

Groundwater Application Review Summary Form

Application # G- 18768

GW Reviewer Joe Kemper Date Review Completed: 9/2/2020

Summary of GW Availability and Injury Review:

Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO

September 2, 2020

TO: Application G- 18768

FROM: GW: Joe Kemper
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

YES The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries

NO

YES Use the Scenic Waterway Condition (Condition 7J)

NO

Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in na Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 9/2/2020
 FROM: Groundwater Section Joe Kemper
 Reviewer's Name
 SUBJECT: Application G- 18768 Supersedes review of 8/20/2019
 Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525. Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. This review is based upon available information and agency policies in place at the time of evaluation.*

A. GENERAL INFORMATION: Applicant's Name: McKenzie Cranberries Inc. County: Curry

A1. Applicant(s) seek(s) 0.169 cfs from 1 well(s) in the South Coast Basin,
Sixes River subbasin

A2. Proposed use Cranberry Seasonality: Year-Round

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	CURR 1433	1	Sediment*	0.267	31S/15W-32 NW-NE	55' S, 1285' W fr NE cor, S32
2	CURR 50232	2	Sediment*	0.267	31S/15W-32 NW-NE	605' S, 1285' W fr NE cor, S32
3	CURR 1627	3	Sediment*	0.267	31S/15W-32 NW-NE	548' S, 2540' W fr NE cor, S32
4	CURR 979	4	Sediment*	0.267	31S/15W-29 SE-SW	672' N, 2550' W fr NE cor, S32
5	Proposed	5	Sediment	0.169	31S/15W-32 NW-NE	990' S, 1300' W fr NE cor S32

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	176	12	18	6/4/1992	60	0-20	0-40	na	40-60	30	5	Pump
2	177	12	17	9/2/1997	104	0-20	0-84	na	84-104	60	-	Air
3	177	44	11	3/16/1994	100	0-20	0-99	na	69-89	20	-	Air
4	176	18	9.5	4/7/1980	73	0-18	0-25	na	324-35	30	5	Bailer
5	178	na	10-20	na	104	0-20	0-104	na	84-104	na	na	na

Use data from application for proposed wells.

A4. **Comments:** The applicant has removed wells 1-4 from the original application and replaced them with proposed well 5. SWL is assumed to be 160-170 feet AMSL based on observations at CURR 50232 and CURR 1626.

A5. **Provisions of the** South Coast (OAR 690-517) Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water **are,** or **are not,** activated by this application. (Not all basin rules contain such provisions.)
 Comments: There are no such provisions.

A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: _____
 Comments: _____

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- a. is over appropriated, is not over appropriated, or cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. will not or will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. will not or will likely to be available within the capacity of the groundwater resource; or
- d. will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. The permit should contain condition #(s) 7C (7-yr); Large Water-Use Reporting;
 - ii. The permit should be conditioned as indicated in item 2 below.
 - iii. The permit should contain special condition(s) as indicated in item 3 below;

- B2. a. **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;
- b. **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;
- c. **Condition** to allow groundwater production only from the _____ groundwater reservoir between approximately _____ ft. and _____ ft. below land surface;
- d. **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Groundwater availability remarks:** The applicant’s well will access an aquifer system hosted in the unconsolidated sediments of the Pleistocene-aged Pioneer terrace. Water levels in wells are typically shallow (typically 5-20 feet BLS) with seasonal fluctuations of 5-25 feet. Water level records in adjacent wells show no clear evidence for systemic declines (see Figure 3). There are several valid POAs within 500-1000 feet of the applicant’s wells, but the potential for significant interference is relatively low in this unconfined, moderately transmissive aquifer system. Additionally, the Department is not currently aware of interference/injury complaints in this area.

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
5	Sediments of the Pioneer Terrace	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: The Pioneer Terrace consists of unconsolidated sediments, primarily sands with some gravel and silt. Despite some indications of local confinement (increased yield with depth, reported SWLs higher than “first water” on well logs), the aquifer system as a whole is unconfined.

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
5	1	Boulder Creek	160-170	65	5350	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	2	Unnamed trib. to Floras Lake	160-170	99	5450	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	3	Unnamed trib. to Sixes River	160-170	150	4250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Water levels in wells are higher than adjacent streams that have incised into terrace sediments. This indicates that groundwater is flowing towards and discharging to surface water.

Water Availability Basin the well(s) are located within: Well 5 is located within SIXES R > PACIFIC OCEAN - AT MOUTH WAB and would potentially impact two others WABs: BOULDER CR > FLORAS L - AT MOUTH & UNN STR > FLORAS L - AT MOUTH (#31730608). These three WABs are considered for Division 9 analysis.

C3a. **690-09-040 (4):** Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
5	3	<input type="checkbox"/>	<input type="checkbox"/>	na	na	<input type="checkbox"/>	17.7	<input type="checkbox"/>	<5%	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

SW #	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: Interference with surface water is estimated using the Hunt (1999) stream depletion model using a parameter range representative of the local geology.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells:		Boulder Creek											
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	1	0%	0%	0%	0%	0%	1%	1%	1%	2%	2%	3%	3%
Well Q as CFS		.169	.169	.169	.169	.169	.169	.169	.169	.169	.169	.169	.169
Interference CFS		0	0	0	0	0.001	0.001	0.002	0.002	0.003	0.004	0.005	0.006
(A) = Total Interf.		0	0	0	0	0.001	0.001	0.002	0.002	0.003	0.004	0.005	0.006
(B) = 80 % Nat. Q		6.06	9.57	8.27	4.66	1.72	0.86	0.61	0.46	0.35	0.34	1.63	5.49
(C) = 1 % Nat. Q		0.0606	0.0957	0.0827	0.0466	0.0172	0.0086	0.0061	0.0046	0.0035	0.0034	0.0163	0.0549
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Non-Distributed Wells:		Unnamed trib. to Floras Lake											
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	2	0.0%	0.0%	0.0%	0.1%	0.3%	0.6%	0.9%	1.3%	1.7%	2.2%	2.7%	3.2%
Well Q as CFS		.169	.169	.169	.169	.169	.169	.169	.169	.169	.169	.169	.169
Interference CFS		0	0	0	0	0.001	0.001	0.002	0.002	0.003	0.004	0.005	0.005
(A) = Total Interf.		0	0	0	0	0.001	0.001	0.002	0.002	0.003	0.004	0.005	0.005
(B) = 80 % Nat. Q		1.38	2.23	1.89	1.02	0.36	0.15	0.09	0.06	0.04	0.04	0.23	1.18
(C) = 1 % Nat. Q		0.0138	0.0223	0.0189	0.0102	0.0036	0.0015	0.0009	0.0006	0.0004	0.0004	0.0023	0.0118
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

Basis for impact evaluation: Interference with surface water sources beyond one mile is estimated using the Hunt (1999) stream depletion model using a parameter range representative of the local geology. The results of stream depletion modeling in row (A) are greater than row (C) for multiple months, but these numbers are smaller than reasonable methods/certainty of measurement or calculation, and thus are not considered rigorous evidence for the assumption of PSI.

C4b. **690-09-040 (5) (b) The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.**

C5. **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:

- i. The permit should contain condition #(s) _____;
- ii. The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** The applicant’s proposed POAs would produce from an aquifer that has been determined to be hydraulically connected to surface water sources. However, there is not a preponderance of evidence that the proposed use/rate would have the Potential for Substantial Interference (PSI) as per OAR 690-009.

References Used:

Hunt, B. 1999. *Unsteady Stream Depletion from Ground Water Pumping*. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

OWRD Groundwater Site Information System Database – Accessed 9/2/2020.

Theis, C. V., 1935, Relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using ground-water storage : Am. Geophys. Union Trans., pt. 2, p. 519-524 ; dupl. as U.S . Geol. Survey Ground Water Note 5, 1952

Wiley, T., McClaughry, J., Ma, L., Mickelson, K., Niewendorp, C., Stimely, L., Rivas, J. (2014). Geologic map of the southern Oregon coast between Port Orford and Bandon, Curry and Coos Counties, Oregon (No. O-14-01). DOGAMI.

D. WELL CONSTRUCTION, OAR 690-200

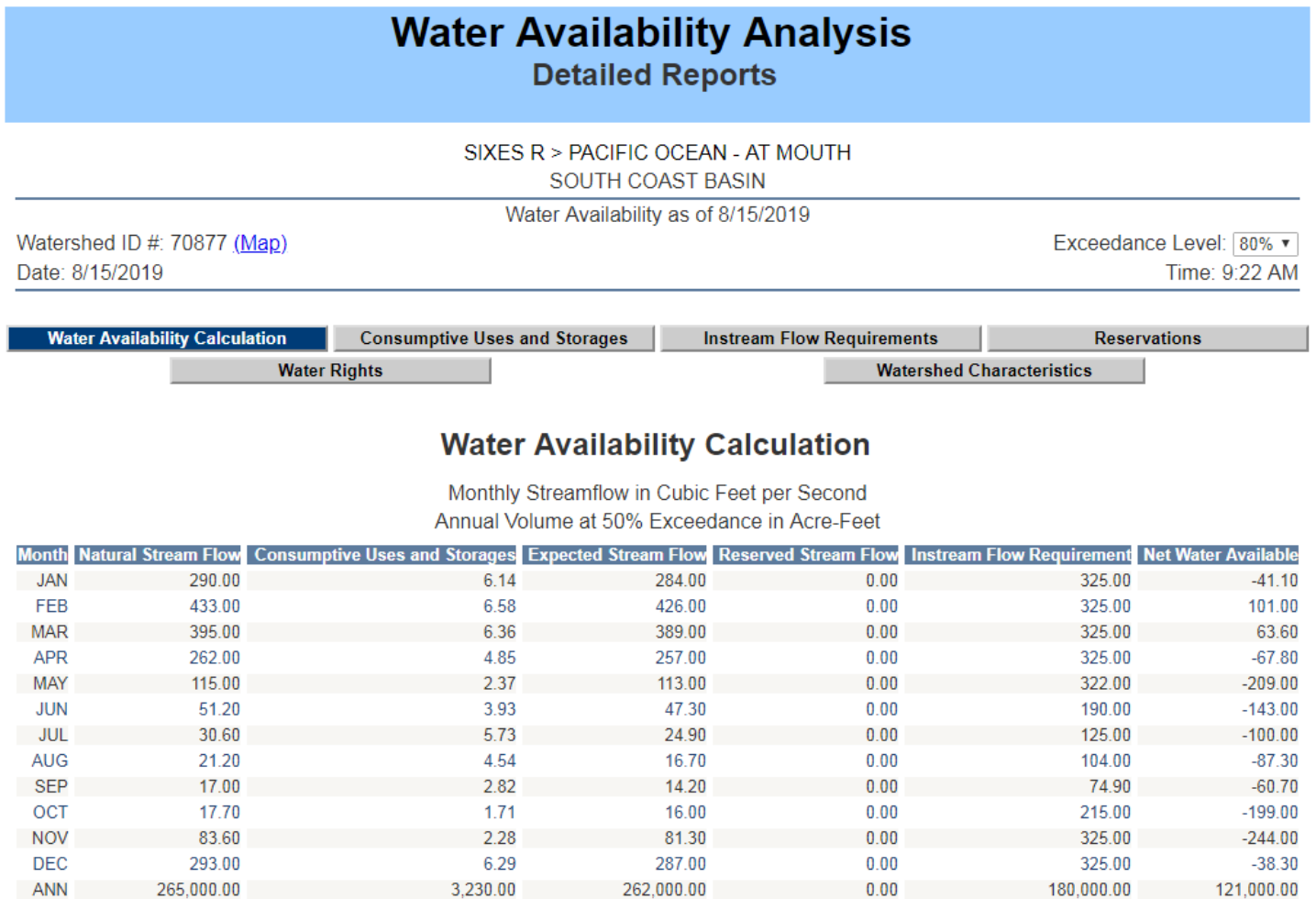
D1. Well #: _____ Logid: _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**
 a. review of the well log;
 b. field inspection by _____;
 c. report of CWRE _____;
 d. other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____

D4. Route to the Well Construction and Compliance Section for a review of existing well construction.

Figure 1. Water Availability Tables



Water Availability Analysis Detailed Reports

UNN STR > FLORAS L - AT MOUTH
SOUTH COAST BASIN

Water Availability as of 8/15/2019

Watershed ID #: 31730608 ([Map](#))

Exceedance Level:

Date: 8/15/2019

Time: 9:20 AM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	1.38	1.51	-0.13	0.00	0.00	-0.13
FEB	2.23	1.64	0.59	0.00	0.00	0.59
MAR	1.89	1.47	0.42	0.00	0.00	0.42
APR	1.02	1.15	-0.13	0.00	0.00	-0.13
MAY	0.36	1.09	-0.73	0.00	0.00	-0.73
JUN	0.15	0.26	-0.11	0.00	0.00	-0.11
JUL	0.09	0.41	-0.32	0.00	0.00	-0.32
AUG	0.06	0.33	-0.27	0.00	0.00	-0.27
SEP	0.04	1.14	-1.10	0.00	0.00	-1.10
OCT	0.04	1.01	-0.97	0.00	0.00	-0.97
NOV	0.23	1.04	-0.81	0.00	0.00	-0.81
DEC	1.18	1.50	-0.32	0.00	0.00	-0.32
ANN	1,320.00	756.00	739.00	0.00	0.00	739.00

Water Availability Analysis Detailed Reports

BOULDER CR > FLORAS L - AT MOUTH
SOUTH COAST BASIN

Water Availability as of 8/15/2019

Watershed ID #: 31730607 ([Map](#))

Exceedance Level:

Date: 8/15/2019

Time: 9:22 AM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	6.06	1.86	4.20	0.00	0.00	4.20
FEB	9.57	2.25	7.32	0.00	0.00	7.32
MAR	8.27	1.51	6.76	0.00	0.00	6.76
APR	4.66	0.91	3.75	0.00	0.00	3.75
MAY	1.72	0.43	1.29	0.00	0.00	1.29
JUN	0.86	0.27	0.59	0.00	0.00	0.59
JUL	0.61	0.42	0.19	0.00	0.00	0.19
AUG	0.46	0.34	0.12	0.00	0.00	0.12
SEP	0.35	0.26	0.09	0.00	0.00	0.09
OCT	0.34	0.13	0.21	0.00	0.00	0.21
NOV	1.63	0.45	1.18	0.00	0.00	1.18
DEC	5.49	1.72	3.77	0.00	0.00	3.77
ANN	5,890.00	633.00	5,250.00	0.00	0.00	5,250.00

Figure 2. Well Location Map

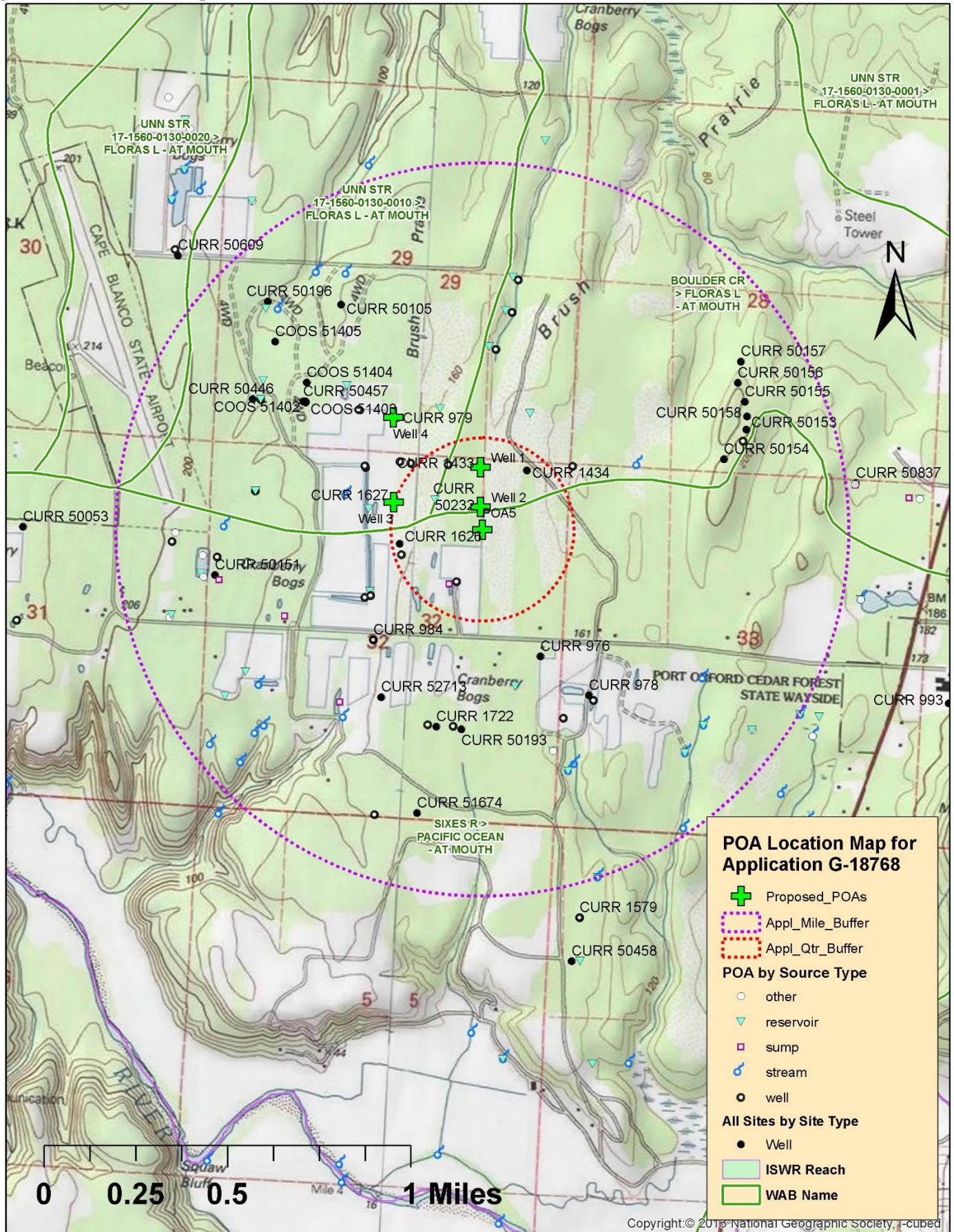


Figure 3. Water-Level Trends in Nearby Wells

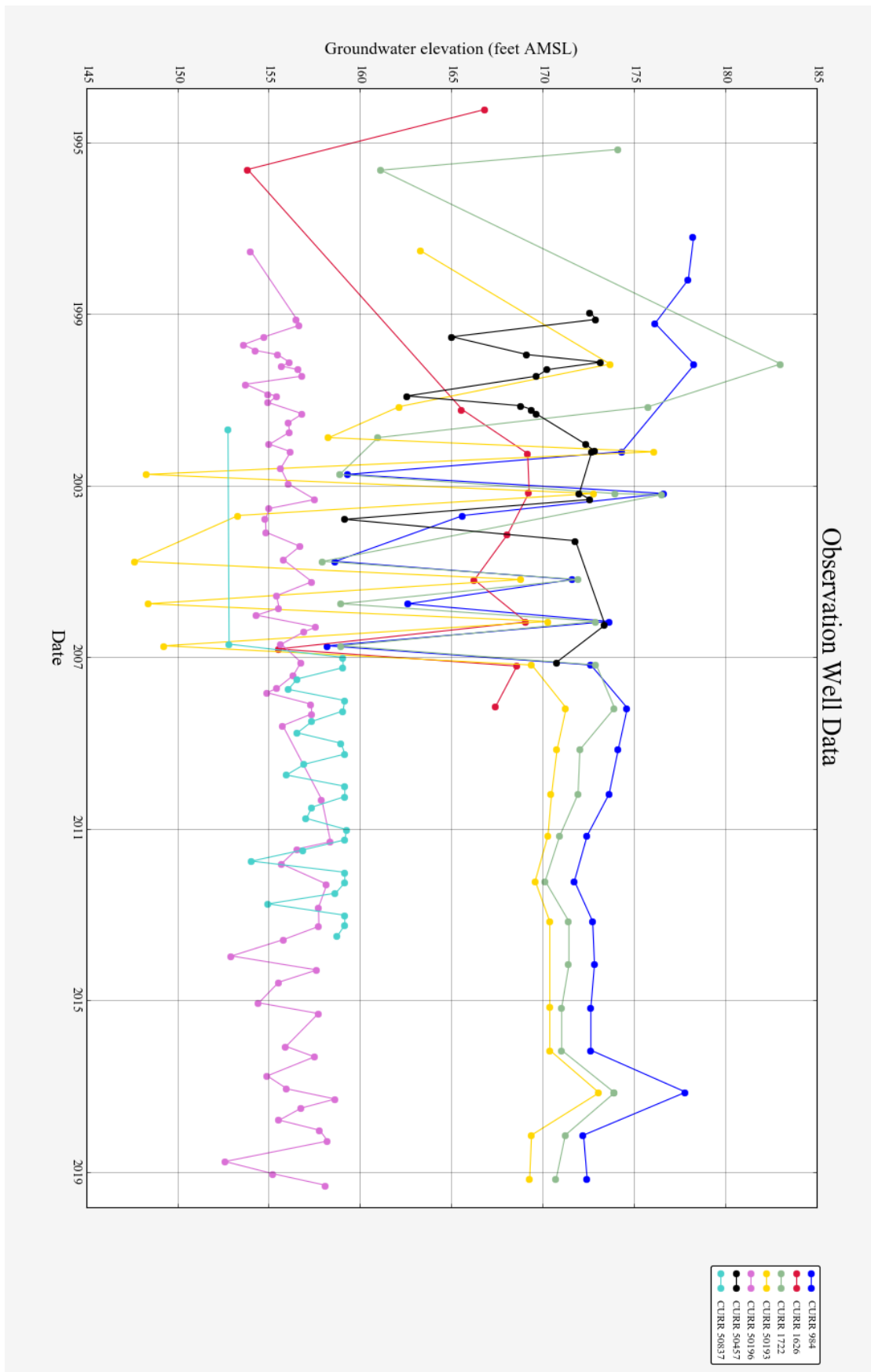
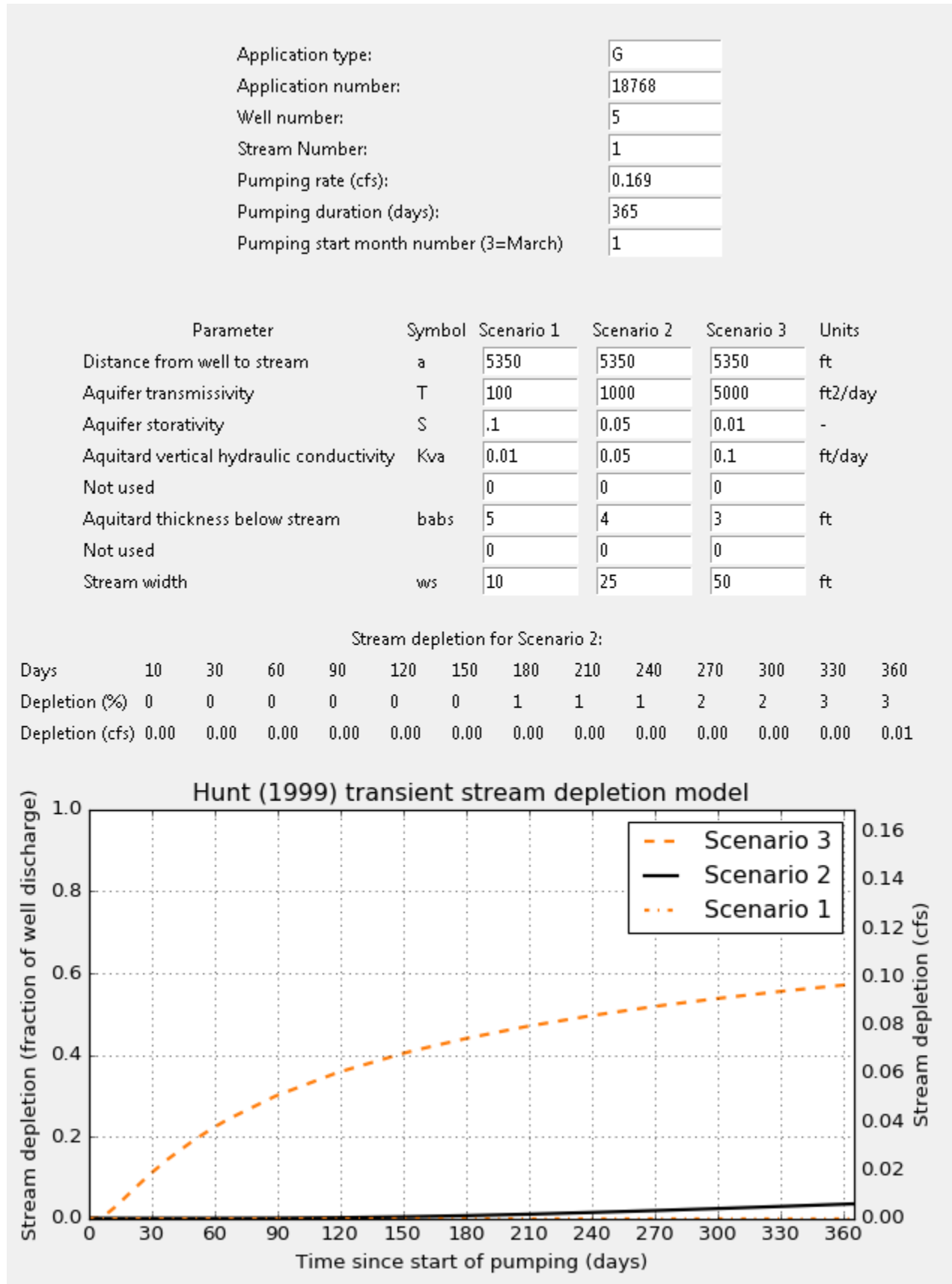


Figure 4. Stream Depletion Model Parameters and Results (Hunt, 1999)



Application type:	G
Application number:	18768
Well number:	5
Stream Number:	2
Pumping rate (cfs):	0.169
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	5450	5450	5450	ft
Aquifer transmissivity	T	100	1000	5000	ft ² /day
Aquifer storativity	S	.1	0.05	0.01	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.1	ft/day
Not used		0	0	0	
Aquitard thickness below stream	babs	5	4	3	ft
Not used		0	0	0	
Stream width	ws	10	25	50	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	0	0	0	0	0	0	1	1	1	2	2	3	3
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01

