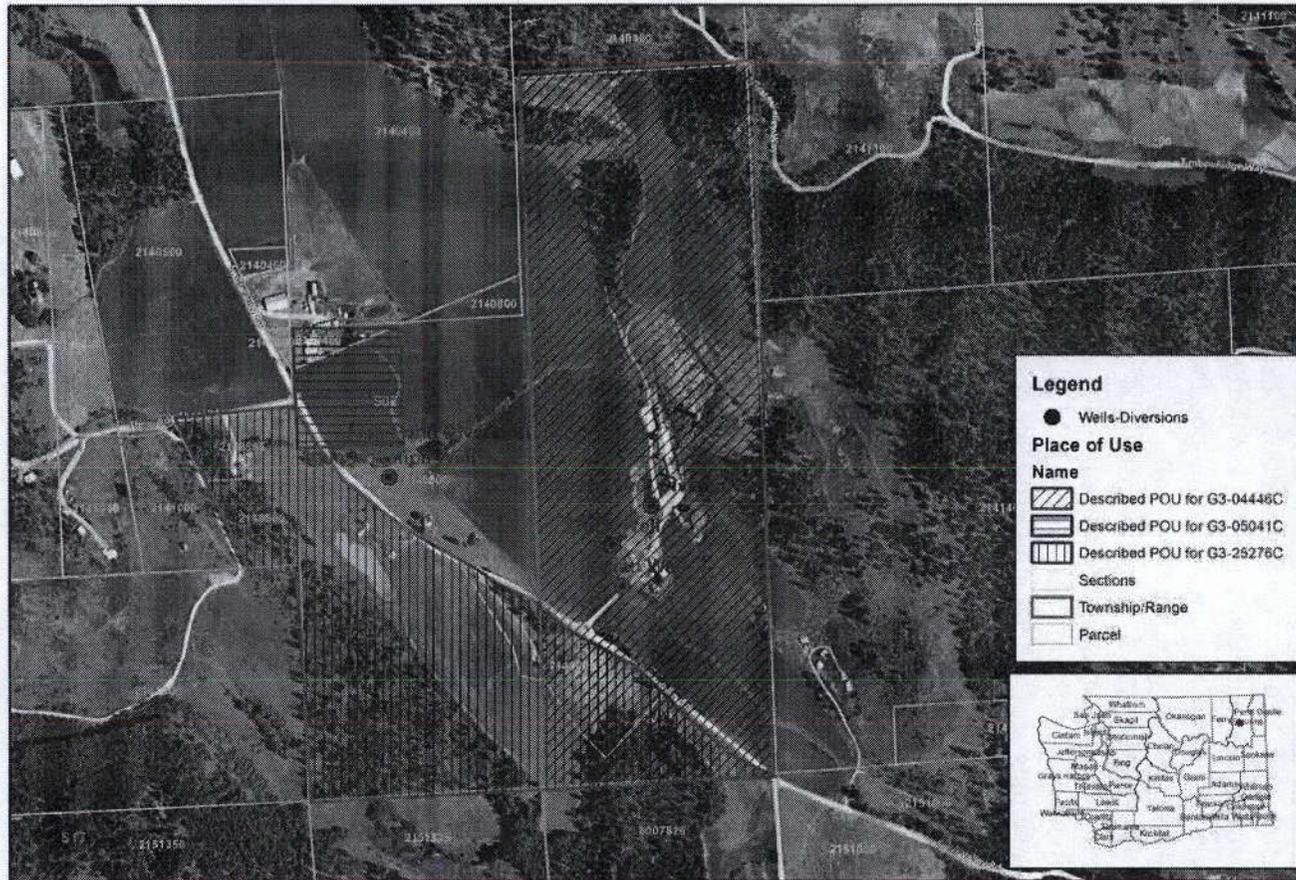
The Certificate allows for a "groundwater" withdrawal from a trench and sump which is located along an unnamed creek. Currently the creek flows directly into the sump and flows out the down gradient end. The water is pumped from a 100 ft x 35 ft x 10 ft deep excavation which was developed along the creek. The trench/sump estimated to hold approximately 3/4 acre-feet of water. Overflow from the trench is directly into the creek from an overflow culvert. Water is pumped from the pond with a 25 hp Berkley pump. A copy of the certificate is attached to this report. This diversion is known as the "Barn Pond" diversion. A summary of water right Certificate conditions is as follows:

- Certificate of Water Right No. 1980A (Ecology File #G3-04446).
- Right to use "ground" waters within Stevens County, State of Washington.
- Original certificate granted to Raymond P. Rausch of Addy, Washington.
- Point of diversion located within E $\frac{1}{2}$ SE $\frac{1}{4}$ Section 8, T33N, R39E.W.M.
- Purpose (beneficial use) of diversion is for irrigation of 70-acres and stock water.
- No Period of Use referenced on certificate.
- Right has a confirmed priority date of September 1, 1956.
- Right is granted to not exceed 250 gallons per minute. An annual allocation of 210 acre-feet is noted on the certificate.
- Beneficial use is to be used in E $\frac{1}{2}$ SE $\frac{1}{4}$ and SE $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 8, T.33 N., R.39 E.W.M. (see Figure 3).

Water Right Certificate No. 25617

The Certificate allows for a groundwater withdrawal from a well (referenced as artesian irrigation well). The well log reveals that the well is 161 feet deep and the well can yield in excess of 500 gpm. A copy of the certificate is attached to this report. A summary of water right Certificate conditions is as follows:

- Certificate of Water Right No. 25276C.
- Right to use groundwater within Stevens County, State of Washington.
- Original certificate granted to Raymond P. Rausch of Addy, Washington.
- Point of diversion located within W $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 8, T33N, R39E.W.M.
- Purpose (beneficial use) of diversion is for irrigation of 80-acres and domestic.
- Period of Use April 1 to October 1 for irrigation, continuous for domestic.
- Right has a confirmed priority date of March 17, 1977.
- Right is granted to not exceed 260 gallons per minute (250 gpm irrigation, 10 gpm domestic). An annual allocation of 201 acre-feet is noted on the certificate.
- Beneficial use is to be used in E $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$ and SE $\frac{1}{4}$ SE $\frac{1}{4}$, lying west of County Road, all in Sec. 8, T.33 N., R.39 E.W.M. (see Figure 3).



Actual distances and relationships may be different than those depicted on this map. This map is for graphical purposes only.

FIGURE 3: Described Place of Use for Certificates G3-04446C (1980A), G3-04041C (4606A) and G3-25276C.

TABLE 1: SUMMARY OF WRTS DATABASE FOR SEC. 8, T33N, R39E.W.M. (Ecology April 2013)

File #	Cert #	Person	Stat	Doc	Priority Date	Purpose	Qi	UOM	Qa	Irrigated Acres	TRS	QQ/Q	Src's	1stSrc
G3-25941BWRIS		OWENS HARRY BOURKE	I	Pmt	5/8/1978	IR	100	GPM	51.2	16	33.0N 39.0E 08		1	WELL
S3-163697CL		SALSBURY LEONARD C	A	Claim L	7/29/1960	ST,IR	0.3	CFS	66	40	33.0N 39.0E 08	SW/NE	1	UNNAMED POND
G3-152976CL		RAUSCH RAYMOND P	A	Claim S		ST,IR		GPM			33.0N 39.0E 08		1	
G3-152980CL		RAUSCH RAYMOND P	A	Claim S		ST,IR		GPM			33.0N 39.0E 08		1	
G3-065768CL		SALSBURY LEONARD C.	A	Claim L	7/14/1964	ST,IR	200	GPM	100	50	33.0N 39.0E 08	NE/NW	1	
G3-062749CL		ANDRESEN SHELDON C.	A	Claim S		ST,DG		GPM			33.0N 39.0E 08		1	
S3-062750CL		ANDERSEN SHELDON C.	A	Claim L	1/1/1900	ST,DG	0.02	CFS	2		33.0N 39.0E 08		1	UNNAMED SPRING
G3-032539CL		SALSBURY LEONARD C.	A	Claim S		ST,DG		GPM			33.0N 39.0E 08		1	
G3-26009GWRIS		LECTURE STEVEN D	A	Cert	7/12/1978	IR	50	GPM	40	40	33.0N 39.0E 08	SW/SW	1	WELL
G3-25276CWRIS		RAUSCH RAYMOND	A	Cert	3/17/1977	IR,DS	940	GPM	489	170	33.0N 39.0E 08	NW/SE	1	WELL
G3-*07247CWRIS	5152-A	SALSBURY L C	A	Cert	7/14/1964	IR	200	GPM	100	50	33.0N 39.0E 08	NE/NW	1	INFILTRATION TREN
G3-*05041CWRIS	4606-A	RAUSCH R Jeanneret John	A	Cert	10/16/1958	IR	60	GPM	30	10	33.0N 39.0E 08	NW/SE	1	SUMP
G3-*05062C	3670-A		A	Cert	11/3/1958	IR	135	GPM	66	22	33.0N 39.0E 08	SW/NE	1	OTHER
G3-*04443CWRIS	3185-A	HOEGERL J	A	Cert	9/19/1956	IR,DS	22	GPM	13.6	2	33.0N 39.0E 08	S2/SW	1	INFILTRATION TREN
G3-*04446CWRIS	2980-A	RAUSCH R P	A	Cert	9/21/1956	ST,IR	250	GPM	210	70	33.0N 39.0E 08	E2/SE	1	WELL
S3-300644CL		TYNER GEORGE	A	Claim	1/1/1929	ST,DG	0.0222	CFS	1	0	33.0N 39.0E 08	SW/NW	1	UNNAMED SPRING



Actual distances and relationships may be different than those depicted on this map. This map is for graphical purposes only.

USGS Topo
BING



1 inch = 700 feet



FIGURE 4: Described Place of Use for Claims G3-152976CL and G3-152980CL.

Water Right Claims No.G3-152976CL & G3-152980CL

Two Claims for use of groundwater are also associated with the property. These are:

- Claim of Water No. 0152976CL, which is a short form filed by Raymond Rausch on June 26, 1974 for use as domestic, stock watering, irrigation and dairy operations. Place of use was described as E $\frac{1}{2}$ and SE $\frac{1}{4}$ and SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 8, T33N, R39E.W.M. (see Figure 4). No acres or quantities were identified on Claim Form.
- Claim of Water No. 0152980CL, which is a short form filed by Raymond Rausch on June 26, 1974 for use as domestic, stock watering, irrigation and dairy operations. Place of use was described as SE $\frac{1}{4}$ of the NW $\frac{1}{4}$, the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ and W $\frac{1}{2}$ of the SE $\frac{1}{4}$ of Sec. 8, T33N, R39E.W.M. (see Figure 4). No acres or quantities were identified on Claim Form.

Copies of the two Claim forms are provided in Attachment 2.

3.1 Field Visit

A representative from the WNR Group visited the site on April 27th, 2013 to inspect the conditions of the site. Photographs of the site visit are attached to this report. The site verified that approximately 175 acres of land was being irrigated. However, approximately 32 acres was outside the described place of use on the certificates and claims. Four main irrigation points were present on the site. Two were ponds/sumps which were excavated to collect seeps, and store runoff from tributaries to the creek, and/or directly intercepting and storing water flowing in the creek (barn pond). Two irrigation wells were also present on the site. In addition to the irrigation wells, one well which delivered water directly to the dairy facility for stock water was also present. A tile collection system was also present throughout the site which collected shallow groundwater and conveyed it through PVC pipe to either the collection ponds or directly into ditches which returned the water to the creek. The GPS coordinates of the diversion points is presented in Table 2. A brief description of the diversions are presented below.

Artesian Irrigation Well	N48.36859	W-117.91714
Main Irrigation Well	N48.37041	W-117.92245
Stock Dairy Well	N48.36922	W-117.91729
Barn Pond Diversion	N48.36982	W-117.91637
Fish Pond Diversion	N48.37377	W-117.92127

Water was delivered to the fields from the diversion points via 6-inch main lines connected to the diversion pumps. The irrigation system consisted of a combination of 3-inch hand lines and a two $\frac{1}{4}$ -mile 7-inch Wade Rain Wheel Line. Sprinkler heads consisted Wade Rain and Royal Gulch 5 and 7 gpm sprinkler heads. The irrigation system appears to be configured to be used from multiple withdrawal/diversion points. No direct as-built of the irrigation system was supplied for this analysis.

- 1) Artesian Irrigation Well: This well is located north of the main dairy farm access road (Figure 2). The well is completed to a depth of 130 ft and is artesian. It is comprised of 8-inch steel casing completed to the full depth of the well. The well has no perforations or screen. Water was visually observed seeping up from around the casing and flowing to the creek. A 20 hp pump is located in the well which conveys water to the irrigation system in the southern part of the property and appears to convey water to the field west of Swiss Valley Road in the southern part of the property. A dedicated electrical service is present at the withdrawal point. The service is provided by Avista under meter No. 76382081 (Service No. 0608).
- 2) Main Irrigation Well: This well is located in the northwestern area of the farm, just east of Swiss Valley Road and south of the creek (near the fish pond diversion). This well is completed to a depth of 161 feet and consists of 10-inch casing completed to the full depths explored. The well has ¼-inch perforations from 121-161 feet below grade. A 30 hp pump is located in the well which conveys water to the irrigation system in the western part of the property and across Swiss Valley Road to the fields on parcel No. 2140500. A dedicated electrical service is present at the withdrawal point. The service is provided by Avista under meter No. 12180002 (Service No. 0494).
- 3) Stock Well: This well is located in the field north of the artesian irrigation well (Figure 2). This well is completed to a depth of 162 feet, with static water level recorded at 10.5 feet below grade. The well consists of 6-inch steel casing completed to the full depths. No perforations or screen is noted on the well logs. A 1-½ hp submersible pump recovers water and conveys it to the milking parlor. No dedicated electrical system was observed at this well.
- 4) Barn Pond Diversion: This sump is completed within the drainage channel southwest of the milking structures. The sump appears to collect water from the shallow seeps and is filled directly from water within the unnamed creek. The diversion consists of a 25-hp baldor motor with a Berkley pump. A dedicated electrical service is present at this diversion point. The service is provided by Avista under meter No. 23672923 (Service No. 0646).
- 5) Fish Pond Diversion: This sump is completed immediately north of the creek in the northwest area of the property (Figure 2). The sump appears to collect water from the shallow seeps which were adjacent to the creek, and is filled directly from water within a small tributary channel to the creek which empties directly into the pond. Water collected in the sump then flows through the pond and discharges to the creek via a culvert overflow structure. The diversion consists of a 10-hp GE motor with a 6 ½ hp Rainflow pump. A dedicated electrical service is present at this diversion point. The service is provided by Avista under meter No. T121771673 (Service No. 0513).

3.1.1 Adjacent properties

A visit to the adjoining properties was also conducted. A seasonal storage area is located on Parcel 2149500. Historical research revealed that this pond was one of the first areas in which the original settlers back in the late 1800's. Information on an old pump house shows an electrical service meter with an installation date of October 13, 1938 recorded

on it. The storage facility appears to store water from developed springs in the headwater of the creek.

4.0 RECORDS REVIEW

The WNR Group conducted a review of readily available information to document the extent and validity of the Rights and Claims associated with the property. In addition, available hydrogeologic, geologic, and watershed planning documents were reviewed. This section provides a summary of the key documents reviewed for this analysis.

4.1 ANECDOTAL INFORMATION

Mr. Darren McCanna provided the following anecdotal information regarding the use of water at the property.

- Irrigation has occurred on the property since the early 1940's.
- A dairy has operated on the property since the early 1900's.
- To the best of his knowledge, the water right has been used on the property and the water rights and claims is not known to have gone 5-years without non-use.
- The previous property owners may have grown alfalfa on the property until 2012, when the fields were mostly irrigated for pasture
- The irrigation system on the parcel consisted of diverting water from the two ponds, the two irrigation wells, and the one stock water well. Other wells on the property provide domestic water to the homes.
- No meter or gauging device was installed in the diversion system to record the amount of water diverted.
- The water was always used for agricultural purposes and for stock water in the dairy operations.
- The dairy operations typically consisted of over 200 dairy cows, and approximately 50 other stock cattle.
- Irrigation methods have always consisted of sprinkler irrigation with hand lines and wheel lines on the property.
- There has always been some volume of water in the creek and the creek does not dry up. The creek is derived from several springs located west of the property.
- The property is undergoing a bankruptcy as of 2012.

Mr. Rausch also provided a brief summary of the property. In this he stated the following:

1. After 1995, the farm averaged 400 head of dairy cows until the bankruptcy in 2012.
2. Ray and Margie Rausch moved to farm in December of 1956 after purchasing the existing dairy farm from Fred and Mary Thoni, original settlers of property (see below).
3. The adjoining property owned by Virgil and Alma Harrison (which was purchased by Rausch in 1962) had a developed pond which they had used for irrigation of crops. Springs were also used for domestic, livestock and crop irrigation on this portion of the property.

4.2 DOCUMENT REVIEW

The WNR Group reviewed readily available hydrogeologic reports and data in the vicinity of the subject Site in an attempt to develop an understanding of the hydrogeologic conditions. The WNR Group attempted to identify uses of existing water withdrawals at and in the immediate vicinity of the Site as recorded in readily available government documents. These sources and findings are summarized in the sections that follow.

4.2.1 Historical Use/Property Ownership

Land ownership documents were reviewed in the Stevens County Assessors web page in order to identify property owners who currently own property within the irrigated lands described on the Certificate. For parcel No. 2140800, the primary parcel of interest, Mr. Peter and Mary Rausch is listed as the property owner for the property. The parcel is listed as comprising 196.7 acres. In addition, a GIS analysis was conducted in order to determine the amount of irrigated acres on the property. Acres defined on the property are shown in Figure 2. The GIS analysis conducted by the WNR Group defined the total irrigated acreage of parcel 2140800 as 111.6 acres. Mr. Rausch also irrigated approximately 32.2 acres on parcel 2140500. This parcel was sold by Mr. Rausch to Robert Swartwout on February 26, 2013. The water rights on this property were expressly withheld (water was diverted from POW's on parcel 2140800 and applied on these lands which were in the original described POU.

Mr. Rausch also irrigated approximately 31 acres (fields 5, 6, 7 and 12 on Figure 2) which were outside of the described place of use on the certificates and claims. These fields are contiguous with fields on the existing place of use.

Historical Documents- A search of historical records was also conducted at the County Courthouse and the historical society. Of particular interest is a 1975 newspaper – “Addy Souvenir Edition” that discusses the history of the Swiss Valley. Within this article it talks about how the Thoni's settled in the valley in 1890, at the location of the present Rausch Farm. It talks how Mr. Thoni began buying dairy cattle in 1891 and as time went by began developing a dairy operation which sold milk, cream and cheese to the nearby local communities. Timber and hogs were also marketed from the property. Historical documents show that a dairy operation has been at the property for over 100 years.

Aerial Photographs- A search for aerial photographs was conducted for the project site. Figure 2 is representative of the 2012 aerial photograph. As shown on the 2012 aerial photograph, water has been diverted from several locations (wells and trench/ponds) and is distributed throughout the property by buried mainline to risers. Hand-lines and wheel-lines were then connected to the numerous risers throughout the property to irrigate the fields. Alfalfa was the primary crop irrigated across the property. Attachment 4 presents aerial photographs for August 6, 2012; November 3, 2011; September 10, 2009; August 17, 2006; July 30, 2006, July 31, 2005; October 28, 2004, June 25, 2003, and August 5, 1998. As shown on the aerial photographs, it appears crops were irrigated on the property and the dairy infrastructure was in place. As shown on the aerial photographs, it appears that water

has been diverted a minimum of once every five years. Photographs of the site are presented at the end of this report.

Available Hydrogeologic Reports- Several hydrogeologic reports were readily available for the area that were prepared by the USGS, Ecology, and other entities. Two reports specifically addressed the hydrogeology within the Colville Valley. These two reports were completed by the USGS in 2003 and 2004 for the WRIA 59 Watershed Planning Unit and are listed in the bibliography of this report. In summary, the hydrogeologic reports identify glacio-fluvial deposits in the shallow geologic formations at the site (Figure 5). No cross-sections are presented in the Kahle report for the Swiss Valley area. However, review of the geologic logs appear to show surface water is perched on top of a thick clay interval (50 to 90 feet) above water bearing semi-confined sands and gravels. This sand and gravel aquifer, which is flowing artesian in places, is inferred to be hydraulically connected to the lower confined aquifer identified in the Kahle reports. Figure 6 presents a map of the upper unconfined aquifer. As shown on the map, the upper unconfined aquifer is identified beneath the site. However, the flow lines are dashed, inferring the aquifer may not always be present. It can be inferred from this map, and the well logs reviewed, that the upper unconfined aquifer is thin in the area of the site, and water within this upper interval is in direct hydraulic continuity with surface water. This is also evident by the springs which were present on the site in which the sump/ponds were developed, intercepting the shallow groundwater discharge to the creek. Figure 7 presents a map showing the lower confined aquifer. As shown on the map, the lower aquifer is located in the area of the site at depth. This is the aquifer which supplies most water in the valley.

Geologic Maps and Reports- The WNR Group reviewed the Washington Division of Geology and Earth Resources geologic map for northeastern Washington (1991). The geologic map revealed that the subject site is underlain by Pleistocene Age glacial drift deposited over bedrock in the area. Bedrock in the valley walls consists of Precambrian argillites and Cambrian/Late Proterozoic quartzite to the south and Ordovician argillite to the north (Figure 8). The unconsolidated glacial drift which fill the valley typically have low yields in the compacted clay silts interbeds, but higher yields in the sand and gravels.

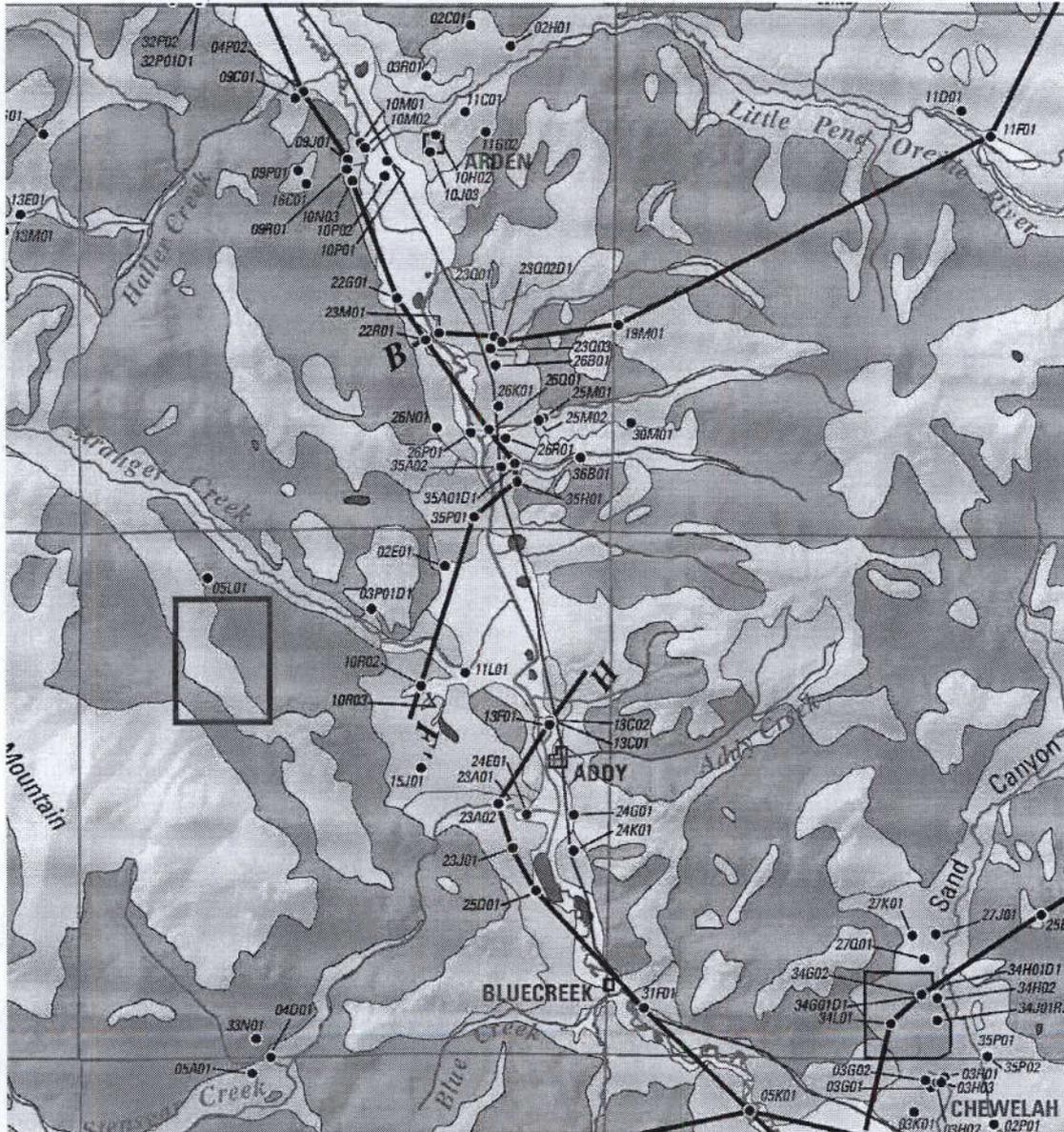
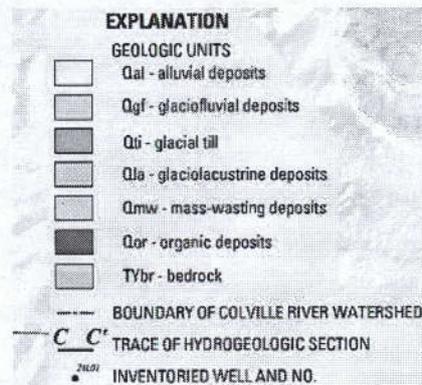


FIGURE 5: Hydrogeologic Map of Area (Kahle, 2003). Approximate Site Location Outlined in Red. Key to map is presented below.



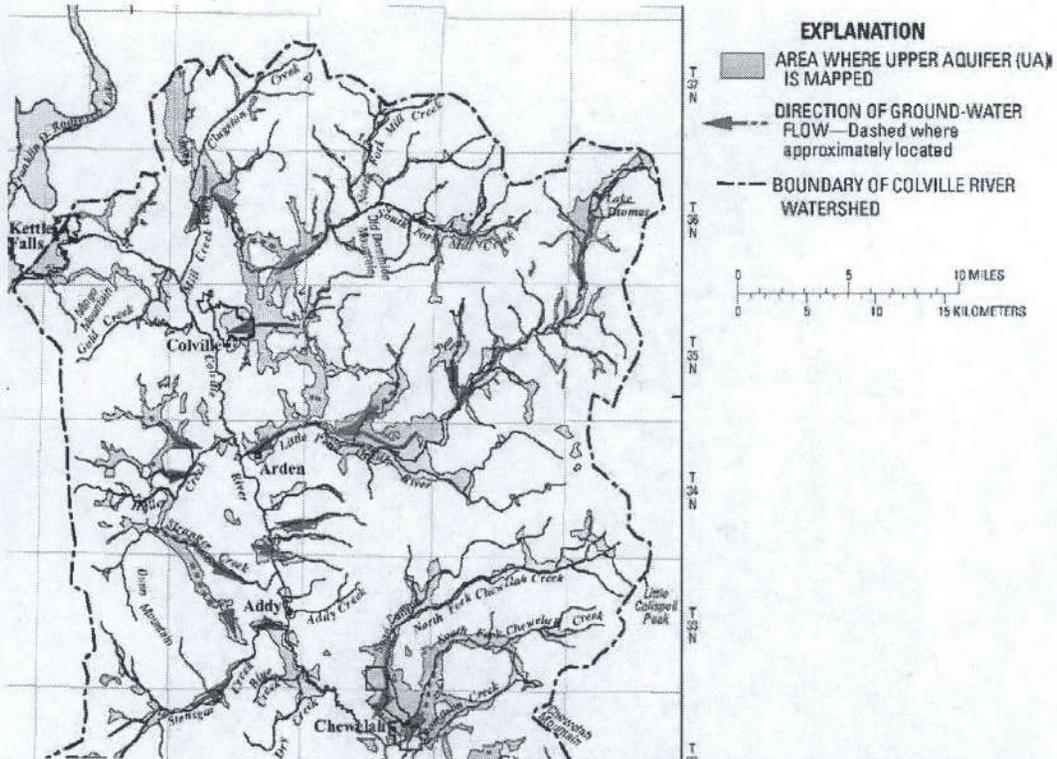


Figure 6: Hydrogeologic Map showing Inferred Flow direction of the Upper Unconfined Aquifer. Some Upper Aquifer Unit is Identified Beneath the Site (Kahle, 2003).

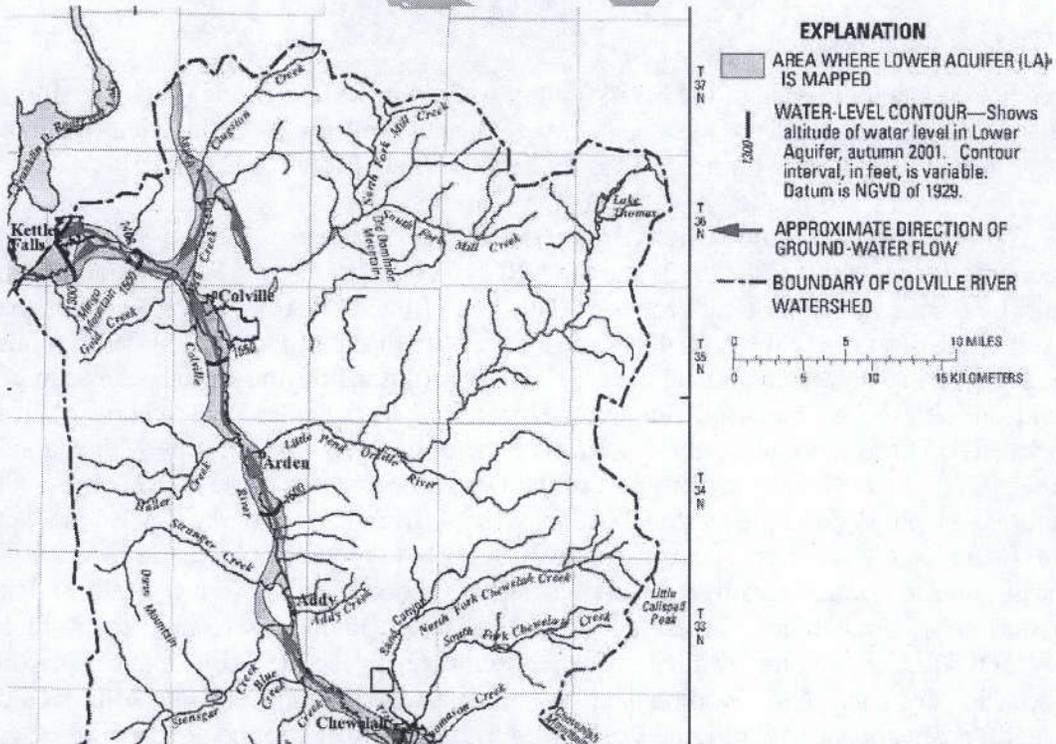


Figure 7: Hydrogeologic Map showing Inferred Flow direction of the Lower Confined Aquifer. Lower Confined Aquifer Unit is Identified Beneath the Site (Kahle, 2003).

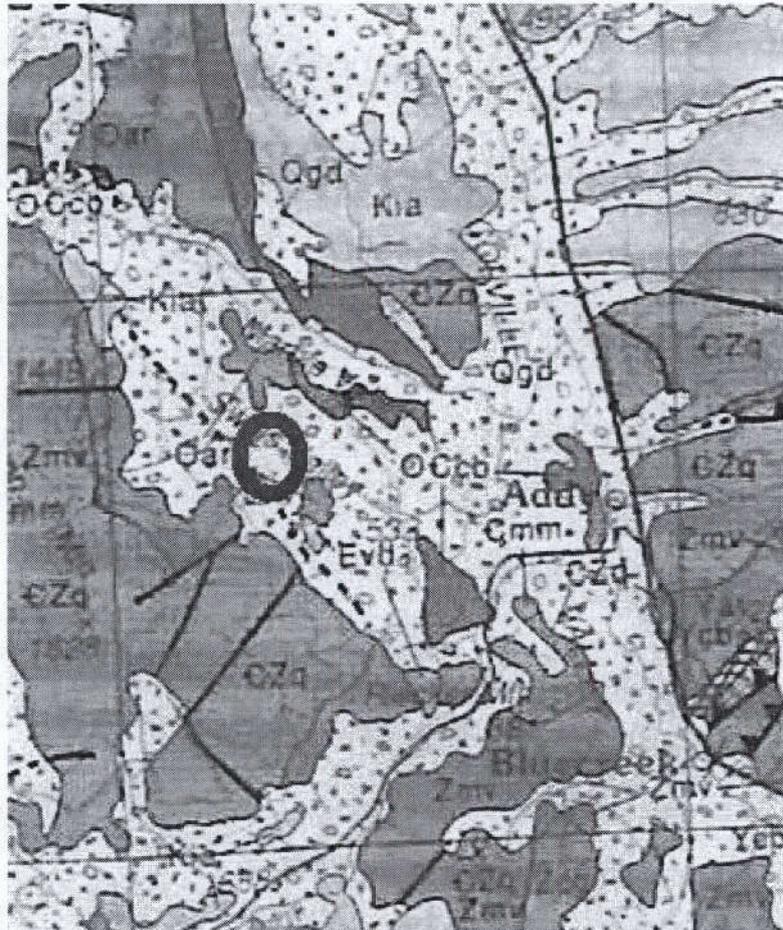


FIGURE 8: Geologic Map of the Swiss Valley Area. Site in Red Circle (WDNR, 1991). Qal = Quaternary Alluvium; Qgd = Quaternary Glacial Drift; Oar = Ordovician Argillite; Kia = Cretaceous Intrusive; CZq = Cambrian/Late Proterozoic Quartzite.

Soil Report – WNR Group reviewed the Soil Survey of Stevens County Washington document (Donaldson, et. al., 1982) and the NRCS web soil database. Figure 9 presents a map of the soils throughout the property. The area of interest (AOI) was selected as the outer boundaries of parcel No. 2140800, that area of the Rausch Farm. Soil descriptions are provided in Table 3 and Attachment 5. Soil descriptions for the various soils can be found on the NRCS Web Soil Survey site presented in the references section of this report. The main north and central portion of the property is underlain by Martella silt loam (Map Unit 143). The eastern part of the farm property is underlain by Colville silt loam (Map Unit 59), and the western portion, west of the road, is underlain by Bonner silt loam (Map Unit 35). These shallow, somewhat poorly to moderately well drained soil is typically located on terraces in the Colville Valley. Slope of this soil is typically 0 to 5 percent. The permeability of these silt loam soil is moderately low to moderately high (0.14 to 0.57 in/hr), and the available water capacity is high (about 12.0 inches). The soil is occasionally subject to flooding and no frequency of ponding. These soils would typically perch and slowly infiltrate water from the surface water to the deeper aquifer, or horizontally transmit water to surface water bodies perched on the thick clay deposit typically found several feet beneath the ground surface.

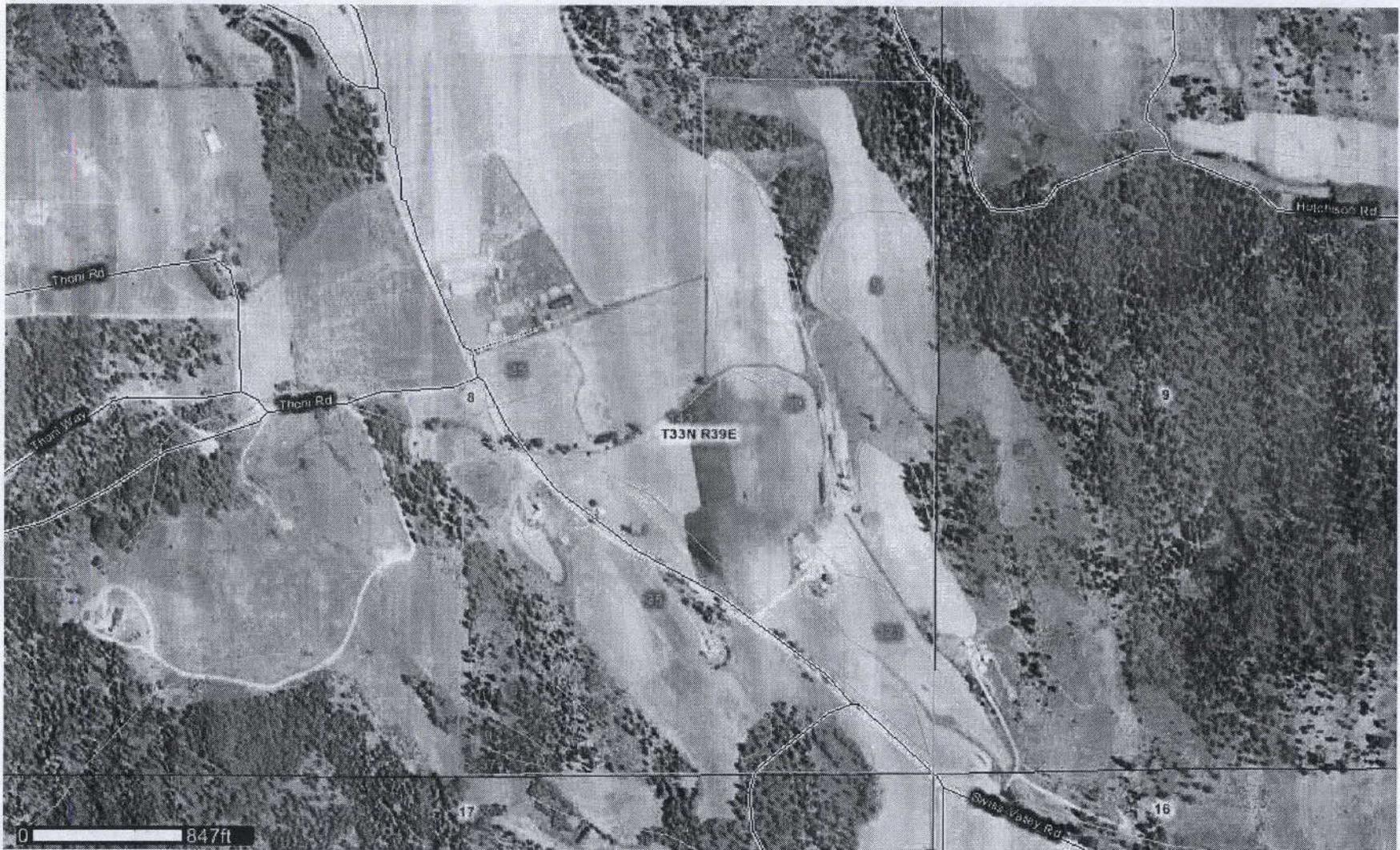


FIGURE 9: Soil Map of the Property (NAIP, 2013) . Soil Descriptions presented in Table 3. Property outlined in blue.

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5	Aits loam, 0 to 15 percent slopes	11.3	5.6%
6	Aits loam, 15 to 25 percent slopes	10.6	5.3%
9	Aits stony loam, 0 to 40 percent slopes	22.3	11.1%
35	Bonner silt loam, 0 to 10 percent slopes	40.7	20.2%
36	Bonner cobbly silt loam, 0 to 10 percent slopes	0.5	0.2%
37	Bossburg muck	1.4	0.7%
59	Colville silt loam, drained	28.1	13.9%
75	Donavan stony loam, 30 to 65 percent slopes	0.8	0.4%
77	Donavan-Rock outcrop complex, 30 to 65 percent slopes	6.0	3.0%
98	Histosols, ponded	1.0	0.5%
121	Konner silty clay loam	6.7	3.3%
143	Martella silt loam, 0 to 5 percent slopes	41.3	20.5%
165	Newbell silt loam, 0 to 25 percent slopes	27.1	13.5%
173	Peone silt loam, drained	3.7	1.8%
Totals for Area of Interest		201.4	100.0%

5.0 IRRIGATION SYSTEM CONFIGURATION

The irrigation system is a sprinkler (hand-line and wheel-line) irrigation system, consisting of two groundwater wells and two surface/groundwater impoundments. Water is conveyed from the diversion points via 6-inch buried main lines to a series of risers. The irrigation components are then connected to the risers for irrigation of the fields. No as-built of the irrigation system was available for this analysis.

No meters are present on the site, and the existing and historical irrigation practices have consisted of the sprinkler irrigation of the fields. On the aerial photographs throughout the past 20 years, the irrigation is evident. The irrigation collection ponds are visible on the photographs.

5.1 PUMP ELECTRICAL METERING ANALYSIS

For the irrigation system, there are two groundwater withdrawals and two groundwater/surface pond diversions at the site (Figure 2). Power is supplied to these four diversion/withdrawal pumps under four separate dedicated electrical meter numbers. Table 4 presents a summary of the electrical usage for each of the four irrigation diversions. Kilowatt hour used during the irrigation season are presented for the years 2007 through 2012. Irrigation of alfalfa fields ceased after the 2011 irrigation year. Some irrigation occurred in 2012, primarily irrigating fields for pasture of the dairy cows and cattle. As shown on the table, 2007 was the highest year of electrical usage, and as shown later in the report, the year when most irrigation occurred due to low precipitation. However, due to the water use in 2012, the highest of the last five years of use was in 2008. Electrical records reviewed for this evaluation are included in Attachment 6.

Service No.	SOURCE	2012	2011	2010	2009	2008	2007
494	NW Irrigation Well	4654	10894	5830	14291	17201	25997
608	Artesian Irr. Well	7100	18300	20100	28980	31360	41250
513	Fish Pond SW	1432	7810	6390	10380	8830	9330
646	Dairy Pond SW	4441	14739	10121	12404	14334	17421
TOTAL		17627	51743	42441	66055	71725	93998

In order to estimate quantities of water pumped from a given system and corresponding electrical system, the total dynamic head must be determined. Total Dynamic Head (TDH) is defined in the Encyclopedic Dictionary of Hydrogeology as "The sum of all head losses that must be overcome to pump water from its source to its desired location". TDH includes lifting head and the friction head, which are losses experienced in a piping network." – **Total Dynamic Head (TDH)** is the total equivalent height that a fluid is to be pumped, taking into account friction losses in the pipe.

$$h_{\text{total}} = \frac{P_1 - P_2}{\rho g}$$

or

$$\text{TDH} = \text{Static Height} + \text{Static Lift} + \text{Friction Loss}$$

where:

- *Static Lift* is the height the water will rise before arriving at the pump (also known as the *suction head*).
- *Static Height* is the maximum height reached by the pipe after the pump (also known as the 'discharge head').
- *Friction Loss* (or Friction Head Loss) is the head necessary to overcome the friction of the pipes, fittings, valves, elbows, etc.

This equation can be derived from **Bernoulli's Equation**.

For a relatively incompressible fluid such as water, TDH is simply the pressure head difference between the inlet and outlet of the pump, if measured at the same elevation and with inlet and outlet of equal diameter. TDH is also the work done by the pump per unit weight, per unit volume of fluid. Our site inspection and review of well logs, coupled with our experience, was used to determine the TDH for the project site. For the site the following was determined:

- Suction Head: estimated at 5 feet for the pond diversions, and 15 feet for the groundwater wells, the vertical distance from the water interface in the well to the pump (as estimated from well logs).
- Discharge Head: determined to be zero to 45 feet as determined from the approximate elevation change across the site.

- Friction Loss: As stated previously, no asbuilts of the conveyance system were available. Due to the unknown design of the conveyance system, and estimated 10 feet of head is added for pipe fittings, valves, and elbows.

The irrigation system at the site was never a fixed system, and combinations of wheel lines, and various lengths of hand lines were utilized during irrigation. Therefore, an estimate of hydraulic head was developed for each of the diversions. For the two pond diversion systems, and average TDH of 50-feet was estimated. For the groundwater wells, in which the potentiometric surface was approximately 10 feet below grade to artesian, an estimated TDH of 75 feet was used.

Electrical records were reviewed for the full years of 2007 through 2012 for each of the four diversion points. Using the above referenced formula. Table 4 summarizes the electrical draw for the period of use reviewed for the four individual power supplies at the site.

The equation below is the primary method used when relying upon electrical power consumption to estimate volume or flow rate as described in WAC 173-173-160(2). Using this methodology, the following was calculated:

$$V = \frac{318,600(kWh)(P_{eff})(M_{eff})}{TDH}$$

Where: V = volume of water pumped in gallons;
 318,600 = conversion factor;
 kWh = number of kilowatt-hours for the time period in question; e.g., irrigation season, year or minutes;
 Peff = pump efficiency as a decimal;
 Meff = motor efficiency as a decimal; and
 TDH = total dynamic head of the system in feet.

The four power supplies are dedicated to each service. Using the methodology described above and the power assumptions described, an estimated quantity of water diverted was calculated for each of the pumps. Table 5 summarizes these results for the years 2007 through 2012.

TABLE 5: ESTIMATE OF ANNUAL WATER DIVERTED							
Service No.	SOURCE	2012	2011	2010	2009	2008	2007
494	NW Irrigation Well	38.83	90.89	48.64	119.24	143.51	216.90
608	Artesian Irr. Well	59.24	152.68	167.70	241.79	261.65	344.17
513	Fish Pond SW	17.92	97.74	79.97	129.91	110.51	116.77
646	Dairy Pond SW	55.58	184.46	126.66	155.24	179.39	218.03
TOTAL		171.57	525.77	422.97	646.18	695.06	895.87

A more detailed analysis is shown on the spreadsheets in Attachment 7.

Table 5 summarizes the annual quantities in acre feet for each pump, and the total for the system. As referenced earlier, although the certificates are dedicated to each well, the conveyance system is intertied and it appears that water withdrawn from a diversion may have supplemented other certificates.

In year 2008 (the highest year in the last 5 years of use), the maximum volume of water was diverted over the records reviewed for the four water rights combined.

6.0 CONSUMPTIVE USE ANALYSIS

No metering was conducted on the subject site. Therefore, in order to assist with the estimation of the extent of each of the water rights and claims, consumptive use values were used for alfalfa on the property with a 70% irrigation efficiency. Values were determined for 175 acres of irrigation (that amount irrigated on and off the described place of use), and for 142.8 acres, that amount irrigated within the described place of use.

6.1 WASHINGTON IRRIGATION GUIDE (WIG)

The Washington Irrigation Guide (USDA, 1990) was developed for use in estimating historical crop use water requirements. The WIG provides technical information and procedures that can be used for planning and management of irrigation systems as well as developing quantities of crop consumptive use for various areas throughout Washington State (Appendix A of WIG). The crop use requirements are derived from a modified Blaney-Criddle method and generally use historical rainfall and precipitation data prior to 1980. The guide provides net irrigation requirements, based on long-term average climate conditions, for various crops and locations throughout the state. This data may not be truly representative of recent trends in decreased precipitation and higher temperatures, but can be used as an average crop requirement from long term historical precipitation and temperature records. The basic inputs to the modified Blaney-Criddle method include mean monthly temperature, precipitation and latitude.

For the property, WIG numbers were used for the area near Chewelah, Washington. Crop irrigation requirements were used for pasture at latitude of 48.3 degrees. The irrigation season is documented beginning on May 15th and ending October 10th in the WIG. The values as presented in the WIG are shown in Table 1. The irrigation period identified on the water right certificate is from April 1 through October 1.

As shown in Table 6, the net irrigation requirements for alfalfa near Chewelah, Washington is 23.93 inches (1.99 feet) per acre of land. The water rights and claims were used for irrigation on approximately 175 acres on the Rausch Farm property and area (Figure 2) from late April through October of each year. Ecology will also generally accept evaporation from the irrigation system as a documented consumptive use. For sprinkler irrigation, an assumed evaporation rate of 10-percent is added to the consumptive use (Ecology Guid-1210, 2005). For this analysis, an average system efficiency rating as presented in Guid-1210 was used, 70 percent.

TABLE 6: WIG NUMBERS FOR ALFALFA NEAR CHEWELAH, WASHINGTON													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Mean Temperature	23.7	30.4	37.1	46.0	54.1	60.6	66.0	64.9	56.8	45.8	34.4	27.7	
Total Precip (inches)	2.56	1.76	1.64	1.45	1.97	1.36	0.80	1.12	1.04	1.41	2.46	3.12	20.69
Effective Precip (ins)	0.00	0.05	0.96	1.02	1.44	1.06	0.76	0.92	0.75	0.87	0.01	0.00	7.84
Alfalfa Irrigation Requirement	0.00	0.00	0.00	0.00	1.44	5.23	7.59	6.02	3.59	0.06	0.00	0.00	23.93

Utilizing this Ecology 1210 guidance, the total irrigation requirement (TIR) for the 175 acres is 498.54 acre-feet and for the 142.8 acres within the described place of use of the former Rausch Farm, the total irrigation requirement was 406.81 acre-feet. The consumptive use estimates for the Rausch Farm site using the Policy 1210 methodology are 398.83 AF for 175 acres of alfalfa and 325.45 AF for 142.8 acres. Return flow passes through the property and returns to the tributaries of the Colville River or infiltrates through the permeable soils into the groundwater. A summary of the irrigation requirements for the Rausch Farm property using the Ecology Guidance 1210 is provided in Table 7.

Table 7: Ecology Policy 1210 WIG Analysis									
Method	Number of irrigated acres	Crop Type	Crop requirement in inches (WIG)	Crop Irrigation Requirement	Total Irrigation Requirement	App. Efficiency (%)	% Total Evaporated	Total Consumed (af)	Return Flow (af)
Periodic Move (Handline)	175	Alfalfa	23.93	348.98	498.54	70	10	398.83	99.71
Periodic Move (Handline)	142.8	Alfalfa	23.93	284.77	406.81	70	10	325.45	81.36

6.2 BLANEY-CRIDDLE METHOD

The Blaney-Criddle Method (Shultz, 1989) was also used to estimate the U_c of the Diamond M property. The Blaney-Criddle Method calculates U_c as the product of crop use coefficient (K) and consumptive use factor (F). Calculations associated with the Blaney-Criddle Method require the following data:

- Mean monthly air temperature and mean monthly precipitation. These values were obtained from the Western Regional Climate Center web site

(www.wrcc.dri.edu) for the Chewelah, Washington station No. 451395 (updated 04/04/13). The period of record within the data base was 1925 to 2013.

- Yearly monthly air temperature and mean monthly precipitation were also calculated for each of the individual years from 2007 to 2012. These values were obtained from the Western Regional Climate Center web site (www.wrcc.dri.edu) for Chewelah, WA, Washington station No. 451395.
- Percent of annual daytime hours occurring for each month, which was estimated from data presented in Jensen et. al. (1969) for northern latitudes of 46 to 49-degrees. Estimation for daytime hours at latitude 48.3 was used for this analysis.
- Monthly Crop Use Coefficients, which were adapted from typical coefficients for alfalfa crops grown in Western United States, such as those presented in Schulz (1989).
- Consumptive use calculations per acre include the amount of water required for the crops plus 10% for evaporation from the flood irrigation system.
- An assumed irrigation efficiency of 70% was applied to this analysis due to the shallow clay layer found across the property.

6.2.1 TIR and Consumptive Use Requirement for Alfalfa

In order to determine the actual TIR required and the consumptive use for the Rausch Farm property, the Blaney-Criddle method was used for precipitation and temperature data for each year between 2007 and 2012. Tables for each of these years are presented in Attachment 8. The tables present the calculated results for consumptive use of alfalfa crops (plus irrigation system evaporation) for one acre of land on the Rausch Farm. Table 8 summarizes this data.

As shown in Table 8, the annual crop net consumptive use ranges from 1.91 feet per acre in 2010 to 2.84 feet per acre in 2007. Total irrigation requirement ranged from 477.75 acre-feet per year in 2010 to 710.5 acre-feet per year in 2007. This transfer is proposing to transfer the entire water right; therefore the highest diverted value in the past 5-years can be transferred. This would be that amount diverted in 2008. As shown on Table 8, in 2008, an estimated amount of 695.06 acre-feet was calculated from electrical records. The Blaney-Criddle method estimated that 654.5 acre-feet was applied to the full 175 acres, and 534.07 acre-feet was applied to the 142.8 acres that are within the described place of use. An estimated 102 acre-feet of stock water was used and is discussed later in this report. Therefore, it appears up to 695.06 acre-feet of water may be available for transfer.

6.3 SUMMARY OF CONSUMPTIVE USE ANALYSIS

In order to allocate specific Blaney-Criddle calculations to individual certificates and claims, the irrigated fields were divided into 13 irrigated fields as shown on Figure 2. The acreage in each field was then multiplied by the year 2008 consumptive use and irrigation efficiency values. Table 9 summarizes the allocation of estimated quantities of water to each of the certificates and claims. Fields highlighted in green were irrigated but are outside the described place of use of certificates and claims. Pink highlighted rows are those fields irrigated inside the described place of use, but the property has been sold and the water rights withheld by Mr. Rausch.

TABLE 8: Estimate of Water Use at Rausch Farm Using Blaney-Criddle Methodology and WRCC Precipitation & Temperature Data for 2007 - 2012 at Chewelah Station

Year	Cu (ft/ac)	Cu + Evap (10%) (ft/ac)	Cu+Evap @ 70% Eff	Estimated AF by Electrical Records (Acre-feet)	AF using 175.0 Acres Irrigated (1)	AF using 142.8 Acres Irrigated (2)	Estimated AF for Dairy/Cattle (3)
2012	2.04	2.25	3.21	171.57	561.75	458.388	---
2011	2.09	2.29	3.28	525.77	574.00	468.384	172.83
2010	1.74	1.91	2.73	422.97	477.75	389.844	172.83
2009	2.33	2.57	3.67	646.18	642.25	524.076	172.83
2008	2.38	2.62	3.74	695.06	654.50	534.072	172.83
2007	2.58	2.84	4.06	895.87	710.50	579.768	172.83

(1) Estimated using 173.5 total acres that was irrigated with property water rights, using BC Method @ 70% Eff.

(2) Estimated using 141.3 total acres that was irrigated with described POU on certs, using BC Method @ 70% Eff.

(3) Estimated use for 350 dairy cows at 0.00129 AF/day/cow and 50 stock cattle at 0.00044 AF/day/cattle.

DRAFT

TABLE 9: IRRIGATION OF FIELDS ON FORMER RAUSCH FARM

ALLOCATION of Cu and TIR				
Field No.	Acres	Crop Cu-2008 (2.38'/ac)	Total Crop Cu- 2008 (+10% Evap) (2.62'/ac)	Total Irrigation Requirement @ 70% Eff (3.74'/ac)
1	7.8	18.564	20.436	29.172
2a	17.2	40.936	45.064	64.328
2b	31.0	73.780	81.220	115.940
3	15.6	37.128	40.872	58.344
4	20.0	47.600	52.400	74.800
5	1.4	3.332	3.668	5.236
6	5.5	13.090	14.410	20.570
7	1.1	2.618	2.882	4.114
8	16.0	38.080	41.920	59.840
9	20.5	48.790	53.710	76.670
10	10.7	25.466	28.034	40.018
11	2.5	5.950	6.550	9.350
12	24.2	57.596	63.404	90.508
13	1.5	3.570	3.930	5.610
TOTAL	175.0	412.930	454.570	648.890

IN DPOU	111.6	262.038	288.462	411.774
IN DPOU/ Withheld	31.2	74.256	81.744	116.688
OUT DPOU	32.2	76.636	84.364	120.428

G3-05041(4606A)	7.8	18.564	20.436	29.172
G3-04446(2980A)- IN DPOU	69.1	164.458	181.042	258.434
G3-04446(2980A)- OUT DPOU	1.4	3.332	3.668	5.236
G3-25276 IN DPOU	17.5	41.650	45.850	65.450
G3-25276 OUT DPOU	1.1	2.618	2.882	4.114
G3-152976CL OUT DPOU	5.5	13.090	14.410	20.570
G3-152980CL IN DPOU	48.4	115.2	126.8	181.0
G3-152980CL OUT DPOU	24.2	57.596	63.404	90.508
TOTAL IRR	175.0	416.500	458.500	654.500

G3-152976CL	Water for 350 Dairy cows and 50 Stock Cattle	172.83
-------------	--	--------

6.3 STOCK WATER CONSUMPTIVE USE ESTIMATE

The Rausch Farm was operated as a dairy farm since the early 1900's when Fred Thoni settled the land in 1890, and subsequently began investing in dairy cows until a large dairy was in operation which supplied cheese, cream and milk to the local communities. The Rausch's eventually purchased the farm from the Thoni's in 1956 and continued the dairy operation. Over the last five years, approximately 350 head of dairy cows and 50 head of stock cattle were maintained at the farm. Water was derived from a stock well and supplied stock water to the milking parlor and associated facilities. In order to estimate a consumptive use for the cattle operations at the facility, the following analysis was conducted.

- A dairy cow is estimated to consume 0.00065 cfs, or approximately 0.00129 AF/day (0.47 AF/yr).
- A stock cattle is estimated to consume 0.00022 cfs, or approximately 0.00043 AF/day (0.157 AF/yr).

Assuming 350 dairy cows, and average annual consumption of 164.8 AF/year would occur. The 50 stock cattle would consume an additional 8.03 AF/yr. Therefore, the dairy and cattle operations at the Rausch Farm consumed an additional 172.83 AF/yr in stock water at the site in addition to the irrigation use.

7.0 CONCLUSIONS

WNR Group has performed a preliminary water right validation and limited hydrogeologic review of the Site located near Addy, Washington. The following conclusions are based on review of readily available data and reports, noted in the bibliography of this letter report. The primary objective of this review was to provide a professional opinion of the validity and extent of the three certificates and two claims located at the Rausch Farm.

The analysis provided under this evaluation has developed the following conclusions:

- Valid water use was documented at the site for the three certificates and the two claims.
- Historical documentation reveals that a dairy operation which used water within the valley was present at the site since the early 1900's. The property was settled in 1890 and dairy cattle was purchased over the years until a large herd of Holsteins was present on the farm.
- A pumping system on the developed springs and pond on the existing Swartout property (a portion of which was irrigated by the Rausch's) shows an electrical meter that has a date stamp of installation of 10-13-1938.
- Table 9 presents the extent of the estimated quantities diverted under each certificate and claim.
- A total of 142.8 acres was irrigated within the described place of use on the certificates and claims with the existing irrigation system.
- There are two groundwater wells and two shallow groundwater/surface water trenches which are withdrawal points for the irrigation water rights.

- One groundwater well is used for a diversion point to supply stock water to the dairy facility.
- The water appears to have been beneficially used for irrigation and stock water uses on the property since the priority date on the Certificates and Claims.
- The irrigation supply system has been operational through 2012 according to power records for the Site.
- The water rights were perfected utilizing groundwater diverted from the deeper confined aquifer, and from “groundwater” trenches developed from excavations at springs located along the unnamed creek.
- The “groundwater” trenches collect both shallow groundwater from springs. In addition, the Fish Pond trench collects surface water from a tributary to the creek, and the lower Barn trench has the main valley creek directly flowing into the collection point. Both trench diversion points discharge water not diverted by pumps directly back to the creek.
- The two “groundwater” trenches divert both shallow groundwater perched on top of the thick clay valley fill sediments and surface water. The two sources are in direct hydraulic continuity with each other. Both the shallow groundwater springs and the surface water diversions end up as surface water in the drainage.
- An evaluation of total irrigation requirement by Ecology WIG methodologies indicate that approximately 406.81 acre-feet of water would be required to irrigate 142.8 acres of alfalfa with a 70% system efficiency. Of the 406.81 acre-feet, 325.45 acre-feet would be consumed by the crops.
- An evaluation using the Blaney-Criddle Method determined that 2008 would be the highest year of crop water use based on temperature and precipitation data. In 2008, the Blaney-Criddle method determined that approximately 534.07 acre-feet of water would be required to irrigate 142.8 acres of alfalfa with a 70% irrigation efficiency. Of the 534.07 acre-feet, 374.14 acre-feet would be consumed.
- An analysis of the consumptive use of 350 dairy cows and 50 stock cattle was also conducted for the site. An estimated 172.83 AF/year would be consumed by the stock at the Rausch Farm.
- Electrical records at the Site indicate that quantities of water diverted at the Site was highest in the year 2008. In 2008, a calculated 695.06 Acre-feet of water was diverted for irrigation at the site.
- The three water right certificates and two water claims at the property appear to be valid. The estimated quantities for each certificate is presented in Table 9.
- Future management of the water rights should continue in order to keep them valid. This should include continuing irrigation and stock watering at the site, or placement of the water right and claims into the trust water bank.
- If the property is purchased, a water management plan should be implemented.

8.0 LIMITING CONDITIONS

This water right validation and limited hydrogeologic letter report has been prepared for the exclusive use of Mr. Darren McCanna and his assigns, in accordance with the standards of the environmental consulting industry at the time the services were performed. This work has been performed for the sole purpose of assisting in the

interpretation of technical data and other documentation to determine the potential extent and validity of three water rights and two claims on the Rausch Farm. This letter report is governed by the specific scope of work authorized by WNR Group and is not intended to be relied upon by any other party unless specified Mr. Darren McCanna. The findings presented herein are based upon of readily available information as of the date the assessment was performed and review of a limited number of readily available hydrogeologic documents for the area near the Site. Geologic and hydrologic data is limited for the subject area and interpretations were made for the conclusions presented in this report.

The findings of the hydrogeologic review, as represented within this letter report, must be viewed in recognition of certain limiting conditions. The scope of work commissioned for this project does not represent an exhaustive study, but rather a reasonable inquiry, consistent with good commercial practice, in general accordance with existing environmental assessment practices. For the purposes of this assessment, only a limited number of documents were reviewed. No borings were completed in order to verify groundwater depth, and/or aquifer characteristics. Conclusions were based on findings of others for sites near the subject property.

Validation of water use consumption and property ownership was concluded from readily available information, found mostly within state and local agency databases. The WNR Group does not warrant the accuracy of these government databases. An exhaustive title search was not completed under the scope of services for this project.

We appreciate the opportunity to be of service to Mr. Darren McCanna in providing our services to provide the preliminary evaluation of Water Rights. Should you have any questions regarding this letter report, please do not hesitate to call us at your earliest convenience.

Very truly yours,
Water & Natural Resource Group

Eugene N.J. St.Godard, R.G., L.Hg.
Principal Hydrogeologist/Owner

BIBLIOGRAPHY

Ecology, October 11, 2005. Washington State Department of Ecology – Water Resources Program Guidance, Determining Irrigation Efficiency and Consumptive Use, Ecology internal guidance document.

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Washington State Department of Natural Resources-Stoffel and others, 1991: Geologic Map of Washington – Northeast Quadrant scale 1:250,000, Washington Division of Geology and Earth Resources, Geologic Map GM-39, 3 sheets.

USDA, 1990 U.S. Department of Agriculture, Soil Conservation Service. “State of Washington Irrigation Guide.” In cooperation with Washington State Cooperative Extension Service. November 1990.

United States Geological Survey, 1977: Dunn Mountain, Washington 7-1/2 minute Topographical Map.

SITE PHOTOGRAPHS

ATTACHMENT 1

WATER RIGHT

CERTIFICATE NO. 2980-A

CERTIFICATE NO. 4606-A

CERTIFICATE G3-25276

CERTIFICATE RECORD No. 10 PAGE No. 4606-A

STATE OF WASHINGTON, COUNTY OF Stevens

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 223, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

THIS IS TO CERTIFY That RAY BAUSCH

of Adity, Washington, has made proof

to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of

the ground waters of a well

located within W1/2E2

Sec. 8, Twp. 33 N., R. 39 E. W. M.,

for the purpose of Irrigation

under and subject to provisions contained in Ground Water Permit No. 4893 issued by the State

Supervisor of Water Resources and that said right to the use of said ground waters has been perfected

in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume 10 at page 4606-A;

that the right hereby confirmed dates from October 16, 1958; that the quantity of ground

water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually

beneficially used for said purposes, and shall not exceed 60 gallons per minute, 30 acre-feet

per year for the irrigation of 10 acres.

Special provisions required by the Supervisor of Water Resources: _____

A description of the lands to which such ground water right is appurtenant:

W1/2E2, less following described tracts: Beginning at the center of Sec. 8; thence east 40 rods; thence southwesterly to the north-south centerline of Section 8; thence north 32 chains, to point of beginning; this tract being within Sec. 8, T. 33 N., R. 39 E. W. M.

The right to the use of the ground water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this 20th day of September, 1963.

M. G. Walker
State Supervisor of Water Resources.

(A)

Certificate of Ground Water Right

Issued in accordance with the provisions of Chapter 253, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.

This is to certify that RAYMOND P. BAUSCH of Adgy, Washington, has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the ground waters of an infiltration trench and sump located within the EISEL Sec. 11, Twp. 33 N., R. 39 E. W. M., for the purpose of irrigation and stock water under and subject to provisions contained in Ground Water Permit No. 4140 issued by the State Supervisor of Water Resources and that said right to the use of said ground waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume 6 at page 2980-A; that the right hereby confirmed dates from September 21, 1956; that the quantity of ground water under the right hereby confirmed for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 250 gallons per minute; 210 acre-foot per year for the irrigation of 70 acres and for stock water.

A description of the lands to which such ground water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

EISEL and SEQUEL, sec. 8, T. 33 N., R. 39 E. W. M.

The right to the use of the ground water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this 31st day of December, 1957.

RECORDED COPY
[Signature]

[Signature]
State Supervisor of Water Resources.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

- Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)
- Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1946, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 17, 1977	61-25276	63-25175P	63-25276C

NAME RAYMOND P. RAUSCH			
ADDRESS STREET	CITY	STATE	ZIP CODE
Route 1, Box 102	Adity	Washington	99101

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

PUBLIC WATER TO BE APPROPRIATED

A well

VALUE OF PUBLIC WATER	VALUE OF PRIVATE WATER	VALUE OF WATER RIGHT PER YEAR
	260	201

250 gallons per minute, 200 acre feet per year, from April 1 to October 1, each year, for the irrigation of 80 acres. 10 gallons per minute, 1 acre foot per year, each year, for continuous domestic supply.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION/WITHDRAWAL
600 feet south and 100 feet east from the center of Sec. 8

NAME OF WATER RIGHT	SECTION	TOWNSHIP	RANGE	QUARTER	W.P.M.	COUNTY
61-25276	8	37	39 E.	39	Sec 8	Skagit

RECORDED PLATTED PROPERTY

SECTION	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Portions of E. 1/4 Sec. 8, N. 39 E., 37 T. 33 N., R. 39 E. W.M.

PROVISIONS

Issuance of this certificate shall not be construed as exonerating the holder thereof from compliance with any applicable federal, state, or local statutes, ordinances, or regulations including those administered by local agencies under the Shoreline Management Act of 1971.

This authorization to make use of public waters of the state is subject to existing rights, including any existing rights held by the United States for the benefit of Indians under treaty or otherwise.

Some of the lands described herein are benefitted by existing water rights. Therefore, the quantities of water granted under this right will be reduced by any quantities that may be used upon those lands by authority of those existing water rights.

Certificate holder shall maintain an access port as described in Ground Water Bulletin No. 1.

All water wells constructed within the state shall meet the minimum standards for construction and maintenance as provided under RCW 16.126 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells).

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

This certificate of water right is specifically subject to relinquishment for some of water as provided in RCW 90.14.120.

Given under my hand and the seal of this office at Spokane Washington, this 22nd day of January 19 82

DORALD V. HOOS, Director
Department of Ecology

REGISTERING DATA

BY JOHN E. ARNDQUIST, Registrar

FOR COUNTY USE ONLY

ATTACHMENT 2

WATER CLAIMS

CLAIM NO. G3-152976CL

CLAIM NO. G3-152980CL

State of Washington
Department of Ecology



RECEIVED
DEPARTMENT OF ECOLOGY

JUN 30 74 167795

CASH OTHER NONE

59

Water Right Claims Registration

Water Right Claim

Name ~~RAYMOND P RAUSCH~~ RAYMOND P RAUSCH

Address RT 1 BOX 108

ADDY, WASHINGTON Zip Code 99101

Phone No. 509/935-8220

1) Source from which the right to take and make use of water is claimed: Surface Water Ground Water
If surface water, please indicate source; give name if known:

(River, stream, lake, pond, spring, etc.)

2) Purpose(s) for which water is used:

Domestic Stockwatering Irrigation (lawn and garden) Other Use (specify) dairy operation

3) Legal description of lands on which water is used:

SE and SE 1/4 and SE 1/4 NE 1/4. Section 8, Twn 33 N., R. 39 E/W

If located within the limits of a recorded platted property:

Lot _____ Block _____ of _____ (Give name of plat or addition)

In addition, please indicate Sec. 8 T. 33 N., R. 39E E/W.W.M.

County in which lands are located Stevens

DO NOT USE THIS SPACE

The filing of a statement of claim does not constitute an adjudication of any claim to the right to use of waters as between the water use claimant and the state or as between one or more use claimants and another or others. This acknowledgment constitutes receipt for the filing fee.

Date Registered: June 26 1974 This has been assigned Water Right Claim Registry No. _____

Director, Department of Ecology

I hereby swear that the above information is true and accurate to the best of my knowledge and belief.

X Raymond P. Rausch

Date June 26 1974

If claim filed by designated representative print or type full name and mailing address of agent below.

Additional information relating to water quality and/or well construction is available.

ORIGINAL DOE

FEES: \$2.00 MUST ACCOMPANY THIS WATER RIGHT CLAIM
Return all three copies with carbons intact, along with your fee to:
Department of Ecology, Water Right Claims Registration, Olympia, Washington 98504

State of Washington
Department of Ecology



RECEIVED
DEPARTMENT OF ECOLOGY
JUN 30 7 41 67 86
CASH OTHER NONE

59

Water Right Claims Registration

Water Right Claim

Name RAYMOND P RAUSCH

Address RT 1 BOX 108

ADDY, WASHINGTON Zip Code 99101

Phone No. 509-935-8220

1) Source from which the right to take and make use of water is claimed: Surface Water Ground Water
If surface water, please indicate source; give name if known:

(River, stream, lake, pond, spring, etc.)

2) Purpose(s) for which water is used:

Domestic Stockwatering Irrigation (lawn and garden) Other Use (specify) _____

3) Legal description of lands on which water is used: SE $\frac{1}{4}$ of the NW $\frac{1}{4}$, the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ and the W $\frac{1}{2}$ of the SE $\frac{1}{4}$ of Section 8, Twn 33N, of Range 39 E/W

If located within the limits of a recorded platted property:

Lot _____ Block _____ of _____ (Give name of plat or addition)

In addition, please indicate Sec. 8 T. 33 N..R. 39E E/W.W.M.

County in which lands are located Stevens

DO NOT USE THIS SPACE
The filing of a statement of claim does not constitute an adjudication of any claim to the right to use of waters as between the water use claimant and the state or as between one or more use claimants and another or others. This acknowledgment constitutes receipt for the filing fee.
Date Registered _____ This has been assigned Water Right Claim Registry No. 15102800
Director, Department of Ecology

I hereby swear that the above information is true and accurate to the best of my knowledge and belief.

X Raymond P. Rausch

Date June 26 1974

If claim filed by designated representative print or type full name and mailing address of agent below.

Additional information relating to water quality and/or well construction is available.

ORIGINAL DOE

A FEE OF \$2.00 MUST ACCOMPANY THIS WATER RIGHT CLAIM

Return all three copies with carbons intact, along with your fee to:
Department of Ecology, Water Right Claims Registration, Olympia, Washington 98504

ATTACHMENT 3

**WATER WELL LOGS
ON RAUSCH FARM IN SEC. 8**

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

WATER WELL REPORT

STATE OF WASHINGTON

Application No. _____
Permit No. G3-25276P

OWNER: Name Ray Rausch Address Rt 1 box 108 Addy Wa. 99101

LOCATION OF WELL: County Stevens W $\frac{1}{2}$ - NW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 8 T. 33 N., R. 39 W.M.
Bearing and distance from section or subdivision corner

PROPOSED USE: Domestic Industrial Municipal
Irrigation Test Well Other

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

DIMENSIONS: Diameter of well 8 inches.
Drilled 131 ft. Depth of completed well 130 ft.

CONSTRUCTION DETAILS:
Casing installed: 8 - Diam. from 4.1 ft. to 130 ft.
Threaded " Diam. from _____ ft. to _____ ft.
Welded " Diam. from _____ ft. to _____ ft.

Perforations: Yes No
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.

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

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

Surface seal: Yes No To what depth? 19 ft.
Material used in seal Bentonite + Clay
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name _____
Type: _____ H.P.

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 4.1 ft. below top of well Date 2/4/87
Artesian pressure 1 lbs. per square inch Date 2/4/87
Artesian water is controlled by SIMMCOB Cap
(Cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? _____
Yield 200 gal./min. with _____ ft. drawdown after _____ hrs.

EST AIR LIFT

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Ballor test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artesian flow _____ g.p.m. Date 2/4/87
Temperature of water _____ Was a chemical analysis made? Yes No

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

MATERIAL	FROM	TO
Black Overburden	0	1
Brown Clay	1	8
Black Peat	8	15
Blue Clay	15	49
Brown Clay	49	68
Brown Clay	68	120
Blue sand & Gravel	120	130
Water Bearing		

FAUCILE # 57784

Work started 2/2 1987 Completed 2/4 1987

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Fogle Pump & Supply
(Person, firm, or corporation) (Type or print)

Address 316 W. 5th Colville Wa.

(Signed) Robert E Touch
(Well Driller)

License No. 1405 Date 2/4 1987

The Department of Ecology does NOT Warrant the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Application No. _____
Permit No. _____

(1) OWNER: Name Fair Temperance Farm Address RT 1 Box 128 Addy WY. 99101
(2) LOCATION OF WELL: County STEELE W 1/2 Sec 8 T 23 N. R 35 E W.M.
and distance from section or subdivision corner

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

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

(5) DIMENSIONS: Diameter of well 10 inches.
Drilled 161 ft. Depth of completed well 161 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 10" Diam. from 71 ft. to 161 ft.
Threaded " Diam. from _____ ft. to _____ ft.
Welded " Diam. from _____ ft. to _____ ft.
Perforations: Yes No
Type of perforator used perch
SIZE of perforations 4 in. by 1 in.
perforations from 121 ft. to 161 ft.
perforations from _____ ft. to _____ ft.
perforations from _____ ft. to _____ ft.

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

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

Surface seal: Yes No To what depth? 20 ft.
Material used in seal padding clay
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____
Type: _____ HP

(8) WATER LEVELS: Land-surface elevation _____ ft.
Static level 40 ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
62500 - 5000 gal/min " " " " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Ballot test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

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

MATERIAL	FROM	TO
<u>Red clay</u>	<u>0</u>	<u>9</u>
<u>clay w/ rock</u>	<u>9</u>	<u>90</u>
<u>Gravel - sand + shales</u>	<u>90</u>	<u>161</u>

water 90' - 160'

RECEIVED
SEP 20 1977
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

Work started 8-25 1977 Completed 8-26 1977

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME A. C. CO. Drilling & Well Svc. Inc.
(Person, firm, or corporation) (Type or print)
Address Box 1499 CDA, Ida
[Signed] E. V. Lewis
(Well Driller)
License No. 0265 Date 8-27 1977

The Department of Ecology does NOT Warrant the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

Start Card No. 31963

STATE OF WASHINGTON

Water Right Permit No. _____

1) OWNER: Name Pete Hausch Address _____

(2) LOCATION OF WELL: County STEVENS NE 1/4 SE 1/4 Sec 8 T. 33 N. R. 39 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) _____

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

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

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

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

MATERIAL	FROM	TO
BLACK DIRT +	0	1
GRAY CLAY & GRAVEL	1	79
BROWN CLAY & GRAVEL	79	82
& SAND		
GRAY CLAY & GRAVEL	82	159
BROWN SAND & GRAVEL	159	162
WATER BEARING		

(5) DIMENSIONS: Diameter of well C inches.
Drilled 162 feet. Depth of completed well 162 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: C Diam. from 12 ft. to 162 ft.
Welded Liner installed Threaded
Perforations: Yes No
Type of perforator used _____
Size of perforations _____ in by _____ in.
Screens: Yes No
Manufacturer's Name _____
Type _____ Model No _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Gravel packed: Yes No Size of gravel _____
Gravel placed from _____ ft. to _____ ft.
Surface seal: Yes No To what depth? 19 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

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

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 10.6" ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap. valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No if yes, by whom? _____
Yield: 505 gal./min. with _____ ft. drawdown after _____ hrs.
100 " LIST "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Batter test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artest _____ gal./min. with stem set at _____ ft. for _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

Work started 9-11 19 89 Completed 9-11 19 89

WELL CONSTRUCTOR CERTIFICATION:

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

NAME De Foyle Pump & Supply
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 316 W 5TH Colville

(Signed) Robert E. Foy License No. 1405
(WELL DRILLER)

Contractor's Registration No. AS 144mi Date 7-11 19 89

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warrant the Data and/or the Information on this Well Report.

BANK POND

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG - Trench No. Appl. 4446
Date July 1956
Record by well driller
Source driller's record

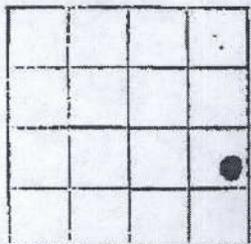


Diagram of Section

Location: State of WASHINGTON
County Stevens
Area
Map
E 1/4 SE 1/4 sec 8 T33 N. R 39 E
Drilling Co. R. M. Skidmore
Address Addy, Washington
Method of Drilling Date 19
Owner Raymond P. Rausch
Address Addy, Wash.
Land surface, datum ft. above below

CONSIDERATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
---------------	----------	------------------	--------------

(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)

Infiltration trench			
Dimensions: 100 ft. long, 35 ft. wide and 10 ft. deep 1.5 to 1 side slopes.			
Bottom width 10 ft. Discharge 300 g.p.m.			
Date of Test: September 1956.			
Position of water bearing stratum with reference to portal of tunnel			
Water was at a depth of from 5 to 10 feet.			

RECEIVED

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

10:29 1981

WATER WELL REPORT

STATE OF WASHINGTON

Application No. N/A

Permit No.

(1) OWNER: Name DEPARTMENT OF ECOLOGY Address RT 1 Box 108 ADDY 99101
(2) LOCATION OF WELL: County STEVENS SW 1/4 Sec 8 T. 33 N. R. 24 W. M.
bearing and distance from section or subdivision corner DUND MTA 7 1/2

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

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

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 213 ft. Depth of completed well 213 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from -2 ft. to 211 ft.
Threaded " Diam. from ft. to ft.
Welded " Diam. from ft. to ft.

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

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

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

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

(7) PUMP: Manufacturer's Name.....
Type:..... HP

(8) WATER LEVELS: Land-surface elevation above mean sea level 2726'
Static level 94 ft. below top of well Date 6/2/81
Artesian pressure lbs. per square inch Date.....
Artesian water is controlled by..... (Cap. valve, etc.)

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

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test 6/2/81
Batter test 12 gal/min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date.....
Temperature of water..... Was a chemical analysis made? Yes No

(10) WELL LOG:

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

MATERIAL	FROM	TO
TOP SOIL	0	2
SANDY CLAY BROWN	2	8
" " TAN	8	15
" " GRAY	15	43
" " TAN	43	47
" " " SOFT	47	53
CLEAN GRAVEL, MOSTLY SHALE	53	55
CLAY, BROWN	55	58
" WITH GRAVEL, GRAY	58	115
GRAVEL, CLEAN	115	123
SANDY CLAY GRAY	123	136
SAND, GRAY STICKY	136	148
CLAY, DARK BROWN, STICKY	148	151
SAND & SMALL GRAVEL	151	152
70% SHALE		
SANDY CLAY, GRAY	152	153
SAND & SMALL GRAVEL	153	155
70% BLK SHALE		
CLAY, GRAY WITH GRAVEL	155	158
INTERMIXED		
SAND & GRAVEL	158	161
CLAY, BROWN, SANDY	161	168
GRAVEL, TRACE WATER	168	170
CLAY, BROWN GRAVEL	170	172
INTERMIXED		
SAND & GRAVEL, 1/2" TO FINE	172	175
15 GPM (ODOR)		
CLAY, BROWN SANDY	175	182
SAND & GRAVEL 1/2" TO VERY FINE	182	184
13 GPM FINE GRAY SILT		
HEAVES SLIGHTLY		
BROWN CLAY HARD DRY	184	212
CLEAN GRAVEL WATER	212	213
5/27 81 12 GPM		

Work started 5/27 81 Completed 6/2 81

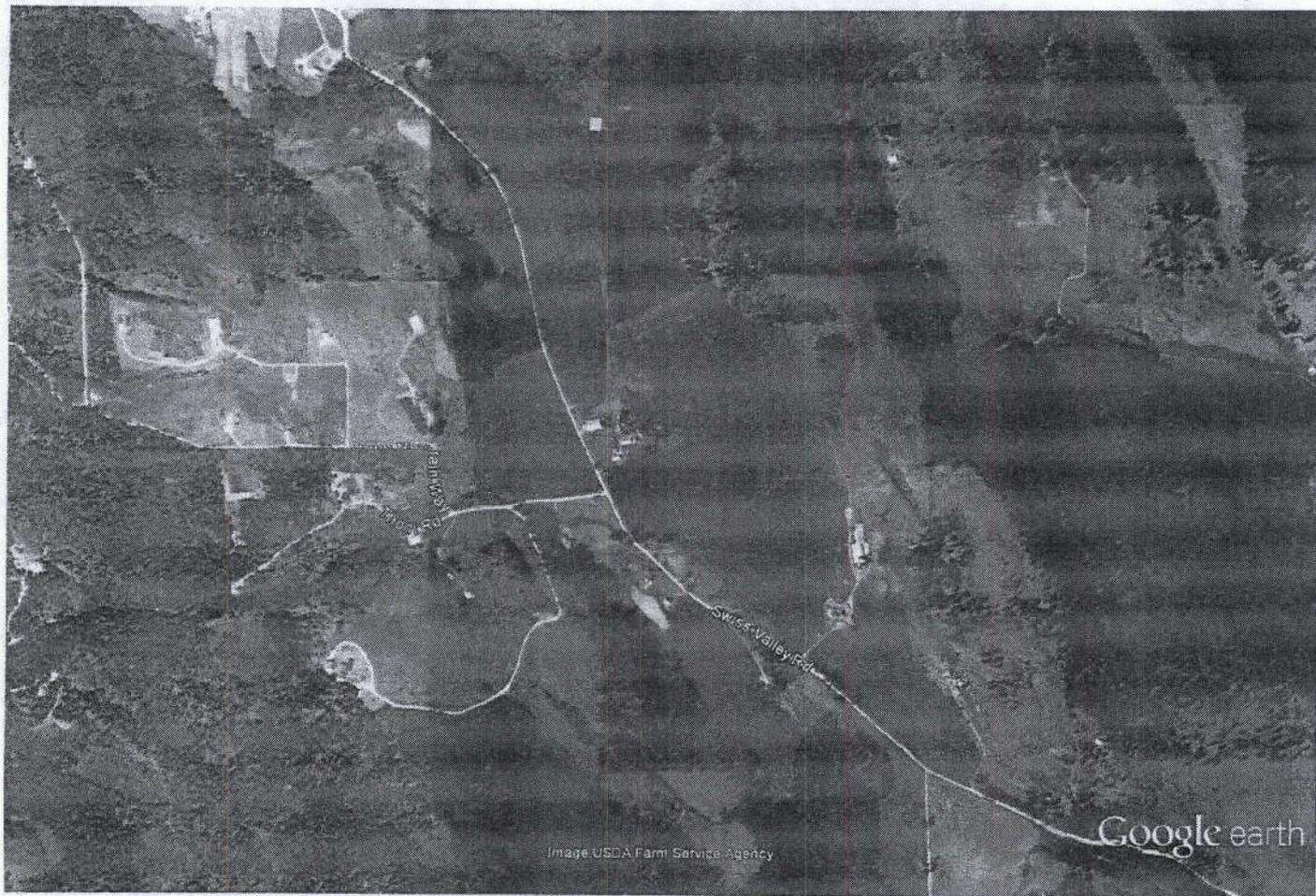
WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME SCOTT & SONS DRILLING INC (Person, firm, or corporation) (Type or print)
Address P.O. Box 604 Ford, WA 99101
[Signed] [Signature] Well Driller
License No. 1212 Date 6/3 81

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

ATTACHMENT 4

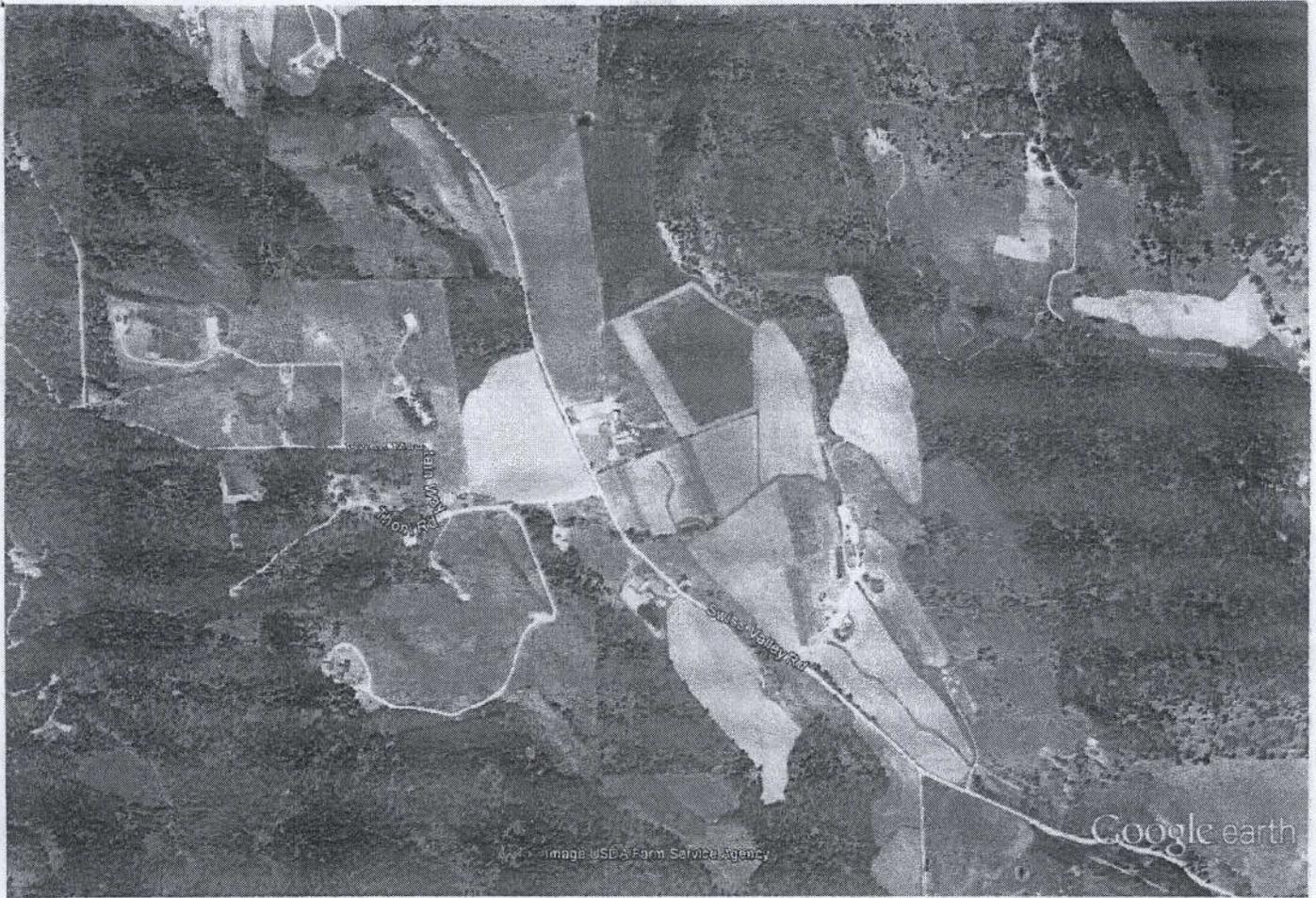
AERIAL PHOTOGRAPHS



Google earth



August 4, 2012



Google earth



November 3, 2011

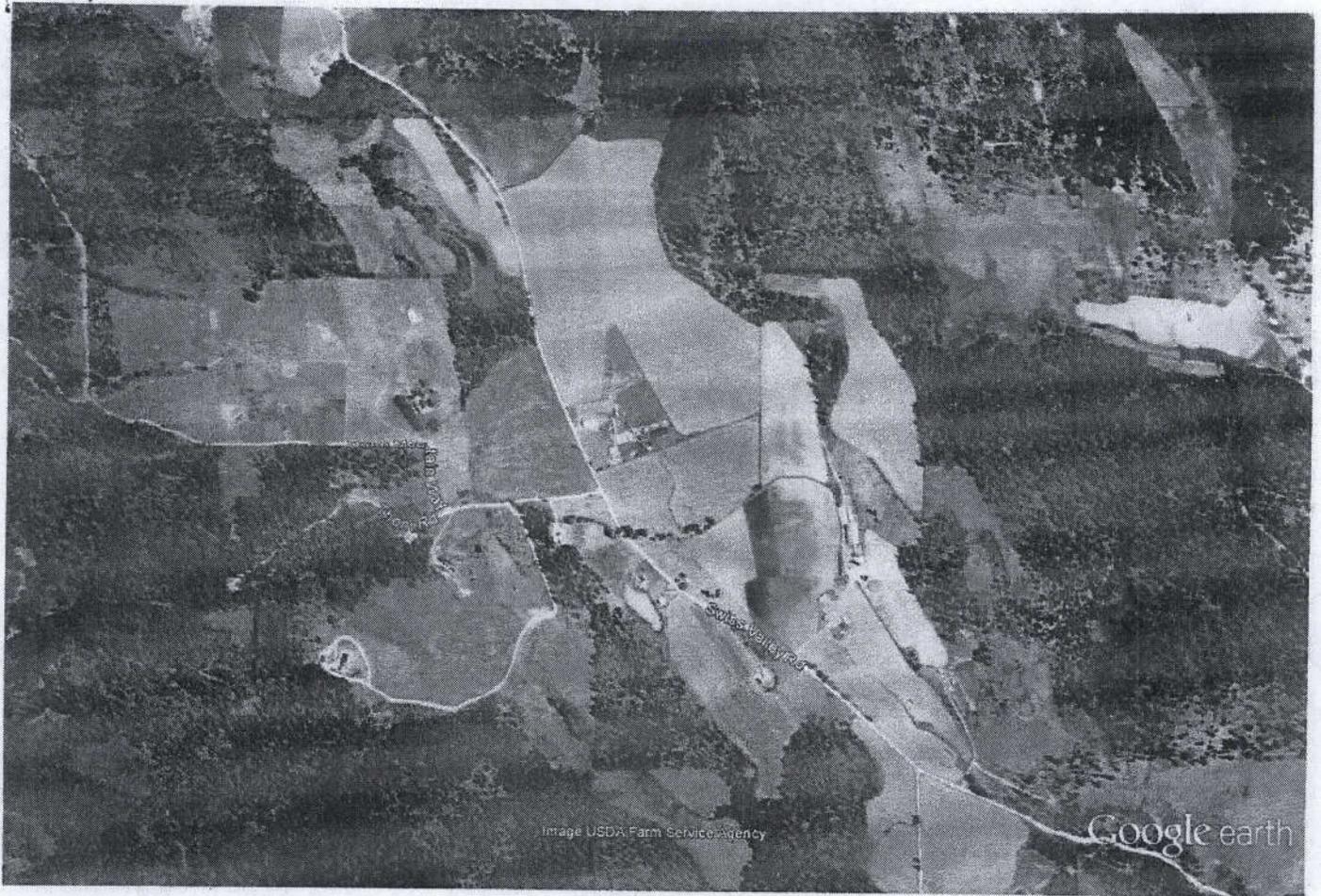




Google earth



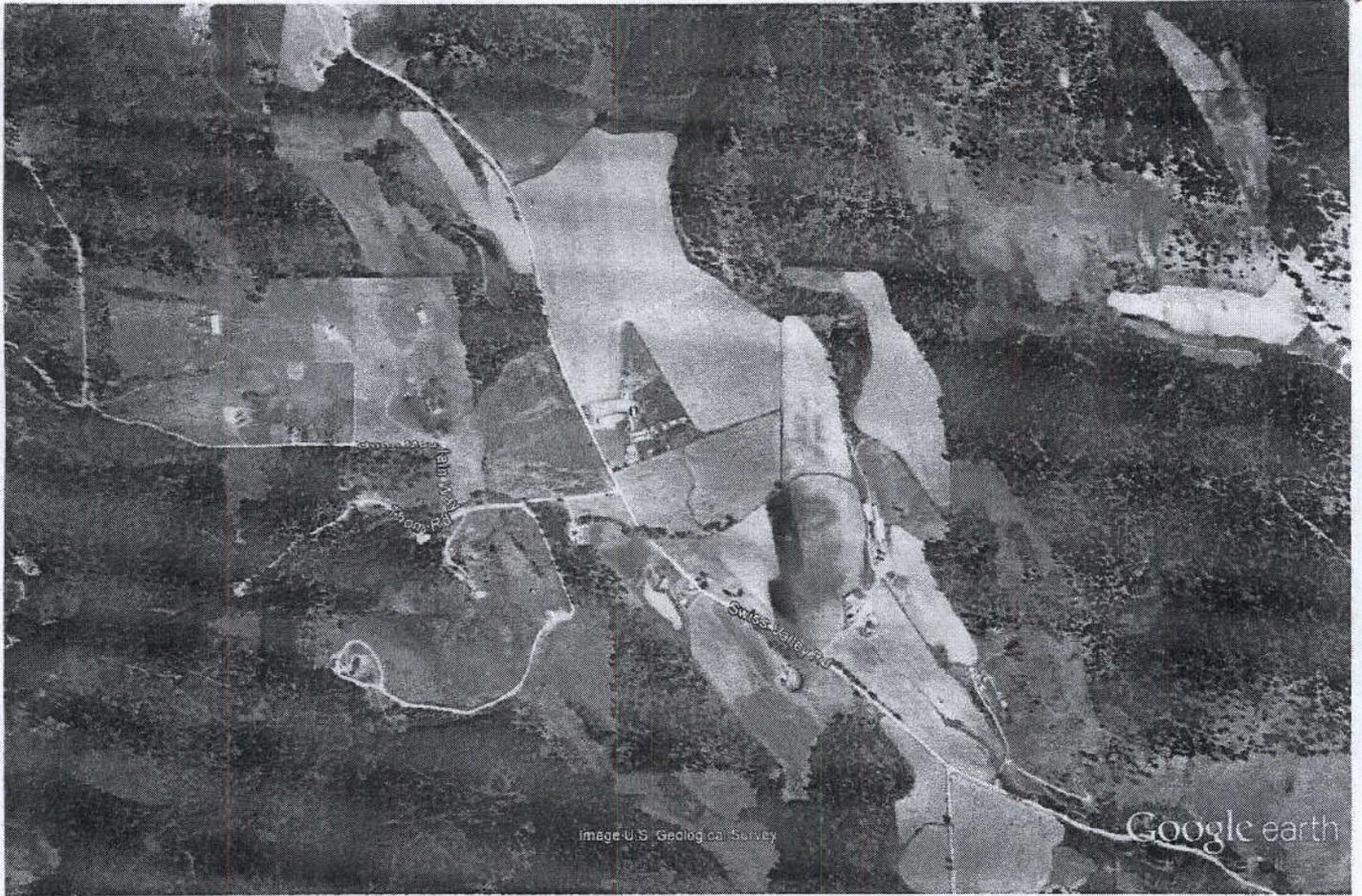
September 10, 2009



Google earth



August 17, 2006



Google earth



July 30, 2006

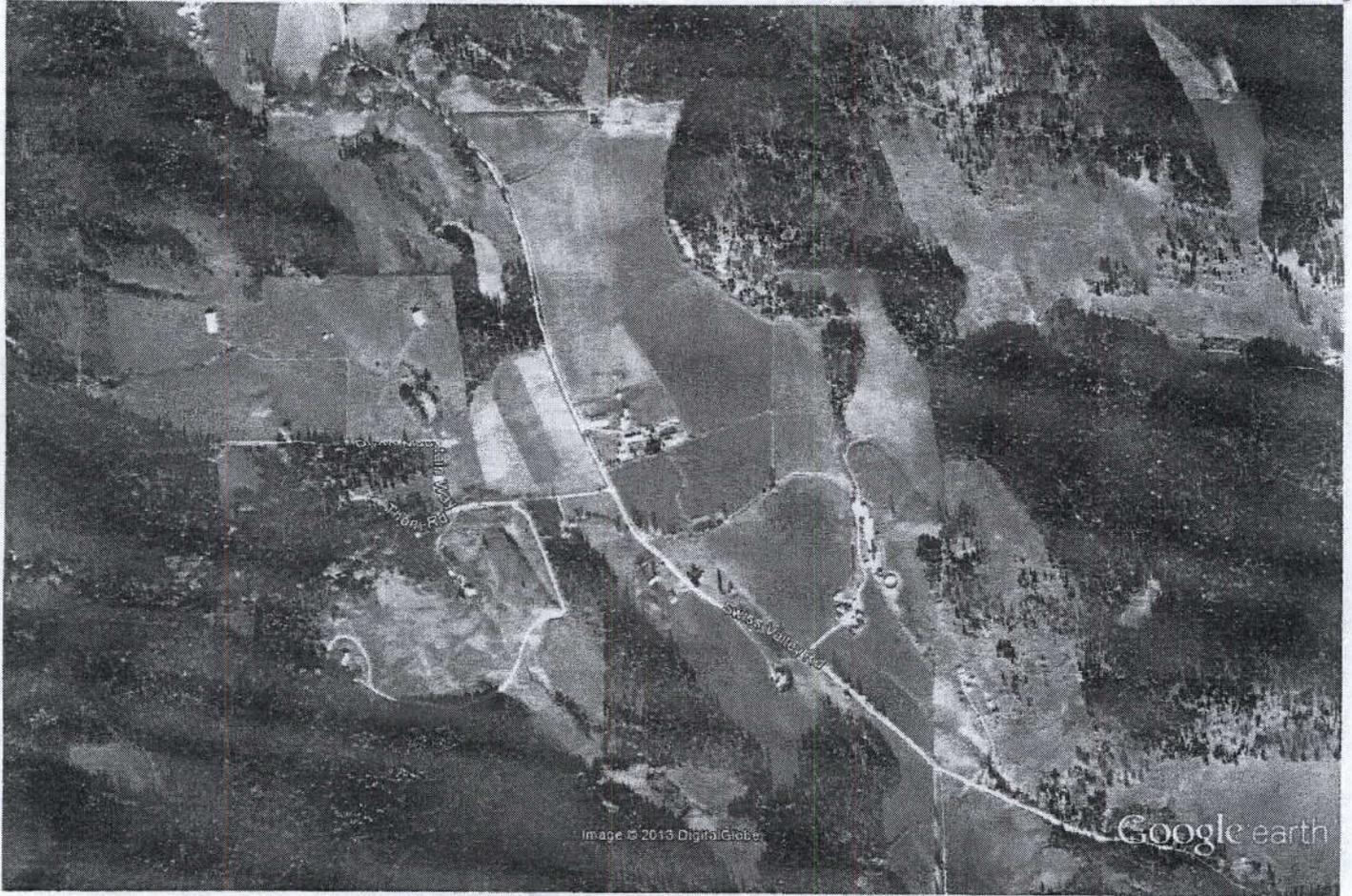


Google earth



July 30, 2005

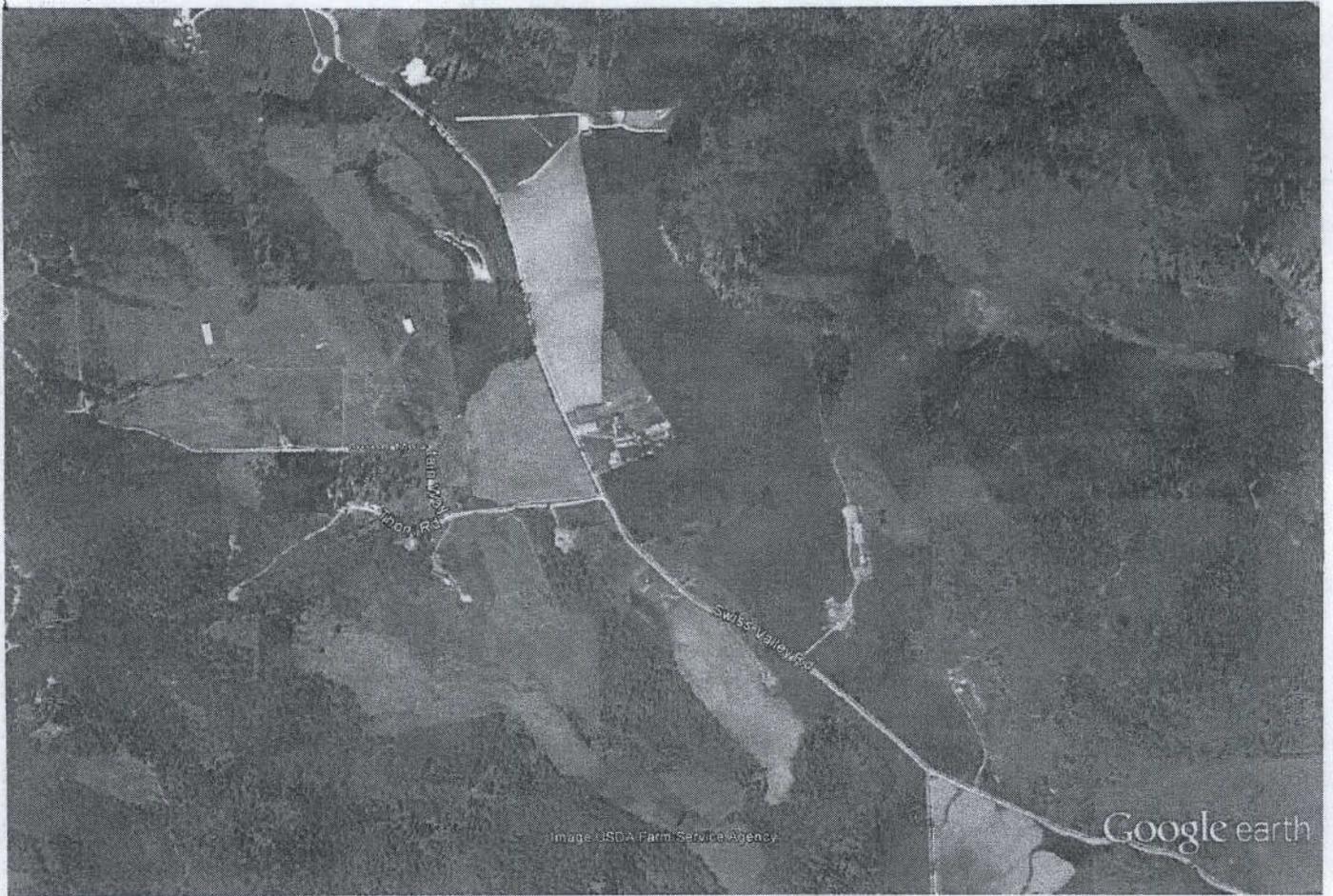




Google earth



OCTOBER 28, 2004



Google earth



JUNE 25, 2003





Google earth



August 5, 1998

ATTACHMENT 5

SURFICAL SOIL DESCRIPTIONS

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5	Aits loam, 0 to 15 percent slopes	11.3	5.6%
6	Aits loam, 15 to 25 percent slopes	10.6	5.3%
9	Aits stony loam, 0 to 40 percent slopes	22.3	11.1%
35	Bonner silt loam, 0 to 10 percent slopes	40.7	20.2%
36	Bonner cobbly silt loam, 0 to 10 percent slopes	0.5	0.2%
37	Bossburg muck	1.4	0.7%
59	Colville silt loam, drained	28.1	13.9%
75	Donavan stony loam, 30 to 65 percent slopes	0.8	0.4%
77	Donavan-Rock outcrop complex, 30 to 65 percent slopes	6.0	3.0%
98	Histosols, ponded	1.0	0.5%
121	Konner silty clay loam	6.7	3.3%
143	Martella silt loam, 0 to 5 percent slopes	41.3	20.5%
165	Newbell silt loam, 0 to 25 percent slopes	27.1	13.5%
173	Peone silt loam, drained	3.7	1.8%
Totals for Area of Interest		201.4	100.0%

5—Aits loam, 0 to 15 percent slopes

Map Unit Setting

- Elevation: 2,000 to 5,000 feet
- Mean annual precipitation: 22 to 35 inches
- Mean annual air temperature: 43 degrees F
- Frost-free period: 90 to 110 days

Map Unit Composition

- Aits and similar soils: 80 percent

Description of Aits

Setting

- Landform: Hills
- Landform position (two-dimensional): Toeslope
- Landform position (three-dimensional): Base slope
- Parent material: Volcanic ash and loess over calcareous glacial till

Properties and qualities

- Slope: 0 to 15 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.57 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability (nonirrigated): 3e
- Hydrologic Soil Group: B
- Other vegetative classification: western hemlock/queen cup beadlily (CHF311)

Typical profile

- 0 to 2 inches: Ashy loam
- 2 to 12 inches: Ashy loam
- 12 to 45 inches: Gravelly loam
- 45 to 60 inches: Very gravelly clay loam

6—Aits loam, 15 to 25 percent slopes

Map Unit Setting

- Elevation: 2,000 to 5,000 feet
- Mean annual precipitation: 22 to 35 inches
- Mean annual air temperature: 43 degrees F
- Frost-free period: 90 to 110 days

Map Unit Composition

- Aits and similar soils: 80 percent

Description of Aits

Setting

- Landform: Hills
- Landform position (two-dimensional): Toeslope
- Landform position (three-dimensional): Base slope
- Parent material: Volcanic ash and loess over calcareous glacial till

Properties and qualities

- Slope: 15 to 25 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.57 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability (nonirrigated): 4e
- Hydrologic Soil Group: B
- Other vegetative classification: western hemlock/queen cup beadlily (CHF311)

Typical profile

- 0 to 2 inches: Ashy loam
- 2 to 12 inches: Ashy loam
- 12 to 45 inches: Gravelly loam
- 45 to 60 inches: Very gravelly clay loam

9—Aits stony loam, 0 to 40 percent slopes

Map Unit Setting

- Elevation: 2,000 to 5,000 feet
- Mean annual precipitation: 22 to 35 inches
- Mean annual air temperature: 43 degrees F
- Frost-free period: 90 to 110 days

Map Unit Composition

- Aits and similar soils: 80 percent

Description of Aits

Setting

- Landform: Hills
- Landform position (two-dimensional): Footslope, toeslope
- Landform position (three-dimensional): Base slope
- Parent material: Volcanic ash and loess over calcareous glacial till

Properties and qualities

- Slope: 0 to 40 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.57 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Moderate (about 7.7 inches)

Interpretive groups

- Farmland classification: Not prime farmland
- Land capability (nonirrigated): 6s
- Hydrologic Soil Group: B
- Other vegetative classification: western hemlock/queen cup beadlily (CHF311)

Typical profile

- 0 to 2 inches: Stony ashy loam
- 2 to 12 inches: Stony ashy loam
- 12 to 45 inches: Gravelly loam
- 45 to 60 inches: Very gravelly clay loam

35—Bonner silt loam, 0 to 10 percent slopes

Map Unit Setting

- Elevation: 2,000 to 3,000 feet
- Mean annual precipitation: 25 to 35 inches
- Mean annual air temperature: 43 to 46 degrees F
- Frost-free period: 90 to 120 days

Map Unit Composition

- Bonner and similar soils: 85 percent

Description of Bonner

Setting

- Landform: Terraces
- Landform position (three-dimensional): Tread
- Parent material: Volcanic ash and loess over glacial outwash

Properties and qualities

- Slope: 0 to 10 percent
- Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Low (about 4.6 inches)

Interpretive groups

- Farmland classification: All areas are prime farmland
- Land capability classification (irrigated): 3e
- Land capability (nonirrigated): 3e
- Hydrologic Soil Group: B
- Other vegetative classification: grand fir/twinflower (CN590)

Typical profile

- 0 to 17 inches: Ashy silt loam
- 17 to 25 inches: Gravelly ashy loam
- 25 to 60 inches: Very gravelly loamy sand

36—Bonner cobbly silt loam, 0 to 10 percent slopes

Map Unit Setting

- Elevation: 2,000 to 3,200 feet
- Mean annual precipitation: 18 to 30 inches
- Mean annual air temperature: 45 degrees F
- Frost-free period: 90 to 120 days

Map Unit Composition

- Bonner and similar soils: 85 percent

Description of Bonner

Setting

- Landform: Terraces
- Landform position (three-dimensional): Tread
- Parent material: Volcanic ash and loess over glacial outwash

Properties and qualities

- Slope: 0 to 10 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Low (about 4.3 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability (nonirrigated): 3s
- Hydrologic Soil Group: B
- Other vegetative classification: grand fir/ninebark (CWS421)

Typical profile

- 0 to 17 inches: Cobbly ashy silt loam
- 17 to 25 inches: Gravelly ashy loam
- 25 to 60 inches: Very gravelly loamy sand

37—Bossburg muck

Map Unit Setting

- Elevation: 1,000 to 2,800 feet
- Mean annual precipitation: 18 to 23 inches
- Mean annual air temperature: 45 to 48 degrees F
- Frost-free period: 100 to 125 days

Map Unit Composition

- Bossburg and similar soils: 85 percent
- Minor components: 9 percent

Description of Bossburg

Setting

- Landform: Alluvial cones, depressions
- Parent material: Mixed volcanic ash alluvium

Properties and qualities

- Slope: 0 to 3 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Very poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: About 0 to 12 inches
- Frequency of flooding: Frequent
- Frequency of ponding: None
- Available water capacity: Very high (about 15.4 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability (nonirrigated): 5w
- Hydrologic Soil Group: B/D
- Ecological site: WET MEADOW 16-24 PZ (R044XY601WA)

Typical profile

- 0 to 8 inches: Muck
- 8 to 18 inches: Ashy silt loam
- 18 to 54 inches: Ashy silt loam
- 54 to 60 inches: Muck
- 60 to 70 inches: Stratified fine sandy loam to silt loam

Minor Components

Colville

- Percent of map unit: 3 percent
- Landform: Flood plains

Histosols, ponded

- Percent of map unit: 3 percent
- Landform: Depressions

Saltese

- Percent of map unit: 3 percent
- Landform: Depressions

59—Colville silt loam, drained

Map Unit Setting

- Elevation: 1,400 to 2,000 feet
- Mean annual precipitation: 17 to 19 inches
- Mean annual air temperature: 45 to 46 degrees F
- Frost-free period: 100 to 125 days

Map Unit Composition

- Colville and similar soils: 80 percent
- Minor components: 12 percent

Description of Colville

Setting

- Landform: Depressions
- Parent material: Mixed alluvium

Properties and qualities

- Slope: 0 to 3 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Somewhat poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.57 in/hr)
- Depth to water table: About 24 to 48 inches
- Frequency of flooding: Occasional
- Frequency of ponding: None
- Calcium carbonate, maximum content: 35 percent
- Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
- Sodium adsorption ratio, maximum: 10.0
- Available water capacity: High (about 12.0 inches)

Interpretive groups

- Farmland classification: All areas are prime farmland
- Land capability classification (irrigated): 3w
- Land capability (nonirrigated): 3w
- Hydrologic Soil Group: C

Typical profile

- 0 to 17 inches: Silt loam
- 17 to 27 inches: Silty clay loam
- 27 to 60 inches: Silty clay loam

Minor Components

Bridgeson

- Percent of map unit: 4 percent
- Landform: Flood plains

Peone

- Percent of map unit: 4 percent
- Landform: Alluvial fans

Saltese, muck

- Percent of map unit: 4 percent
- Landform: Depressions

75—Donavan stony loam, 30 to 65 percent slopes

Map Unit Setting

- Elevation: 1,800 to 4,000 feet
- Mean annual precipitation: 14 to 20 inches
- Mean annual air temperature: 45 to 48 degrees F
- Frost-free period: 90 to 120 days

Map Unit Composition

- Donovan and similar soils: 75 percent

Description of Donovan

Setting

- Landform: Hills
- Landform position (two-dimensional): Footslope
- Landform position (three-dimensional): Base slope
- Parent material: Glacial till mixed with a component of volcanic ash and loess

Properties and qualities

- Slope: 30 to 65 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Moderate (about 7.4 inches)

Interpretive groups

- Farmland classification: Not prime farmland
- Land capability (nonirrigated): 7e
- Hydrologic Soil Group: B
- Other vegetative classification: ponderosa pine-Douglas-fir/bluebunch wheatgrass (CDG311)

Typical profile

- 0 to 6 inches: Stony ashy loam
- 6 to 60 inches: Cobbly sandy loam

77—Donavan-Rock outcrop complex, 30 to 65 percent slopes

Map Unit Setting

- Elevation: 1,800 to 4,000 feet
- Mean annual precipitation: 14 to 20 inches
- Mean annual air temperature: 45 to 48 degrees F
- Frost-free period: 90 to 120 days

Map Unit Composition

- Donovan and similar soils: 65 percent
- Rock outcrop: 20 percent

Description of Donovan

Setting

- Landform: Hills
- Landform position (two-dimensional): Footslope
- Landform position (three-dimensional): Base slope
- Parent material: Glacial till mixed with a component of volcanic ash and loess

Properties and qualities

- Slope: 30 to 65 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Moderate (about 7.4 inches)

Interpretive groups

- Farmland classification: Not prime farmland
- Land capability (nonirrigated): 7e
- Hydrologic Soil Group: B
- Other vegetative classification: ponderosa pine-Douglas-fir/bluebunch wheatgrass (CDG311)

Typical profile

- 0 to 6 inches: Stony ashy loam
- 6 to 60 inches: Cobbly sandy loam

Description of Rock Outcrop

Properties and qualities

- Slope: 30 to 65 percent
- Depth to restrictive feature: 0 inches to lithic bedrock
- Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 5.95 in/hr)

Interpretive groups

- Farmland classification: Not prime farmland
- Land capability (nonirrigated): 8s

Typical profile

- 0 to 60 inches: Unweathered bedrock

98—Histosols, ponded

Map Unit Setting

- Elevation: 1,500 to 4,000 feet
- Mean annual precipitation: 12 to 50 inches
- Mean annual air temperature: 45 to 46 degrees F
- Frost-free period: 100 to 170 days

Map Unit Composition

- Histosols and similar soils: 100 percent

Description of Histosols

Setting

- Landform: Depressions
- Parent material: Organic material and volcanic ash alluvium

Properties and qualities

- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Very poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: About 0 inches
- Frequency of flooding: None
- Frequency of ponding: Frequent
- Available water capacity: Very high (about 26.9 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability (nonirrigated): 5w
- Hydrologic Soil Group: B/D

Typical profile

- 0 to 18 inches: Muck
- 18 to 60 inches: Mucky peat
- 60 to 70 inches: Fine sandy loam

121—Konner silty clay loam

Map Unit Setting

- Elevation: 1,500 to 2,500 feet
- Mean annual precipitation: 16 to 22 inches
- Mean annual air temperature: 46 to 48 degrees F
- Frost-free period: 90 to 120 days

Map Unit Composition

- Konner and similar soils: 80 percent
- Minor components: 12 percent

Description of Konner

Setting

- Landform: Depressions
- Parent material: Mixed alluvium

Properties and qualities

- Slope: 0 to 3 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Somewhat poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
- Depth to water table: About 12 to 24 inches
- Frequency of flooding: Occasional
- Frequency of ponding: None
- Available water capacity: High (about 11.2 inches)

Interpretive groups

- Farmland classification: Prime farmland if drained
- Land capability (nonirrigated): 4w
- Hydrologic Soil Group: C/D
- Ecological site: WET MEADOW 16-24 PZ (R044XY601WA)

Typical profile

- 0 to 17 inches: Silty clay loam
- 17 to 45 inches: Clay loam
- 45 to 60 inches: Silty clay loam

Minor Components

Bridgeson

- Percent of map unit: 3 percent
- Landform: Flood plains

Colville

- Percent of map unit: 3 percent
- Landform: Flood plains, depressions

Peone

- Percent of map unit: 3 percent
- Landform: Alluvial fans

Histosols, ponded

- Percent of map unit: 3 percent
- Landform: Depressions

143—Martella silt loam, 0 to 5 percent slopes

Map Unit Setting

- Elevation: 2,000 to 3,600 feet
- Mean annual precipitation: 18 to 30 inches
- Mean annual air temperature: 43 to 46 degrees F
- Frost-free period: 90 to 120 days

Map Unit Composition

- Martella and similar soils: 85 percent

Description of Martella

Setting

- Landform: Terraces
- Parent material: Volcanic ash and loess over glacial lake sediments

Properties and qualities

- Slope: 0 to 5 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.57 in/hr)
- Depth to water table: About 24 to 36 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum content: 24 percent
- Available water capacity: High (about 11.5 inches)

Interpretive groups

- Farmland classification: All areas are prime farmland
- Land capability classification (irrigated): 3w
- Land capability (nonirrigated): 3w
- Hydrologic Soil Group: C
- Other vegetative classification: grand fir/big huckleberry (CWS214)

Typical profile

- 0 to 7 inches: Ashy silt loam
- 7 to 13 inches: Ashy silt loam
- 13 to 30 inches: Silt loam
- 30 to 60 inches: Stratified very fine sandy loam to silty clay loam

165—Newbell silt loam, 0 to 25 percent slopes

Map Unit Setting

- Elevation: 2,100 to 4,500 feet
- Mean annual precipitation: 18 to 35 inches
- Mean annual air temperature: 43 to 45 degrees F
- Frost-free period: 90 to 120 days

Map Unit Composition

- Newbell and similar soils: 80 percent

Description of Newbell

Setting

- Landform: Hills
- Landform position (two-dimensional): Toeslope
- Landform position (three-dimensional): Base slope
- Parent material: Volcanic ash and loess over glacial till derived from granite

Properties and qualities

- Slope: 0 to 25 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Moderate (about 8.8 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability classification (irrigated): 4e
- Land capability (nonirrigated): 3e
- Hydrologic Soil Group: B
- Other vegetative classification: western hemlock/queen cup beadlily (CHF311)

Typical profile

- 0 to 10 inches: Ashy silt loam
- 10 to 13 inches: Ashy silt loam, loam
- 13 to 60 inches: Very gravelly sandy loam

173—Peone silt loam, drained

Map Unit Setting

- Elevation: 1,700 to 3,000 feet
- Mean annual precipitation: 13 to 22 inches
- Mean annual air temperature: 45 to 46 degrees F
- Frost-free period: 90 to 120 days

Map Unit Composition

- Peone and similar soils: 80 percent
- Minor components: 10 percent

Description of Peone

Setting

- Landform: Depressions
- Parent material: Mixed alluvium with diatomite and volcanic ash

Properties and qualities

- Slope: 0 to 3 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Somewhat poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: About 24 to 36 inches
- Frequency of flooding: Occasional
- Frequency of ponding: None
- Available water capacity: High (about 11.1 inches)

Interpretive groups

- Farmland classification: Prime farmland if drained
- Land capability (nonirrigated): 3w
- Hydrologic Soil Group: C

Typical profile

- 0 to 14 inches: Ashy silt loam
- 14 to 43 inches: Silt loam
- 43 to 60 inches: Stratified loamy coarse sand to silt loam

Minor Components

Bridgeson

- Percent of map unit: 5 percent
- Landform: Flood plains

Colville

- Percent of map unit: 5 percent
- Landform: Flood plains, depressions

ATTACHMENT 6

ELECTRICAL RECORDS

Electric Billing History for ELECTRIC SVC No. T12180002
 at 1877 SWISS VALLEY RD WELL Deep #2 ADDY WA 99101
 Route: 060484 Premise No.: 0494

Irr Well

Current account #650062764 Customer: FAIR TOMORROW FARMS INC,
 Mailing address:

1917 THONI RD
 ADDY WA 991019658

Service status: CLOSED (SERVICE ON) 10-19-2012
 Rate schedule: 032 PUMPING SERVICE RESIDENTIAL AND FARM

From 2007-01-10 to 2013-02-05 (2,241 days of service)
 Total usage: 78,867 Total billing: \$6,296.01

Read Date	RBC	Dys Svc	Deg Dys	Usage	Tax Amt	Billed Amt	Mult	Begin Read	End Read
2013-02-05	AI	32	1222	0	0.00	0.00	1	0	0
2013-01-04	AI	30	1111	0	0.00	0.00	1	0	0
2012-12-05	AI	30	803	0	0.00	0.00	1	0	0
2012-11-07	Q	2	41	0	0.00	0.00	1	21378	21378
2012-11-05	NI	17	342	0	0.00	0.00	1	21378	21378
2012-10-19	TC	14	174	0	0.00	10.00	1	21378	21378
2012-10-05	VR	28	125	3236	0.00	300.11	1	18142	21378
2012-09-07	NR	32	22	0	0.00	10.00	1	18142	18142
2012-08-06	RY	32	5	1418	0.00	138.74	1	16724	18142
2012-07-05	VR	30	161	0	0.00	10.00	1	16724	16724
2012-06-05	VR	33	313	0	0.00	10.00	1	16724	16724
2012-05-03	NR	29	460	0	0.00	10.00	1	16724	16724
2012-04-04	NR	28	693	0	0.00	10.00	1	16724	16724
2012-03-07	NR	30	954	0	0.00	10.00	1	16724	16724
2012-02-06	VR	31	1084	0	0.00	10.00	1	16724	16724
2012-01-06	NR	30	1050	0	0.00	8.20	1	16724	16724
2011-12-07	NR	33	1030	0	0.00	7.75	1	16724	16724
2011-11-04	VR	30	583	0	0.00	7.75	1	16724	16724
2011-10-05	RR	28	123	1997	0.00	186.16	1	14727	16724
2011-09-07	RR	29	24	5291	0.00	426.61	1	9436	14727
2011-08-09	VR	33	35	3345	0.00	301.35	1	6091	9436
2011-07-07	RR	30	149	261	0.00	31.07	1	5830	6091
2011-06-07	ER	32	340	0	0.00	7.75	1	5830	5830
2011-05-06	ER	30	671	0	0.00	7.75	1	5830	5830
2011-04-06	ER	30	716	0	0.00	7.75	1	5830	5830
2011-03-07	ER	33	1122	0	0.00	7.75	1	5830	5830
2011-02-02	ER	28	950	0	0.00	7.75	1	5830	5830
2011-01-05	ER	30	1110	0	0.00	7.75	1	5830	5830
2010-12-06	ER	33	1129	0	0.00	6.93	1	5830	5830
2010-11-03	VR	27	481	0	0.00	6.75	1	5830	5830
2010-10-07	RR	30	164	1465	0.00	126.26	1	4365	5830
2010-09-07	VR	34	84	4365	0.00	338.18	1	0	4365
2010-08-04	RR	28	11	0	0.00	6.75	1	0	0
2010-07-28	Q	21	11	0	0.00	0.00	1	49958	49958
2010-07-07	VR	30	161	0	0.00	6.75	1	49958	49958
2010-06-07	ER	34	403	0	0.00	6.75	1	49958	49958
2010-05-04	NR	32	566	0	0.00	6.75	1	49958	49958
2010-04-02	ER	31	749	0	0.00	6.75	1	49958	49958
2010-03-02	VR	28	737	0	0.00	6.75	1	49958	49958
2010-02-02	NR	29	853	0	0.00	6.75	1	49958	49958
2010-01-04	ER	30	1169	0	0.00	6.32	1	49958	49958
2009-12-05	VR	31	928	0	0.00	6.25	1	49958	49958
2009-11-04	NR	28	648	0	0.00	6.25	1	49958	49958
2009-10-07	VR	33	229	0	0.00	6.25	1	49958	49958
2009-09-04	RR	28	20	3031	0.00	262.40	1	46927	49958
2009-08-07	RY	28	14	5918	0.00	479.97	1	41009	46927
2009-07-10	VR	32	73	5342	0.00	469.99	1	35667	41009
2009-06-08	VR	32	220	0	0.00	6.25	1	35667	35667
2009-05-07	NR	30	532	0	0.00	6.25	1	35667	35667
2009-04-07	NR	27	713	0	0.00	6.25	1	35667	35667
2009-03-11	VR	30	1013	0	0.00	6.25	1	35667	35667
2009-02-09	NR	33	1236	0	0.00	6.25	1	35667	35667
2009-01-07	VR	30	1355	0	0.00	6.06	1	35667	35667
2008-12-08	VR	33	932	0	0.00	6.00	1	35667	35667
2008-11-05	VR	28	557	0	0.00	6.00	1	35667	35667

Electric Billing History for ELECTRIC SVC No. 00021186
 at: 1877 SWISS VALLEY RD WELL Deep #1 ADDY WA 99101
 Route: 060484 Premise No.: 0608

*In Well
ARTESIAN*

Current account #2015598 Customer: FAIR TOMORROW FARMS INC,
 Mailing address:

1917 THONI RD
 ADDY WA 991019658

Service status: CLOSED (SERVICE ON) 10-19-2012
 Rate schedule: 032 PUMPING SERVICE RESIDENTIAL AND FARM

From 2006-12-11 to 2013-02-05 (2,248 days of service)
 Total usage: 147,110 Total billing: \$10,337.95

Read Date	RBC	Dys Svc	Deg Dys	Usage	Tax Amt	Billed Amt	Mult	Begin Read	End Read
2013-02-05	RI	32	1222	0	0.00	0.00	10	247	247
2013-01-04	RI	30	1111	0	0.00	0.00	10	247	247
2012-12-05	EI	30	803	0	0.00	0.00	10	247	247
2012-11-05	RI	17	342	0	0.00	0.00	10	247	247
2012-10-19	TC	14	174	10	0.00	10.88	10	246	247
2012-10-05	VR	28	125	0	0.00	10.00	10	246	246
2012-09-07	VR	32	22	5530	0.00	447.72	10	9693	246
2012-08-06	RY	32	5	1570	0.00	152.54	10	9536	9693
2012-07-05	VR	30	161	0	0.00	10.00	10	9536	9536
2012-06-05	VR	33	313	0	0.00	10.00	10	9536	9536
2012-05-03	VR	29	460	0	0.00	10.00	10	9536	9536
2012-04-04	VR	28	693	0	0.00	10.00	10	9536	9536
2012-03-07	VR	30	954	0	0.00	10.00	10	9536	9536
2012-02-06	VR	31	1084	0	0.00	10.00	10	9536	9536
2012-01-06	VR	30	1050	0	0.00	8.20	10	9536	9536
2011-12-07	VR	33	1030	0	0.00	7.75	10	9536	9536
2011-11-04	VR	30	583	0	0.00	7.75	10	9536	9536
2011-10-05	RR	28	123	3970	0.00	345.70	10	9139	9536
2011-09-07	VR	29	24	9200	0.00	682.35	10	8219	9139
2011-08-09	VR	33	35	5130	0.00	420.37	10	7706	8219
2011-07-07	VR	30	149	0	0.00	7.75	10	7706	7706
2011-06-07	VR	32	340	0	0.00	7.75	10	7706	7706
2011-05-06	VR	30	671	0	0.00	7.75	10	7706	7706
2011-04-06	VR	30	716	0	0.00	7.75	10	7706	7706
2011-03-07	ER	33	1122	0	0.00	7.75	10	7706	7706
2011-02-02	VR	28	950	0	0.00	7.75	10	7706	7706
2011-01-05	VR	30	1110	0	0.00	7.75	10	7706	7706
2010-12-06	VR	33	1129	0	0.00	6.93	10	7706	7706
2010-11-03	VR	27	481	0	0.00	6.75	10	7706	7706
2010-10-07	VR	30	164	660	0.00	60.59	10	7640	7706
2010-09-07	RR	34	84	9660	0.00	647.46	10	6674	7640
2010-08-04	VR	28	11	9780	0.00	654.47	10	5696	6674
2010-07-07	VR	30	161	0	0.00	6.75	10	5696	5696
2010-06-07	VR	34	403	0	0.00	6.75	10	5696	5696
2010-05-04	VR	32	566	0	0.00	6.75	10	5696	5696
2010-04-02	VR	31	749	0	0.00	6.75	10	5696	5696
2010-03-02	VR	28	737	0	0.00	6.75	10	5696	5696
2010-02-02	VR	29	853	0	0.00	6.75	10	5696	5696
2010-01-04	VR	30	1169	0	0.00	6.32	10	5696	5696
2009-12-05	VR	31	928	0	0.00	6.25	10	5696	5696
2009-11-04	VR	28	648	0	0.00	6.25	10	5696	5696
2009-10-07	RR	33	229	5180	0.00	401.74	10	5178	5696
2009-09-04	RR	28	20	11810	0.00	812.93	10	3997	5178
2009-08-07	VY	28	14	8800	0.00	641.42	10	3117	3997
2009-07-10	VR	32	75	3050	0.00	271.02	10	2812	3117
2009-06-08	RR	32	220	140	0.00	18.40	10	2798	2812
2009-05-07	VR	30	532	0	0.00	6.25	10	2798	2798
2009-04-07	NR	27	713	0	0.00	6.25	10	2798	2798
2009-03-11	VR	30	1013	0	0.00	6.25	10	2798	2798
2009-02-09	VR	33	1236	0	0.00	6.25	10	2798	2798
2009-01-07	VR	29	1324	0	0.00	6.06	10	2798	2798
2008-12-09	NR	34	963	0	0.00	6.00	10	2798	2798
2008-11-05	VR	28	557	0	0.00	6.00	10	2798	2798
2008-10-08	VR	28	187	1060	0.00	87.21	10	2692	2798
2008-09-10	RR	33	87	11530	0.00	719.86	10	1539	2692

Electric Billing History for ELECTRIC SVC No. T12177167
 at: 1877 SWISS VALLEY RD POND FISH ADDY WA 99101
 Route: 060484 Premise No.: 0513

Fish pond

Current account #2015589 Customer: FAIR TOMORROW FARMS INC,
 Mailing address:

1917 THONI RD
 ADDY WA 991019658

Service status: CLOSED (SERVICE ON) 10-19-2012
 Rate schedule: 032 PUMPING SERVICE RESIDENTIAL AND FARM

From 2007-01-10 to 2013-02-05 (2,231 days of service)
 Total usage: 44,172 Total billing: \$3,752.52

Read Date	RBC	Dys Svc	Deg Dys	Usage	Tax Amt	Billed Amt	Mult	Begin Read	End Read
2013-02-05	AI	32	1222	0	0.00	0.00	1	0	0
2013-01-04	AI	30	1111	0	0.00	0.00	1	0	0
2012-12-05	AI	30	803	0	0.00	0.00	1	0	0
2012-11-05	AI	17	342	0	0.00	0.00	1	0	0
2012-10-19	TC	14	174	0	0.00	10.00	1	0	0
2012-10-05	AR	28	125	151	0.00	23.54	1	0	0
2012-09-20	Q	13	39	151	0.00	0.00	1	6796	6947
2012-09-07	NR	32	22	0	0.00	10.00	10	6796	6796
2012-08-06	RY	32	5	1130	0.00	112.59	10	6683	6796
2012-07-05	VR	30	161	0	0.00	10.00	10	6683	6683
2012-06-05	VR	33	313	0	0.00	10.00	10	6683	6683
2012-05-03	NR	29	460	0	0.00	10.00	10	6683	6683
2012-04-04	NR	28	693	0	0.00	10.00	10	6683	6683
2012-03-07	NR	30	954	0	0.00	10.00	10	6683	6683
2012-02-06	VR	31	1084	0	0.00	10.00	10	6683	6683
2012-01-06	NR	30	1050	0	0.00	8.20	10	6683	6683
2011-12-07	NR	33	1030	0	0.00	7.75	10	6683	6683
2011-11-04	VR	30	583	0	0.00	7.75	10	6683	6683
2011-10-05	RR	28	123	1310	0.00	124.79	10	6552	6683
2011-09-07	RR	29	24	3410	0.00	268.45	10	6211	6552
2011-08-09	VR	33	35	2410	0.00	204.08	10	5970	6211
2011-07-07	RR	30	149	680	0.00	68.50	10	5902	5970
2011-06-07	ER	32	340	0	0.00	7.75	10	5902	5902
2011-05-06	ER	30	671	0	0.00	7.75	10	5902	5902
2011-04-06	ER	30	716	0	0.00	7.75	10	5902	5902
2011-03-07	ER	33	1122	0	0.00	7.75	10	5902	5902
2011-02-02	ER	28	950	0	0.00	7.75	10	5902	5902
2011-01-05	VR	30	1110	0	0.00	7.75	10	5902	5902
2010-12-06	ER	33	1129	0	0.00	6.93	10	5902	5902
2010-11-03	VR	27	481	0	0.00	6.75	10	5902	5902
2010-10-07	RR	30	164	1350	0.00	116.88	10	5767	5902
2010-09-07	RR	34	84	3050	0.00	223.12	10	5462	5767
2010-08-04	RR	28	11	1990	0.00	161.21	10	5263	5462
2010-07-07	ER	30	161	0	0.00	6.75	10	5263	5263
2010-06-07	ER	34	403	0	0.00	6.75	10	5263	5263
2010-05-04	NR	32	566	0	0.00	6.75	10	5263	5263
2010-04-02	ER	31	749	0	0.00	6.75	10	5263	5263
2010-03-02	VR	28	737	0	0.00	6.75	10	5263	5263
2010-02-02	NR	29	853	0	0.00	6.75	10	5263	5263
2010-01-04	NR	30	1169	0	0.00	6.32	10	5263	5263
2009-12-05	VR	31	928	0	0.00	6.25	10	5263	5263
2009-11-04	NR	28	648	0	0.00	6.25	10	5263	5263
2009-10-07	RR	33	229	2110	0.00	174.22	10	5052	5263
2009-09-04	RR	28	20	3050	0.00	232.52	10	4747	5052
2009-08-07	RY	28	14	2730	0.00	217.39	10	4474	4747
2009-07-10	VR	32	75	2490	0.00	203.52	10	4225	4474
2009-06-08	VR	32	220	0	0.00	6.25	10	4225	4225
2009-05-07	NR	30	532	0	0.00	6.25	10	4225	4225
2009-04-07	NR	27	713	0	0.00	6.25	10	4225	4225
2009-03-11	VR	30	1013	0	0.00	6.25	10	4225	4225
2009-02-09	NR	33	1236	0	0.00	6.25	10	4225	4225
2009-01-07	VR	30	1355	0	0.00	6.06	10	4225	4225
2008-12-08	ER	33	932	0	0.00	6.00	10	4225	4225
2008-11-05	ER	28	557	0	0.00	6.00	10	4225	4225
2008-10-08	RR	28	187	1090	0.00	89.51	10	4116	4225

Electric Billing History for ELECTRIC SVC No. 00040798
 at: 1877 SWISS VALLEY RD POND Big Fa ADDY WA 99101
 Route: 060484 Premise No.: 0646

*Pond pump
 by Dairy*

Current account #2015600 Customer: FAIR TOMORROW FARMS INC,
 Mailing address:

1917 THONI RD
 ADDY WA 991019658

Service status: CLOSED (SERVICE ON) 10-19-2012
 Rate schedule: 031 PUMPING SERVICE

From 2006-12-11 to 2013-02-05 (2,248 days of service)
 Total usage: 73,464 Total billing: \$5,922.66

Read Date	RBC	Dys Svc	Deg Dys	Usage	Tax Amt	Billed Amt	Mult	Begin Read	End Read
2013-02-05	RI	32	1222	0	0.00	0.00	1	75033	75033
2013-01-04	RI	30	1111	0	0.00	0.00	1	75033	75033
2012-12-05	RI	30	803	0	0.00	0.00	1	75033	75033
2012-11-05	RI	17	342	0	0.00	0.00	1	75033	75033
2012-10-19	TC	14	174	0	0.00	10.00	1	75033	75033
2012-10-05	VR	28	125	0	0.00	10.00	1	75033	75033
2012-09-07	RR	32	22	2775	0.00	268.88	1	72258	75033
2012-08-06	RY	32	5	1666	0.00	167.31	1	70592	72258
2012-07-05	VR	30	161	0	0.00	10.00	1	70592	70592
2012-06-05	VR	33	313	0	0.00	10.00	1	70592	70592
2012-05-03	VR	29	460	0	0.00	10.00	1	70592	70592
2012-04-04	NR	28	693	0	0.00	10.00	1	70592	70592
2012-03-07	NR	30	954	0	0.00	10.00	1	70592	70592
2012-02-06	VR	31	1084	0	0.00	10.00	1	70592	70592
2012-01-06	NR	30	1050	0	0.00	8.20	1	70592	70592
2011-12-07	VR	33	1030	0	0.00	7.75	1	70592	70592
2011-11-04	VR	30	583	0	0.00	7.75	1	70592	70592
2011-10-05	RR	28	123	2084	0.00	197.19	1	68508	70592
2011-09-07	RR	29	24	5984	0.00	476.44	1	62524	68508
2011-08-09	VR	33	35	5285	0.00	430.36	1	57239	62524
2011-07-07	RR	30	149	1386	0.00	133.74	1	55853	57239
2011-06-07	ER	32	340	0	0.00	7.75	1	55853	55853
2011-05-06	ER	30	671	0	0.00	7.75	1	55853	55853
2011-04-06	VR	30	716	0	0.00	7.75	1	55853	55853
2011-03-07	VR	33	1122	0	0.00	7.75	1	55853	55853
2011-02-02	ER	28	950	0	0.00	7.75	1	55853	55853
2011-01-05	ER	30	1110	0	0.00	7.75	1	55853	55853
2010-12-06	ER	33	1129	0	0.00	6.93	1	55853	55853
2010-11-03	VR	27	481	0	0.00	6.75	1	55853	55853
2010-10-07	VR	30	164	90	0.00	14.36	1	55763	55853
2010-09-07	RR	34	84	5017	0.00	357.14	1	50746	55763
2010-08-04	VR	28	11	5014	0.00	360.79	1	45732	50746
2010-07-07	VR	30	161	0	0.00	6.75	1	45732	45732
2010-06-07	CR	34	403	0	0.00	6.75	1	45732	45732
2010-05-04	VR	32	566	0	0.00	6.75	1	45732	45732
2010-04-02	ER	31	749	0	0.00	6.75	1	45732	45732
2010-03-02	VR	28	737	0	0.00	6.75	1	45732	45732
2010-02-02	ER	29	853	0	0.00	6.75	1	45732	45732
2010-01-04	ER	30	1169	0	0.00	6.32	1	45732	45732
2009-12-05	VR	31	928	0	0.00	6.25	1	45732	45732
2009-11-04	VR	28	648	0	0.00	6.25	1	45732	45732
2009-10-07	VR	33	229	1338	0.00	119.32	1	44394	45732
2009-09-04	RR	28	20	4273	0.00	338.05	1	40121	44394
2009-08-07	VY	28	14	5352	0.00	414.20	1	34769	40121
2009-07-10	RR	32	75	1428	0.00	130.21	1	33341	34769
2009-06-08	VR	32	220	0	0.00	6.25	1	33341	33341
2009-05-07	VR	30	532	13	0.00	7.38	1	33328	33341
2009-04-07	NR	27	713	0	0.00	6.25	1	33328	33328
2009-03-11	VR	30	1013	0	0.00	6.25	1	33328	33328
2009-02-09	VR	33	1236	0	0.00	6.25	1	33328	33328
2009-01-07	VR	29	1324	0	0.00	6.06	1	33328	33328
2008-12-09	NR	34	963	0	0.00	6.00	1	33328	33328
2008-11-05	NR	28	557	0	0.00	6.00	1	33328	33328
2008-10-08	RR	28	187	1266	0.00	102.99	1	32062	33328
2008-09-10	RR	33	87	2561	0.00	202.20	1	29501	32062

ATTACHMENT 7

**SPREADSHEETS CALCULATING
AMOUNT DIVERTED USING
ELECTRICAL RECORDS**

ATTACHMENT 7: ELECTRICAL CALCULATIONS USING WAC 173-173-160(2)**Irrigation Well Service No. 0494 (Main Irr Well) - Water Right No. G3-25276C**

2012						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	4654	0.8	0.8	75	12652922.88	38.83039451
2011						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	10894	0.8	0.8	75	29617735.68	90.89349328
2010						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	5830	0.8	0.8	75	15850137.6	48.6422862
2009						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	14291	0.8	0.8	75	38853227.52	119.236177
2008						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	17201	0.8	0.8	75	46764702.72	143.5156029
2007						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	25997	0.8	0.8	75	70678563.84	216.9045479

Irrigation Well Service No. 0608 (Artesian Well) - Water Right No.G3-152980cl

2012						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	7100	0.8	0.8	75	19302912	59.23846175
2011						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	18300	0.8	0.8	75	49752576	152.6850493
2010						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	20100	0.8	0.8	75	54646272	167.7032509
2009						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	28980	0.8	0.8	75	78788505.6	241.7930453
2008						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	31360	0.8	0.8	75	85259059.2	261.6504451
2007						
Constant	K(w)	Pe _{eff}	Me _{eff}	TDH	Q (gallons)	Q (acre-feet)
318600	41250	0.8	0.8	75	112147200	344.1671193

ATTACHMENT 7: ELECTRICAL CALCULATIONS USING WAC 173-173-160(2)

[Continued]

Irrigation Well Service No. 0513 (Fish Pond)- Water Right No. 4606-A

2012						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	1432	0.8	0.8	50	5839810.56	17.92172054
2011						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	7810	0.8	0.8	50	31849804.8	97.74346189
2010						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	6390	0.8	0.8	50	26058931.2	79.97192336
2009						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	10380	0.8	0.8	50	42330470.4	129.9074436
2008						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	8830	0.8	0.8	50	36009446.4	110.5089332
2007						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	9330	0.8	0.8	50	38048486.4	116.7665172

Irrigation Well Service No. 0646 (Dairy Pond) - Water Right No. 2980-A

2012						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	4441	0.8	0.8	50	18110753.28	55.57986098
2011						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	14739	0.8	0.8	50	60106821.12	184.4610608
2010						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	10121	0.8	0.8	50	41274247.68	126.6660151
2009						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	12404	0.8	0.8	50	50584504.32	155.2381436
2008						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	14334	0.8	0.8	50	58455198.72	179.3924178
2007						
Constant	K(w)	Peff	Meff	TDH	Q (gallons)	Q (acre-feet)
318600	17421	0.8	0.8	50	71044231.68	218.0267413

ATTACHMENT 8

**SPREADSHEETS CALCULATING
AMOUNT DIVERTED USING
BLANEY-CRIDDLE METHOD**

TABLE - 2012
Blanney-Criddle Method for Crop Consumptive Use
Rausch Property
Stevens County, Washington

Month	Mean Monthly Air Temperature ² t (degrees F)	Percent of Annual Daytime Hours ³ P (percent)	Consumptive Use Factor F	Crop Use Coefficient ⁴ K	Consumptive Use Uc (inches)	Precipitation ⁵ (inches)	Net Consumptive Use Ucn (inches)	Volumetric Net Consumptive Use ⁶ Ucn (acre-feet)
January	25.95	6.15	1.60	0	0	1.87	0	0
February	31.64	6.40	2.02	0	0	1.66	0	0
March	38.08	8.26	3.15	0	0	5.62	0	0
April	48.95	9.18	4.49	0.95	4.27	2.06	2.21	0.18
May	54.10	10.54	5.70	0.95	5.42	1.06	4.36	0.36
June	58.42	10.75	6.28	0.95	5.97	5.42	0.55	0.05
July	69.18	10.83	7.49	0.95	7.12	0.70	6.42	0.53
August	66.68	9.91	6.61	0.95	6.28	0.01	6.27	0.52
September	58.52	8.45	4.94	0.95	4.70	0.00	4.70	0.39
October	45.90	7.49	3.44	0.95	3.27	1.50	0.00	0.00
November	38.02	6.22	2.36	0	0	3.38	0	0
December	31.95	5.82	1.86	0	0	5.21	0	0
Annual	47.28	100	NA	NA	37.01	28.49	24.49	2.04
							w/ 10% Evap	2.25
							70% Eff	3.21

Notes:

$F = P * t$ $Uc = F * K$ $Ucn = Uc - Precip$

1: Blanney-Criddle Method adapted from Schulz (1973).

2: Mean monthly air temperature obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/04/13).

3: Percent of annual daytime hours occurring each month for site latitude (approximately 48.3 degrees) adapted from Jensen et. al. 1969.

4: Crop use coefficient obtained from Schulz et.al. (1989) and determined as follows:

Crop	K	Area	K x %
Alfalfa	0.95	100%	0.95

5: Precipitation data obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/04/13).

6: Volumetric net consumptive use assumes an irrigable acreage of 1.

TABLE - 2010
Blanney-Criddle Method for Crop Consumptive Use
Rausch Property
Stevens County, Washington

Month	Mean Monthly Air Temperature ² t (degrees F)	Percent of Annual Daytime Hours ³ P (percent)	Consumptive Use Factor F	Crop Use Coefficient ⁴ K	Consumptive Use Uc (inches)	Precipitation ⁵ (inches)	Net Consumptive Use Ucn (inches)	Volumetric Net Consumptive Use ⁶ Ucn (acre-feet)
January	24.60	6.15	1.51	0	0	2.03	0	0
February	25.82	6.40	1.65	0	0	0.81	0	0
March	39.08	8.26	3.23	0	0	3.82	0	0
April	42.52	9.18	3.90	0.95	3.71	2.35	1.36	0.11
May	53.10	10.54	5.60	0.95	5.32	2.46	2.86	0.24
June	58.53	10.75	6.29	0.95	5.98	0.74	5.24	0.44
July	62.39	10.83	6.76	0.95	6.42	1.69	4.73	0.39
August	65.42	9.91	6.48	0.95	6.16	0.01	6.15	0.51
September	58.93	8.45	4.98	0.95	4.73	0.04	4.69	0.39
October	45.71	7.49	3.42	0.95	3.25	0.75	0.00	0.00
November	31.65	6.22	1.97	0	0	3.25	0	0
December	26.48	5.82	1.54	0	0	0.94	0	0
Annual	44.52	100	NA	NA	35.56	18.89	25.02	2.09
							w/ 10% Evap	2.29
							70% Eff	3.28

Notes:

$F = P * t$ $Uc = F * K$ $Ucn = Uc - Precip$

1: Blanney-Criddle Method adapted from Schulz (1973).

2: Mean monthly air temperature obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/04/13).

3: Percent of annual daytime hours occurring each month for site latitude (approximately 48.3 degrees) adapted from Jensen et. al. 1969.

4: Crop use coefficient obtained from Schulz et.al. (1989) and determined as follows:

Crop	K	Area	K x %
Alfalfa	0.95	100%	0.95

5: Precipitation data obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/04/13).

6: Volumetric net consumptive use assumes an irrigable acreage of 1.

TABLE - 2010
Blanney-Criddle Method for Crop Consumptive Use
Rausch Property
Stevens County, Washington

Month	Mean Monthly Air Temperature ² t (degrees F)	Percent of Annual Daytime Hours ³ P (percent)	Consumptive Use Factor F	Crop Use Coefficient ⁴ K	Consumptive Use Uc (inches)	Precipitation ⁵ (inches)	Net Consumptive Use Ucn (inches)	Volumetric Net Consumptive Use ⁶ Ucn (acre-feet)
January	32.95	6.15	2.03	0	0	1.86	0	0
February	37.05	6.40	2.37	0	0	1.02	0	0
March	40.63	8.26	3.36	0	0	1.85	0	0
April	46.05	9.18	4.23	0.95	4.02	2.58	1.44	0.12
May	50.31	10.54	5.30	0.95	5.04	1.95	3.09	0.26
June	57.93	10.75	6.23	0.95	5.92	4.07	1.85	0.15
July	64.47	10.83	6.98	0.95	6.63	1.02	5.61	0.47
August	64.24	9.91	6.37	0.95	6.05	0.28	5.77	0.48
September	57.43	8.45	4.85	0.95	4.61	1.53	3.08	0.26
October	48.11	7.49	3.60	0.95	3.42	1.95	0.00	0.00
November	33.00	6.22	2.05	0	0	2.67	0	0
December	26.71	5.82	1.55	0	0	3.42	0	0
Annual	46.57	100	NA	NA	35.68	24.20	20.83	1.74
							w/ 10% Evap	1.91
							70% Eff	2.73

Notes:

$F = P * t$ $Uc = F * K$ $Ucn = Uc - Precip$

1: Blanney-Criddle Method adapted from Schulz (1973).

2: Mean monthly air temperature obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/04/13).

3: Percent of annual daytime hours occurring each month for site latitude (approximately 48.3 degrees) adapted from Jensen et. al. 1969.

4: Crop use coefficient obtained from Schulz et.al. (1989) and determined as follows:

Crop	K	Area	K x %
Alfalfa	0.95	100%	0.95

5: Precipitation data obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/04/13).

6: Volumetric net consumptive use assumes an irrigable acreage of 1.

TABLE - 2009
Blanney-Criddle Method for Crop Consumptive Use
Rausch Property
Stevens County, Washington

Month	Mean Monthly Air Temperature ² t (degrees F)	Percent of Annual Daytime Hours ³ P (percent)	Consumptive Use Factor F	Crop Use Coefficient ⁴ K	Consumptive Use Uc (inches)	Precipitation ⁵ (inches)	Net Consumptive Use Ucn (inches)	Volumetric Net Consumptive Use ⁶ Ucn (acre-feet)
January	21.12	6.15	1.30	0	0	1.51	0	0
February	26.36	6.40	1.69	0	0	0.90	0	0
March	32.76	8.26	2.71	0	0	1.16	0	0
April	45.15	9.18	4.14	0.95	3.94	1.25	2.69	0.22
May	53.63	10.54	5.65	0.95	5.37	1.19	4.18	0.35
June	61.18	10.75	6.58	0.95	6.25	0.81	5.44	0.45
July	68.35	10.83	7.40	0.95	7.03	1.23	5.80	0.48
August	66.84	9.91	6.62	0.95	6.29	0.67	5.62	0.47
September	58.98	8.45	4.98	0.95	4.73	0.46	4.27	0.36
October	41.18	7.49	3.08	0.95	2.93	1.56	0.00	0.00
November	35.83	6.22	2.23	0	0	1.74	0	0
December	22.00	5.82	1.28	0	0	1.75	0	0
Annual	44.45	100	NA	NA	36.55	20.24	28.00	2.33

w/ 10% Evap 2.57
70% Eff 3.67

Notes:

$F = P * t$ $Uc = F * K$ $Ucn = Uc - Precip$

1: Blanney-Criddle Method adapted from Schulz (1973).

2: Mean monthly air temperature obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/4/13).

3: Percent of annual daytime hours occurring each month for site latitude (approximately 48.3 degrees) adapted from Jensen et. al. 1969.

4: Crop use coefficient obtained from Schulz et.al. (1989) and determined as follows:

Crop	K	Area	K x %
Alfalfa	0.95	100%	0.95

5: Precipitation data obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/04/13).

6: Volumetric net consumptive use assumes an irrigable acreage of 1.

TABLE - 2008
Blanney-Criddle Method for Crop Consumptive Use
Rausch Property
Stevens County, Washington

Month	Mean Monthly Air Temperature ² t (degrees F)	Percent of Annual Daytime Hours ³ P (percent)	Consumptive Use Factor F	Crop Use Coefficient ⁴ K	Consumptive Use Uc (inches)	Precipitation ⁵ (inches)	Net Consumptive Use Ucn (inches)	Volumetric Net Consumptive Use ⁶ Ucn (acre-feet)
January	21.16	6.15	1.30	0	0	3.15	0	0
February	29.28	6.40	1.87	0	0	0.75	0	0
March	35.66	8.26	2.95	0	0	1.66	0	0
April	41.07	9.18	3.77	0.95	3.58	0.74	2.84	0.24
May	54.56	10.54	5.75	0.95	5.46	0.74	4.72	0.39
June	58.07	10.75	6.24	0.95	5.93	0.75	5.18	0.43
July	66.83	10.83	7.24	0.95	6.88	0.00	6.88	0.57
August	65.53	9.91	6.49	0.95	6.17	1.23	4.94	0.41
September	56.18	8.45	4.75	0.95	4.51	0.49	4.02	0.33
October	43.23	7.49	3.24	0.95	3.08	0.64	0.00	0.00
November	34.32	6.22	2.13	0	0	2.08	0	0
December	24.30	5.82	1.41	0	0	2.99	0	0
Annual	72.90	100	NA	NA	35.61	15.22	28.58	2.38
							w/ 10% Evap	2.62
							70% Eff	3.74

Notes:

$F = P * t$ $Uc = F * K$ $Ucn = Uc - Precip$

1: Blanney-Criddle Method adapted from Schulz (1973).

2: Mean monthly air temperature obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 4/4/13).

3: Percent of annual daytime hours occurring each month for site latitude (approximately 48.3 degrees) adapted from Jensen et. al. 1969.

4: Crop use coefficient obtained from Schulz et.al. (1989) and determined as follows:

Crop	K	Area	K x %
Alfalfa	0.95	100%	0.95

5: Precipitation data obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/4/13).

6: Volumetric net consumptive use assumes an irrigable acreage of 1.0.

TABLE - 2007
Blanney-Criddle Method for Crop Consumptive Use
Rausch Property
Stevens County, Washington

Month	Mean Monthly Air Temperature ² t (degrees F)	Percent of Annual Daytime Hours ³ P (percent)	Consumptive Use Factor F	Crop Use Coefficient ⁴ K	Consumptive Use Uc (inches)	Precipitation ⁵ (inches)	Net Consumptive Use Ucn (inches)	Volumetric Net Consumptive Use ⁶ Ucn (acre-feet)
January	21.35	6.15	1.31	0	0	0.84	0	0
February	33.36	6.40	2.14	0	0	2.13	0	0
March	40.85	8.26	3.37	0	0	0.87	0	0
April	46.68	9.18	4.29	0.95	4.07	0.64	3.43	0.29
May	54.60	10.54	5.75	0.95	5.47	0.64	4.83	0.40
June	60.95	10.75	6.55	0.95	6.22	0.94	5.28	0.44
July	73.61	10.83	7.97	0.95	7.57	0.35	7.22	0.60
August	64.98	9.91	6.44	0.95	6.12	0.24	5.88	0.49
September	57.15	8.45	4.83	0.95	4.59	0.23	4.36	0.36
October	45.44	7.49	3.40	0.95	3.23	0.66	0.00	0.00
November	32.70	6.22	2.03	0	0	0.97	0	0
December	25.56	5.82	1.49	0	0	4.45	0	0
Annual	46.52	100	NA	NA	37.27	14.06	31.00	2.58

w/ 10% Evap 2.84
70% Eff 4.06

Notes:
 $F = P * t$ $Uc = F * K$ $Ucn = Uc - Precip$
1: Blanney-Criddle Method adapted from Schulz (1973).
2: Mean monthly air temperature obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/4/13).
3: Percent of annual daytime hours occurring each month for site latitude (approximately 48.3 degrees) adapted from Jensen et. al. 1969.
4: Crop use coefficient obtained from Schulz et.al. (1989) and determined as follows:

<u>Crop</u>	<u>K</u>	<u>Area</u>	<u>K x %</u>
Alfalfa	0.95	100%	0.95

5: Precipitation data obtained from Western Region Climate Center (www.wrcc.dri.edu) for Chewelah, Washington station No. 451395 (updated 04/4/13).
6: Volumetric net consumptive use assumes an irrigable acreage of 1.