DEPARTMENT OF ECOLOGY
State of Washington

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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

APPLICATION DATE	APPLICATION NO.
June 5, 2009	G4-35251

NAME

Meadow Springs LLC and Stuart Vista LLC

ADDRESS/STREET	CITY/STATE	ZIP CODE
206 West First Street	Cle Elum, WA	98922

PUBLIC WATERS TO BE APPROPRIATED

SOURCE

85 units served by wells tapping alluvium: One existing well (Ecology Well ID AKW669) and up to three additional wells
4 units served by wells tapping bedrock: up to 4 wells

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	180	29.9

QUANTITY, TYPE OF USE, PERIOD OF USE

180 gallons per minute, 29.9 acre-feet per year apportioned as follows:

85 units served by wells tapping alluvium: 160 gallons per minute, 14.28 acre-feet per year for year-round multiple domestic supply for up to 85 units, and 14.28 acre-feet per year for the irrigation of 5.76 acres from May 1 through September 30.

4 units served by wells tapping bedrock: 20 gallons per minute, 0.67 acre-feet per year for year-round multiple domestic supply for up to 4 units, and 0.67 acre-feet per year for the irrigation of 0.27 acres from May 1 through September 30.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL

2,240 feet east and 1,025 feet south from the northwest of Section 12, T. 19 N., R. 14 E.W.M. – Well ID AKW669
Additional well locations to be determined

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP	RANGE	WRIA	COUNTY
85 units served by wells tapping alluvium: NE¼ NW¼ (Well ID AKW669); and S½ SW¼ (additional wells); and/or NE¼ NW¼ or NW¼ NE ¼ (additional wells)	12 01 12	19 N.	14 E.W.M.	39	Kittitas
4 units served by wells tapping bedrock: SE1/4	01	19 N.	14 E.W.M.		

PARCEL NUMBER	LATITUDE	LONGITUDE	DATUM
19-14-12000-0003 (Well ID AKW669)			

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED
[Attachment 1 shows location of the authorized place of use and point(s) of diversion or withdrawal.]

PLACE OF USE 1:

85 units to be served by wells tapping alluvium:

The S½ of the SW¼ of Section 1, and the NW¼NE¼ and NE¼NW¼ of Section 12, all in T. 19 N., R. 14 E.W.M., Kittitas County, Washington;

AND

That portion of the E½ of Section 1, T. 19 N., R. 14 E.W.M., Kittitas County, Washington, which lies south of the Westside County Road and north of the Highline Canal of the Kittitas Reclamation District, and southeasterly of the following described line: Beginning at the east quarter corner of Section 1, T. 19 N., R. 14 E.W.M.; thence north 01°50'57" east along the east boundary of the northeast quarter of said Section 1, 140.93 feet to the south right of way boundary of Westside Road; thence south 88°26'07" west along the south right of way boundary of Westside Road, 84.18 feet to a point of curvature to the right having a radius of 619.92 feet (radius bearing north 01°33'53" west), a length of 380.94 feet, through a central angle of 35°12'30"; thence north 56°21'23" west, 304.04 feet to the true point of beginning of said line; thence south 33°38'37" west, 151.82 feet to a point of the north right of way boundary of the Highline Canal and the terminus of said line.

AND

Parcel E, as described in Attachment 2.

PLACE OF USE 2:

4 units served by wells tapping bedrock:

Parcels A, B, C, and D, as described in Attachment 2.

DESCRIPTION OF PROPOSED WORKS

One existing and up to five additional new points of withdrawal will be used to provide domestic supply to 89 residential units. Four units located in the SE1/4 of Section 1, T. 19 N., R. 14 E.W.M. will be served by up to four new wells to be completed in bedrock. The remaining 85 units will be served by one existing well (Ecology Well ID AKW669) and up to three additional wells, as needed to provide sufficient instantaneous capacity.
The proposed domestic use will be regulated as a Group A or B system(s) as appropriate, community public water system by the Washington State Department of Health. Domestic wastewater will be discharged to individual septic systems or one or more onsite, engineered community drain fields.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	WATER PUT TO FULL USE BY THIS DATE
December 31, 2011	December 31, 2021	December 31, 2025

PROVISIONS

Wells

1. The water supply wells supplying 85 units within the Place of Use 1 shall be drilled and completed in the unconsolidated alluvial deposits in hydraulic continuity with Spex Arth Creek.

2. The water supply wells supplying 4 units within Place of Use 2 shall be drilled and completed in bedrock.

3. In accordance with WAC 173-160, wells shall not be located within certain minimum distances of potential sources of contamination. These minimum distances shall comply with local health regulations, as appropriate. In general, wells shall be located at least 100 feet from sources of contamination. Wells shall not be located within 1,000 feet of the boundary of a solid waste landfill.

4. All wells constructed in the state shall meet the construction requirements of WAC 173-160 titled "Minimum Standards for the Construction and Maintenance of Wells" and RCW 18.104 titled "Water Well Construction". Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard shall be decommissioned.

5. Flowing wells shall be constructed and equipped with valves to ensure that the flow of water can be completely stopped when not in use. Likewise, the well shall be continuously maintained to prevent the waste of water through leaky casings, pipes, fittings, valves, or pumps -- either above or below land surface.

6. All wells shall be tagged with a Department of Ecology unique well identification number. If you have an existing well and it does not have a tag, please contact the well-drilling coordinator at the regional Department of Ecology office issuing this decision. This tag shall remain attached to the well. If you are required to submit water measuring reports, reference this tag number.

7. Required installation and maintenance of an access port as described in WAC 173-160- 291(3).

8. In order to maintain a sustainable supply of water, pumping must be managed so that static water levels do not progressively decline from year to year. Static water level is defined as the water level in a well when no pumping is occurring and the water level has fully recovered from previous pumping. Static water levels in each well used under this authorization shall be measured and recorded monthly, using a consistent methodology. Data for the previous year shall be submitted by January 31 to the Department of Ecology.

9. Static water level data shall be submitted in digital format and shall include the following elements:
    a. Unique Well ID Number
    b. Measurement date and time
    c. Measurement method (air line, electric tape, pressure transducer, etc.)
    d. Measurement accuracy (to nearest foot, tenth of foot, etc.)
    e. Description of the measuring point (top of casing, sounding tube, etc.)
    f. Measuring point elevation above or below land surface to the nearest 0.1 foot
    g. Land surface elevation at the well head to the nearest foot.
    h. Static water level below measuring point to the nearest 0.1 foot.

Metering and Reporting

10. An approved measuring device shall be installed and maintained for each of the sources authorized by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173. http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html

11. Water use data shall be recorded weekly and maintained by the property owner for a minimum of five years. The maximum monthly rate of diversion/withdrawal and the monthly total volume shall be submitted to the Department of Ecology by January 31st of each calendar year.

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

General

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

14. The water right holder shall file the notice of Proof of Appropriation of water (under which the permit of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. A certificate will reflect the extent of the project perfected within the limitations of the water right. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

15. The water source and/or water transmission facilities are not wholly located upon land owned by the applicant. Issuance of a water right change authorization by this department does not convey a right of access to, or other right to use, land which the applicant does not legally possess. Obtaining such a right is a private matter between applicant and owner of that land.

16. Use of water under this authorization shall be contingent upon the water right holder's maintenance of efficient water delivery systems and use of up-to-date water conservation practices consistent with established regulation requirements and facility capabilities.

17. Use of water under this authorization shall be contingent upon Departement of Ecology's written acceptance of and permit holder's compliance with a storage and release plan, which addresses the out-of-irrigation season (October 1 to March 31) impacts associated with the withdrawals under this permit.

18. Per Chapter 173-539A WAC consumptive use authorized under this permit is water budget neutral. Consumptive use quantities (total withdrawal minus return flow) must be fully offset by debit of an equal consumptive use quantity of seasonal irrigation water rights placed into permanent trust in the Washington State Trust Water Right Program (TWRP) by Northland Resources LLC.

19. Water use under this authorization is contingent upon the conveyance of an equal (18.0 acre-feet per year) or greater amount of consumptive use from a suitable instream flow right (see trust water right agreement) to the Washington State Trust Water Right Program.

20. The connection limit (85 units within Place of Use 1) is an upper limit and is contingent upon the approval of a Group A Water System by the Washington State Department of Health (DOH).

FINDINGS OF FACT AND ORDER

Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find the appropriation of water as recommended: is physically and legally available, is a beneficial use, will not impair existing rights and is not detrimental to the public interest.

Therefore, I ORDER the approval of Application No. G4-35251 subject to existing rights and the provisions specified above.

YOUR RIGHT TO APPEAL

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

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

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

ADDRESS AND LOCATION INFORMATION

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 4224 – 6th Avenue SE Rowe Six, Building 2 Lacey WA 98503	**Pollution Control Hearings Board** PO Box 40903 Olympia WA 98504-0903

Signed at Yakima, Washington, this 1ST day of July 2011.

Thomas L. Mackie, Acting Section Manager
Water Resources Program/CRO

BACKGROUND

Project Description

On June 5, 2009, Meadow Springs LLC and Stuart Vista LLC, of Cle Elum, Washington (the applicant) filed an application with the Washington State Department of Ecology (Ecology) for a water right permit to appropriate public groundwater. The application was assigned Application No. G4-35251. The applicant requested authorization for an instantaneous withdrawal (Qi) of 250 gallons per minute (gpm) and an annual withdrawal volume (Qa) of 41.5 acre-feet per year (ac-ft/yr) for multiple domestic supply for a planned 128 unit residential development referred to as Meadow Springs.

In two memoranda to Ecology, dated October 19 and October 20, 2009, the applicant requested the Qa be increased to 53 ac-ft/yr to serve 135 residential units. Based on current development plans, the number of residential units has been reduced to 89 at full build-out, with a water demand of 29.9 ac-ft/yr. Despite the requests, Ecology determines the maximum instantaneous and annual quantity necessary to satisfy the requirements of the project.

On August 12, 2010 Ecology issued a Report of Examination recommending that the subject application be approved to authorize withdrawal of 180 gpm, 29.9 acre-feet per year for year-round domestic supply seasonal irrigation for 89 residential units. This approval limited groundwater withdrawals to wells completed in alluvium in hydraulic continuity with Spex Arth Creek. Subsequent to that approval the applicant requested that a portion of the property comprised of four residential parcels be served by on-site bedrock wells. In consultation with Ecology the applicant requested that a superseding Report of Examination be issued authorizing additional points of withdrawal from bedrock sources to serve up to four residential parcels, as described on Page 1 of this report. The previously approved alluvial source would serve up to the remaining 85 residential parcels.

The applicant intends to mitigate for consumptive use under the requested appropriation through creation of a water banking program, referred to as the Northland Water Exchange. The Northland Water Exchange will be established by transferring into the Washington State Trust Water Right Program (TWRP) water rights that divert water from the Yakima River or its tributaries and have a pre-1905 priority date (Trust Water Rights). The Trust Water Rights will be maintained in trust to mitigate for new out-of-priority water right permits, including the subject application. Specific terms of the Northland Water Exchange are described in Attachment 3 – Trust Water Right Agreement between Northland Resources, LLC and the State of Washington, Department of Ecology.

Table 1
Summary of Application No. G4-35251

Attributes	*Proposed (as in amended application and Public Notice)*
Applicant	Meadow Springs LLC and Stuart Vista LLC
Date of Application	June 5, 2009
Instantaneous Quantity	250 gpm
Annual Quantity	53 ac-ft/yr
Source	One or more wells
Point of Withdrawal	E½ of Section 1; AND the S½SW¼ of Section 1; AND the NE¼NW¼ and NW¼NE¼ of Section 12; ALL in T. 19 N., R. 14 E.W.M.
Purpose of Use	Multiple Domestic
Period of Use	Year-round
Place of Use	As described on page 1 of this Report of Examination

Legal Requirements for Application Processing
The following requirements must be met prior to processing a water right application:

- **Public Notice**
  Notice of the application was published in the *Daily Record* of Ellensburg, Washington, on October 24 and 31, 2009. No comments or protests were received by Ecology during the 30-day comment period.
- **State Environmental Policy Act (SEPA)**
  On October 30, 2009, Kittitas County (SEPA lead agency) issued a Mitigated Determination of Non-Significance for the Meadow Springs (LP-07-00015), Starlite Heights (LP-07-00016), and Tamarack Ridge (LP-07-00018) Performance Based Cluster Plats. This decision was made after review of a completed environmental checklist and other information on file with the lead agency. Kittitas County determined certain mitigation measures or conditions were necessary in order issue a Determination of Non-Significance. Those conditions related to: cultural resources and historic preservation, stormwater, transportation, lights and aesthetics, wetlands and wildlife, and noise. No appeals were filed in protest of this decision.
- **Water Resources Statutes and Case Law**
  Chapter90.44 RCW, specifically 90.44.060 authorizes the appropriation of public groundwater for beneficial use and Chapter 90.03 RCW describe the process for obtaining water rights.
  RCW 90.42.100(2)(c) authorizes Ecology to issue new water rights using the Trust Water Right Program for water banking purposes. In addition, this application qualifies for expedited processing under WAC 173-539A-060(2).

INVESTIGATION

Site Visit
A site visit was performed on September 8, 2009, by Kurt Walker from Ecology. Noel Kurtz, a representative of the applicant familiar with the site, and Joe Morrice of Aspect Consulting LLC, the applicant's consultant, were also present. Relevant features observed during the site visit included:

- The location existing well AKW669. The location of this well was confirmed as the NE1/4NW1/4 of Section 12, T. 19 N., R. 14 E.W.M.
- A former irrigation ditch fed by a diffuse spring system on the west side of the property that discharges to a branch of Spex Arth Creek, a tributary to the Yakima River.

A second site visit was performed on July 1, 2011 after the applicant requested to use bedrock wells in Place of Use 2.

Domestic Water Use
The proposed Meadow Springs development does not currently have a Group A water system plan. However, the applicant has presented water demand estimates by month (see Table 2). Average daily demand (ADD) for indoor water use purposes is estimated at 150 gallons per day (gpd) per equivalent residential unit (ERU). Outdoor water use is expected to primarily consist of lawn and garden irrigation, and is estimated using methods and assumptions found in Ecology's GUID 1210, *Determining Irrigation Efficiency and Consumptive Use*[1], and Chapter 173-539A WAC.

The 2009, *Water System Design Manual*[2] (WSDM) by the Washington State Department of Health (DOH) contains guidance for establishing water demands. The suggested methods (in order of preference) include:

1. Metered water-production and use records.
2. Comparable metered water-production and use data from analogous water systems.
   See WAC 246-290-2321(3)(a) and Section 5.2.3
3. The criteria presented in this chapter.

Analogous water systems are defined in Section 5.2.3 of the WSDM as systems with similar characteristics such as: demographics, housing size, income levels, lot sizes, climate, water pricing structure, conservation practices, use restrictions, soils and landscaping, and maintenance practices.

There is no water use for the proposed development to review, and records for qualifying analogous systems are not available. Currently, the proposed water demand estimates are not consistent with the WSDM recommendation of at least 200 gpd for indoor water use. As a result, Ecology's connection approval (85 units) from the alluvial source is only tentative and is contingent upon DOH's approval of a Group A water system which remains within the other limitations of this permit (i.e. Qi, Qa, irrigated acres, etc.) DOH has full discretion and authority to limit the number of connections to less than the proposed 85 units. On the same

[1] Ecology's GUID 1210, *Determining Irrigation Efficiency and Consumptive Use*
http://www.ecy.wa.gov/programs/wr/rules/images/pdf/guid1210.pdf
[2] Department of Health's *Water System Design Manual* http://www.doh.wa.gov/ehp/dw/Publications/331-123.pdf

topic, water use from the bedrock well(s) is limited to indoor use only until Ecology issues a letter which authorizes outdoor water use (see provision).

Table 2
Domestic Water Use

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
[1] Indoor	150	150	150	150	150	150	150	150	150	150	150	150
[1] Outdoor	0	0	0	0	70	380	540	480	320	0	0	0
[1] Total	150	150	150	150	220	530	690	630	470	150	150	150

[1] Gallons per day (gpd) per Equivalent Residential Unit (ERU).

Monthly and annual total and consumptive use at full build-out of the project were calculated based on the planned 89 ERUs (85 served by alluvium sources and 4 served by bedrock sources), the indoor and outdoor water use per ERU in Table 2, and the consumptive use factors specified in the *Upper Kittitas Emergency Groundwater Rule* (WAC 173-539A). Under WAC 173-539A, 30 percent of domestic indoor use discharged to a septic system is assumed to be consumptively used and 90 percent of outdoor domestic use is assumed to be consumptively used. Calculated total and consumptive use from the alluvium and bedrock sources are summarized in Tables 3 and 4.

Table 3
Estimated Total and Consumptive Use at Full Build-Out – 85 Units Served by Alluvium Wells

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total (acre-feet)	1.24	1.05	1.24	1.15	1.81	4.11	5.54	5.06	3.72	1.24	1.15	1.24	28.56
Consumptive (acre-feet)	0.38	0.29	0.38	0.38	0.86	3.06	4.30	3.82	2.58	0.38	0.38	0.38	17.19

Table 4
Estimated Total and Consumptive Use at Full Build-Out - 4 Units Served by Bedrock Wells

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total (acre-feet)	0.06	0.05	0.06	0.05	0.09	0.19	0.26	0.24	0.18	0.06	0.05	0.06	1.34
Consumptive (acre-feet)	0.02	0.01	0.02	0.02	0.04	0.14	0.20	0.18	0.12	0.02	0.02	0.02	0.81

Ecology's Guidance Document 1210, *Determining Irrigation Efficiency and Consumptive Use,* and the assumptions found in WAC 173-539A were used to calculate the area that could be irrigated with the proposed quantities of 0.17 acre-feet per ERU. A crop irrigation requirement (CIR) for grass in the Cle Elum area of 24 inches was estimated using the ASCE-Penman Monteith method. Assuming the outdoor use is 90 percent consumptive, consistent with the assumptions in WAC 173-539A, and applying the ASCE-Penman Monteith CIR, the assumed outdoor use is sufficient to irrigate approximately 2,950 square feet of grass per ERU or 6.04 acres for the entire development.

Hydrologic/Hydrogeologic Evaluation
The project site is located in an east-west trending valley on the north flank of South Cle Elum Ridge and on a low ridge forming the north side of the valley. Surficial geology at the site is mapped as alluvium along the floor and south wall of the valley and Darrington phyllite bedrock along the ridge to the north (Tabor, et al., 2000). Based on the location and topography, the alluvium appears to be alluvial fan deposits formed along the lower elevations of South Cle Elum Ridge.

The valley floor slopes gradually downward to the east. A former irrigation ditch flows west to east through the valley bottom, discharging to a branch of Spex Arth Creek, a tributary of the Yakima River, near the southeast corner of the SW¼ of Section 1. On the southwestern portion of the site the former irrigation ditch is fed by a diffuse spring system that occurs where the shallow water table in the alluvium intersects the ground surface.

Groundwater at the site is likely recharged primarily by precipitation and snowmelt infiltrating from the higher elevation South Cle Elum Ridge. Additional recharge is also likely derived from infiltration of precipitation and snowmelt falling directly on the site and drainage from the bedrock ridge at the north side of the valley. Groundwater discharges from alluvium at the site at the diffuse springs feeding the former irrigation ditch. Groundwater in alluvium likely also flows down valley to the east, supporting flows in Spex Arth Creek.

While groundwater occurrence and flow in the bedrock is less certain, the bedrock likely receives recharge through infiltration of precipitation. Groundwater from the bedrock discharges to wells, springs, and the overlying unconsolidated alluvium where head relationships allow. The effects of groundwater withdrawals from the bedrock source on flows in tributaries may be somewhat attenuated depending upon the well location and aquifer characteristics of the site. Based on the proposed locations of bedrock wells in the SE1/4 of Section 1, T. 19 N., R. 14 E.W.M. Spex Arth Creek is expected to be the only tributary drainage that would potentially be affected by withdrawals from bedrock wells.

The applicant has one existing well at the site (Ecology Well ID AKW669), located in the NE¼NW¼ of Section 12. This well was completed in November 2005 to a depth of 101 feet below ground surface (bgs). The driller's log describes layers of gravels, cobbles, and boulders interbedded with layers of clay and silty sand and gravel. Bedrock, described as phyllite, was encountered at a depth of 101 feet bgs. Static water level at time of drilling was 19 feet below the top of casing, or 16 feet below ground surface. About 25 feet of the 85 foot saturated thickness consists of gravels, cobbles, and boulders. An air lift test was performed after well completion, with an estimated yield of approximately 60 gpm.

Based on the relatively shallow depth to water in well AKW669, completion of this well in coarse-grained water bearing zones of the alluvium, and given that the alluvium is the source of water for spring and groundwater discharge that support flows in Spex Arth Creek.

Well AKW669 is proposed to provide supply to up to 85 of the 89 planned residential parcels. Should additional wells be required to meet project demand for these 85 parcels, they would be completed in the alluvium, rather than the less productive bedrock. Based on the geologic map (Tabor, et al., 2000), alluvium underlies developable areas of the property in the S½SW¼ of Section 1 and the NE¼NW¼ and N½NW¼NE¼ of Section 12, T. 19N, R.15 E.W.M. These areas coincide with the valley bottom where springs and groundwater ultimately discharge to the Yakima River.

Up to four additional wells are proposed to provide supply to up to four residential parcels (Place of Use 2) in the SE1/4 of Section 1, T. 19 N., R. 14 E.W.M. Based on review of topographic and geologic maps and drillers' logs of nearby wells, it is unlikely that these planned wells would encounter sufficient saturated alluvium to provide reliable water supply. Instead, these wells would be completed in bedrock, tapping groundwater that ultimately discharges to the Yakima River system.

Planned Mitigation

The applicant has offered mitigation to address the impacts of the planned development in the form of instream flow rights and future storage and releases.

Instream Flow Rights

The Northland Water Exchange has been created by the transfer of pre-1905 water rights to instream flow and water banking purposes through the TWRP. As a result of these transfers, the Exchange represents instream flow mitigation based on the consumptive use of these water rights during the irrigation season on a month-by-month basis. The instream flow rights will be debited to mitigate for consumptive use under the subject application. The Exchange currently has instream flow rights (mitigation) represented by the following water rights:

- **CS4-02223CTCLsb2@1 (Pasco).** This application, approved by Ecology on April 19, 2010, permanently changes an unperfected change authorization for year-round domestic supply and seasonal irrigation and stock watering to instream flow for water banking purposes. The historic authorized point of diversion is an unnamed spring, tributary to Spex Arth Creek and the Yakima River. Consumptive use recognized under this Trust Water Right is 55 ac-ft/yr. However, based on 2010 monitoring data, which is a condition of the CS4-02223CTCLsb2@1 approval, the consumptive water use shall not exceed 42.5 afy until Ecology determines in writing that additional water is available to serve as mitigation in the Sapphire Skies Water Bank. When additional monitoring is completed, Ecology shall review the results and determine the extent to which this Trust Water Right may serve as mitigation in a Water Bank (up to 55 afy of consumptive use.)

- **CS4-01676(B)CTCL@1 (Newton).** This application, approved by Ecology on May 14, 2010, permanently changes the use from seasonal irrigation and stock watering to instream flow for water banking purposes. The historic authorized point of diversion is the Younger Ditch diversion from the Yakima River. Consumptive use recognized under this Trust Water Right is 73.7 ac-ft/yr.
- **CS4-00365CTCLsb5 (Henshaw).** This application, approved by Ecology on May 24, 2010, permanently changes the use of a portion of Acquavella Adjudicated Court Claim No. 00365 from seasonal irrigation to instream flow for water banking purposes. The historic authorized point of diversion is the Younger Ditch diversion from the Yakima River. Consumptive use recognized under this Trust Water Right is 89 ac-ft/yr.

The current instream flow mitigation is represented by the transfer and change of the three above water rights are as follows by estimated total monthly consumptive use:

Table 5
Available Instream Flow Rights by Consumptive Use (ac-ft/yr)

Water Right	Apr	May	Jun	Jul	Aug	Sep	Annual
[1] Pasco	0.09	4.18	9.0	13.01	6.98	9.22	42.5
[2] Newton	0	15.7	26.6	31.4	0	0	73.7
Henshaw	0	1.4	17.3	28.6	25.2	16.5	89
Total	0.09	21.28	55.4	75.9	39.2	25.72	217.7

[1] Up to 55.0 acre-feet may be available for mitigation upon written approval from Ecology.
[2] Consumptive use quantities under the Newton water right will be used prior to July 29 each year

The total year round consumptive use associated with proposed use is 18.0 ac-ft/yr (17.19 ac-ft/yr from the alluvium source and 0.81 ac-ft/yr from the bedrock source). Tables 3 and 4 present the estimated monthly consumptive use. The consumptive use impacts to surface water flows in the Yakima River Basin associated with this application will be mitigated on a month to month basis by a combination of assigning consumptive use mitigation from the Northland Water Exchange and providing scheduled releases from storage to address new out-of-season impacts. Specific terms of the Northland Water Exchange, including requirements to provide sufficient storage for release of mitigation water outside the historical irrigation season, are described in Attachment 3.

Future Storage
The applicant has also offered mitigation to address the out-of-irrigation season impacts through the use of storage and releases (augmentation). The applicant has indicated that they plan to use uncommitted instream flow rights to divert, store, and release water within the authorized POU to offset the impacts to Spex Arth Creek and the Yakima River associated with the authorized uses. While the applicant has not yet specified how, when, and where water will be diverted, stored and released, the applicant is aware that additional permits may be required.

Impairment Considerations
Groundwater – Alluvium Source
Ecology's water rights and well log databases were searched to identify nearby groundwater rights or water right permit-exempt wells that could be affected by the proposed groundwater appropriation from alluvium sources. No groundwater permits or certificates and eight groundwater claims were identified within one-mile of well AKW669. About 13 well logs are identified in quarter-quarter sections adjacent to potential alluvial well locations on the property; however, the logs indicate that all but one of these wells are completed in bedrock and are unlikely to be affected by pumping from the shallower alluvium. The one nearby well completed in alluvium (Well Tag ID AKO138) is located in the SE¼NE¼ of Section 12, T. 19 N., R. 14 E.W.M. The exact location of well AKO138 is unknown, but conservatively assuming it is located near the northwest corner of the quarter-quarter section (i.e, closest corner to the Meadow Springs property) , then it would be at least 1,000 feet from any potential well location on the Meadow Springs property.

The potential effect of pumping a well at the property on water levels at well AKO138 was evaluated using the Theis nonequilibrium equation corrected for unconfined conditions using the method of Jacob (1944) and the following parameters. A transmissivity of 625 feet squared per day was estimated based on the 25 foot saturated thickness of the gravel and cobble deposits and an assumed hydraulic conductivity of 25 feet per day for these materials. A storativity of 0.2 was assumed, based on typical specific yield for sands and gravels. As a worst case scenario, effects were evaluated assuming pumping of a single well at the requested instantaneous pumping rate of 180 gpm for 38 days, until the annual quantity of 29.9 acre-feet is exhausted. Assuming a distance of 1,000 feet between the pumping well and well AKO138 and applying the above values, the estimated drawdown at well AKO138 would be on the order of 0.2 foot.

Groundwater – Bedrock Source

The area of the proposed bedrock wells is located along the NE side of a topographic high between Spex Arth Creek to the East and the Peterson/Fowler Creek drainage to the West. In the vicinity of the subject parcels, Tabor et al (2000) map the land as Jurassic Darrington Phyllite. The Phyllite unit is describe as containing quartz veins and lenses, and as locally interbedded with schist. Pleistocene glacial deposits overlie the Phyllite to the north of the parcel (Tabor et al, 2000) and form a terrace above the present day Yakima River and associated alluvium. The subject parcels are located in a structurally complex area where the regional NW-SE trending Olympic Wallowa Lineament intersects the N-S trending Straight Creek Fault (Tabor et al, 2000). More specifically, the subject parcels are located between two high angle faults that merge to the NW. As a result, fracturing and deformation of the bedrock is expected in the area. The reader is referred to Tabor et. al. (2000) for additional information on regional geology.

According to bedrock well logs near the subject area; bedrock is generally encountered at less than 30 feet bgs, wells are typically drilled to a depth between 300 and 600 feet bgs, yields range from 0 to 7.5 gpm, and static water levels range from 410 feet bgs to slightly above ground surface. In general, water derived from the Phyllite is obtained from fracture systems which are likely recharged by the infiltration of local precipitation. Groundwater from the Phyllite in the subject area is discharged to local wells, the overlying unconsolidated deposits or surface water features where head relationships allow, and ultimately to the Yakima River. Due to the nature of water occurrence, the radius of influence formed by intermittent domestic pumping from the proposed bedrock wells is expected to be small and the withdrawals are not anticipated to result in adverse impacts to neighboring groundwater users.

Surface Water

No surface water rights were identified as diverting from Spex Arth Creek downstream of the Meadow Springs project. Year round consumptive use impacts to the mainstem Yakima River associated with the project will be mitigated through use of mitigation available from transfer of pre-1905 water rights to the TWRP, including CS4-02223CTCLsb2@1 (Pasco) previously located on-site, and scheduled surface water releases.

Water Availability

Water availability includes legal availability (e.g., closure of basins to further appropriation) and physical availability (e.g., productivity of the aquifer).

Legal Availability

Under WAC 173-539A (rule) all groundwater in upper Kittitas County, including the project site, was withdrawn from further appropriation, except where the new appropriation is water budget neutral. The rule defines water budget neutral as "…an appropriation or project where withdrawals of ground water of the state are proposed in exchange for discharge of water from other water rights that are placed into the trust water right program where such discharge is at least equivalent to the amount of consumptive use." The appropriation proposed under the subject application will be water budget neutral by dedicating 18.0 ac-ft/yr of consumptive use available from the Northland Water Exchange to mitigation purposes. Month-by-month mitigation is offered to account for the project's indoor and outdoor uses during the irrigation season (April 1 – September 30). Out-of-irrigation season (October 1 – March 31) uses will be mitigated through an acceptable storage and release program to address out-of-season impacts.

Physical Availability, Alluvial Source

The existing alluvial well is likely capable of producing a Qi of 60 gpm, based on an air lift test. It is unclear if this well could sustain higher withdrawals; however, should higher Qi be required to meet project needs additional wells would be completed in the alluvium at the site. Based on the coarse-grained gravels and cobbles, the unconfined conditions, and the saturated thickness of the alluvium it is expected that a total of four alluvial wells could produce a Qi of 160 gpm.

Physical Availability, Bedrock Source

Typical yield reported on area well logs is generally 3 gpm or less. However, it may be possible to achieve the requested Qi of 5 gpm per well (four wells total) for a short duration, depending upon the local aquifer characteristics and well construction. As a result, small scale storage will likely be necessary to meet peak demand, which is often the case with low production wells. In summary, it is expected that groundwater is physically available from the bedrock source to satisfy the proposed uses.

Public Interest Considerations

When investigating a water right application, Ecology is required to consider whether the change is detrimental to the public interests. Ecology must consider how the change will affect an array of factors such as wildlife habitat, recreation, water quality, and human health. The environmental amenities and values associated with the area were taken into account during the consideration of this application.

Consideration of Protests and Comments
No protests or comments were received during the 30-day comment period following publication of the public notice.

CONCLUSIONS

- Water is physically available at the quantities requested, although multiple wells will likely be required to achieve the requested Qi for each source. When combined with the proposed mitigation measures and provisions stated above, water is legally available under the provisions of WAC 173-539A.
- According to RCW 90.54.020 multiple domestic use is considered a beneficial use.
- Approval of the proposed appropriation, when combined with the proposed mitigation measures and provisions stated above, will not result in impairment of existing water right holders.
- Approval of the proposed appropriation, when combined with the proposed mitigation measures and provisions stated above, is not detrimental to the public interest.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that Application No. G4-35251 be authorized, in the amounts and within the limitations listed below and subject to the provisions beginning on Page 2.

Purpose of Use and Authorized Quantities
The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial.

85 units served by wells tapping alluvium:
- 160 gallons per minute
- Year-round multiple domestic supply 85 units
- 28.56 acre-feet per year (14.28 for domestic and 14.28 for irrigation)
- Irrigation of 5.76 acres from May 1 to September 30

4 units served by wells tapping bedrock:
- 20 gallons per minute
- Year-round multiple domestic supply 4 units
- 1.34 acre-feet per year (0.67 for domestic and 0.67 for irrigation)
- Irrigation of 0.27 acres from May 1 to September 30

Points of Withdrawal
85 units served by wells tapping alluvium:
Well AKW669 – NE1/4 NW1/4, Section 12, Township 19 North, Range 14 East W.M.
Three additional wells - S1/2 SW1/4, Section 1, Township 19 North, Range 14 East W.M.; and/or NE1/4NW1/4 or NW1/4NE1/4, Section 12, Township 19 North, Range 14 East W.M.

4 units served by wells tapping bedrock:
Four wells - SE1/4 of Section 1, Township 19 North, Range 14 East W.M.

Place of Use
As described on Pages 1 and 2 of this Report of Examination.

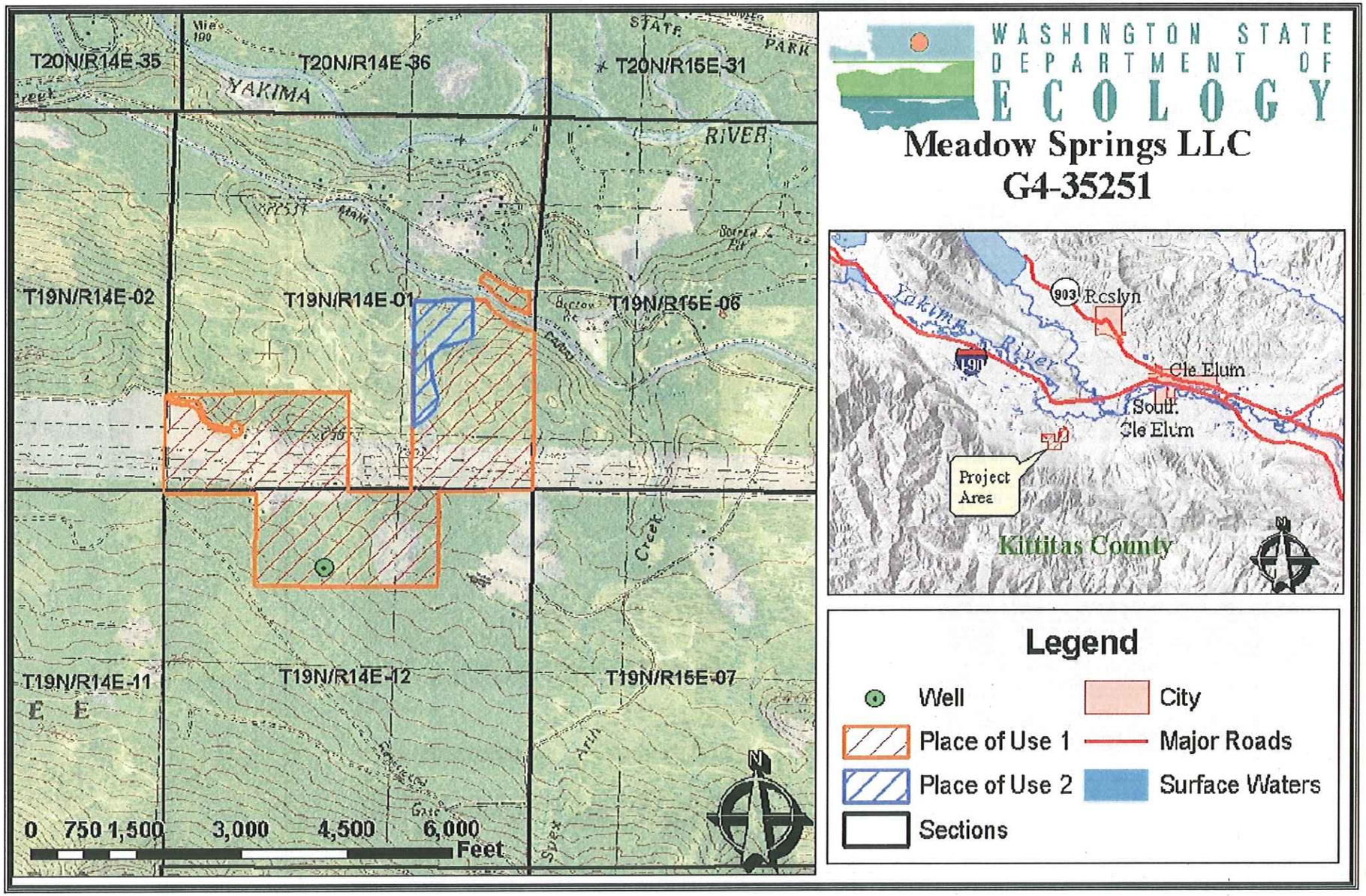
Report by: Melissa Downes
Melissa Downes, Water Resources Program

Date: July 1, 2011

References:

Tabor, R.W., V. A. Frizzell, Jr., D. B. Booth, and R. B. Waitt. 2000. Geologic Map of the Snoqualmie Pass 30 X 60 Minute Quadrangle, Washington. USGS Map I-2583.

Washington Department of Ecology Well Database.



Attachment 1

Attachment 2

Attachment 3

VOL./PAGE

OLD LEGAL DESCRIPTIONS

PARCELS 1, 2, 3 AND 4 OF THAT CERTAIN SURVEY AS RECORDED JANUARY 26, 2005, IN BOOK 30 OF SURVEYS, PAGE 236, UNDER AUDITOR'S FILE NO. 200501260006, RECORDS OF KITTITAS COUNTY, WASHINGTON, BEING A PORTION OF LOT 12-C, SP-2003-11 FOWLER CREEK LARGE LOT SUBDIVISION, IN THE COUNTY OF KITTITAS, STATE OF WASHINGTON, AS PER PLAT THEREOF RECORDED IN BOOK 8 OF PLATS, PAGES 231 AND 232, RECORDS OF SAID COUNTY.

TOGETHER WITH:

LOT 12-B, SP-2003-11 FOWLER CREEK LARGE LOT SUBDIVISION, IN THE COUNTY OF KITTITAS, STATE OF WASHINGTON, AS PER PLAT THEREOF RECORDED IN BOOK 8 OF PLATS, PAGES 231 AND 232, RECORDS OF SAID COUNTY.

NEW LEGAL DESCRIPTIONS

PARCEL A

THAT PORTION OF LOT 12-B OF LARGE LOT SUBDIVISION SP-2003-11, FOWLER CREEK LARGE LOT SUBDIVISION, RECORDED IN BOOK 8 OF PLATS, PAGES 231 AND 232, RECORDS OF KITTITAS COUNTY, WASHINGTON, BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 1, TOWNSHIP 19 NORTH, RANGE 19 NORTH, RANGE 14 EAST, WILLAMETTE MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT THE NORTHWEST CORNER OF SAID LOT 12-B;
THENCE SOUTH 00°42'17" WEST, 1,087.36 FEET TO A POINT ON A NON-TANGENT CURVE, THE RADIUS OF WHICH BEARS NORTH 41°15'02" EAST AND THE TRUE POINT OF BEGINNING;
THENCE EASTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE NORTH, HAVING A RADIUS OF 175.00 FEET, THROUGH A CENTRAL ANGLE OF 70°36'10", AND AN ARC LENGTH OF 215.64 FEET TO A POINT OF REVERSE CURVATURE;
THENCE EASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 100.00 FEET, THROUGH A CENTRAL ANGLE OF 33°50'17", AND AN ARC LENGTH OF 59.06 FEET;
THENCE SOUTH 85°30'51" EAST, 15.11 FEET TO A POINT OF TANGENCY;
THENCE SOUTHEASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 25.00 FEET, THROUGH A CENTRAL ANGLE OF 85°55'50", AND AN ARC LENGTH OF 37.49 FEET TO A POINT OF REVERSE CURVATURE;
THENCE SOUTHERLY ALONG THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 750.00 FEET, THROUGH A CENTRAL ANGLE OF 14°11'40", AND AN ARC LENGTH OF 185.81 FEET;
THENCE SOUTH 13°46'42" EAST, 146.00 FEET TO A POINT OF TANGENCY;
THENCE SOUTHERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 690.00 FEET, THROUGH A CENTRAL ANGLE OF 08°02'37", AND AN ARC LENGTH OF 96.87 FEET;
THENCE SOUTH 05°44'05" EAST, 155.28 FEET TO A POINT OF TANGENCY;
THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 300.00 FEET, THROUGH A CENTRAL ANGLE OF 59°13'12", AND AN ARC LENGTH OF 310.08 FEET TO THE NORTH LINE OF A 687.5 FOOT BONNEVILLE POWER EASEMENT PER VANTAGE-COVINGTON NO. 1 PLANS DATED JUNE 6, 1964;
THENCE NORTH 87°53'47" WEST, 275.28 FEET ALONG SAID NORTH LINE TO THE WEST LINE OF SAID LOT 12-B;
THENCE NORTH 00°42'17" EAST, 871.53 FEET ALONG SAID WEST LINE TO THE TRUE POINT OF BEGINNING.

PARCEL B

THAT PORTION OF LOT 12-B OF LARGE LOT SUBDIVISION SP-2003-11, FOWLER CREEK LARGE LOT SUBDIVISION, RECORDED IN BOOK 8 OF PLATS, PAGES 231 AND 232, RECORDS OF KITTITAS COUNTY, WASHINGTON, BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 1, TOWNSHIP 19 NORTH, RANGE 19 NORTH, RANGE 14 EAST, WILLAMETTE MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT THE NORTHWEST CORNER OF SAID LOT 12-B;
THENCE SOUTH 00°42'17" WEST, 1,087.35 FEET ALONG THE WEST LINE OF SAID LOT 12-B TO A POINT ON A NON-TANGENT CURVE, THE RADIUS OF WHICH BEARS NORTH 41°15'02" EAST AND THE TRUE POINT OF BEGINNING;
THENCE EASTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE NORTH, HAVING A RADIUS OF 175.00 FEET, THROUGH A CENTRAL ANGLE OF 70°36'10", AND AN ARC LENGTH OF 215.64 FEET TO A POINT OF REVERSE CURVATURE;
THENCE EASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 100.00 FEET, THROUGH A CENTRAL ANGLE OF 33°50'17", AND AN ARC LENGTH OF 59.06 FEET;
THENCE SOUTH 85°30'51" EAST, 15.11 FEET TO A POINT OF TANGENCY;
THENCE SOUTHEASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 25.00 FEET, THROUGH A CENTRAL ANGLE OF 85°55'50", AND AN ARC LENGTH OF 37.49 FEET TO A POINT ON A NON-TANGENT CURVE, THE RADIUS OF WHICH BEARS SOUTH 89°35'01" EAST;
THENCE NORTHERLY ALONG THE ARC OF A CURVE CONCAVE TO THE EAST, HAVING A RADIUS OF 750.00 FEET, THROUGH A CENTRAL ANGLE OF 07°37'14", AND AN ARC LENGTH OF 99.75 FEET;
THENCE NORTH 08°02'13" EAST, 297.65 FEET TO A POINT OF TANGENCY;
THENCE NORTHEASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 230.00 FEET, THROUGH A CENTRAL ANGLE OF 39°20'45", AND AN ARC LENGTH OF 157.94 FEET;
THENCE NORTH 42°37'02" WEST, 598.98 FEET TO SAID WEST LINE;
THENCE SOUTH 00°42'17" WEST, 837.38 FEET ALONG SAID WEST LINE TO TRUE POINT OF BEGINNING.

PARCEL C

THAT PORTION OF LOT 12-B OF LARGE LOT SUBDIVISION SP-2003-11, FOWLER CREEK LARGE LOT SUBDIVISION, RECORDED IN BOOK 8 OF PLATS, PAGES 231 AND 232, RECORDS OF KITTITAS COUNTY, WASHINGTON, BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 1, TOWNSHIP 19 NORTH, RANGE 19 NORTH, RANGE 14 EAST, WILLAMETTE MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

BEGINNING AT THE NORTHWEST CORNER OF SAID LOT 12-B;
THENCE NORTH 89°55'34" EAST, 561.58 FEET ALONG THE NORTH LINE OF SAID LOT 12-B;
THENCE SOUTH 15°49'57" EAST, 501.29 FEET;
THENCE SOUTH 74°10'03" WEST, 209.80 FEET TO A POINT OF TANGENCY;
THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 230.00 FEET, THROUGH A CENTRAL ANGLE OF 26°47'05", AND AN ARC LENGTH OF 107.52 FEET;
THENCE NORTH 42°37'02" WEST, 598.98 FEET TO THE WEST LINE OF SAID LOT 12-B;
THENCE NORTH 00°42'17" EAST, 150.00 FEET TO THE TRUE POINT OF BEGINNING.

PARCEL D

THAT PORTION OF PARCELS 1, 2, 3, AND 4 OF SURVEY RECORDED IN BOOK 30 OF SURVEYS, PAGE 236, UNDER AUDITOR'S FILE NO. 200501260006, RECORDS OF KITTITAS COUNTY, WASHINGTON AND THAT PORTION OF LOT 12-B OF LARGE LOT SUBDIVISION SP-2003-11, FOWLER CREEK LARGE LOT SUBDIVISION, RECORDED IN BOOK 8 OF PLATS, PAGES 231 AND 232, RECORDS OF KITTITAS COUNTY, WASHINGTON, BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 1, TOWNSHIP 19 NORTH, RANGE 19 NORTH, RANGE 14 EAST, WILLAMETTE MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT THE NORTHWEST CORNER OF SAID LOT 12-B;
THENCE NORTH 89°55'34" EAST, 561.58 FEET ALONG THE NORTH LINE OF SAID LOT 12-B TO THE TRUE POINT OF BEGINNING;
THENCE SOUTH 15°49'57" EAST, 501.29 FEET;
THENCE NORTH 74°10'03" EAST, 78.57 FEET TO A POINT OF TANGENCY;
THENCE NORTHEASTERLY ALONG THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 170.00 FEET, THROUGH A CENTRAL ANGLE OF 82°55'51", AND AN ARC LENGTH OF 246.06 FEET TO A POINT OF REVERSE CURVATURE;
THENCE NORTHEASTERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 230.00 FEET, THROUGH A CENTRAL ANGLE OF 91°29'58", AND AN ARC LENGTH OF 367.30 FEET TO THE SOUTHERLY MARGIN OF HIGHLINE CANAL AS DELINEATED PER K.R.D. MAP 118, RECORDS OF KITTITAS COUNTY RECLAMATION DISTRICT;
THENCE NORTH 47°14'04" WEST, 6.85 FEET TO A POINT OF TANGENCY ALONG SAID SOUTHERLY MARGIN;
THENCE NORTHWESTERLY ALONG THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 873.77 FEET, THROUGH A CENTRAL ANGLE OF 00°24'04", AND AN ARC LENGTH OF 6.12 FEET ALONG SAID SOUTHERLY MARGIN TO THE NORTH LINE OF SAID LOT 12-B;
THENCE SOUTH 89°55'34" WEST, 522.96 FEET ALONG SAID NORTH LINE TO THE TRUE POINT OF BEGINNING.

PARCEL E

THAT PORTION OF PARCELS 1, 2, 3, AND 4 OF SURVEY RECORDED IN BOOK 30 OF SURVEYS, PAGE 236, UNDER AUDITOR'S FILE NO. 200501260006, RECORDS OF KITTITAS COUNTY, WASHINGTON AND THAT PORTION OF LOT 12-B OF LARGE LOT SUBDIVISION SP-2003-11, FOWLER CREEK LARGE LOT SUBDIVISION, RECORDED IN BOOK 8 OF PLATS, PAGES 231 AND 232, RECORDS OF KITTITAS COUNTY, WASHINGTON, BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 1, TOWNSHIP 19 NORTH, RANGE 19 NORTH, RANGE 14 EAST, WILLAMETTE MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

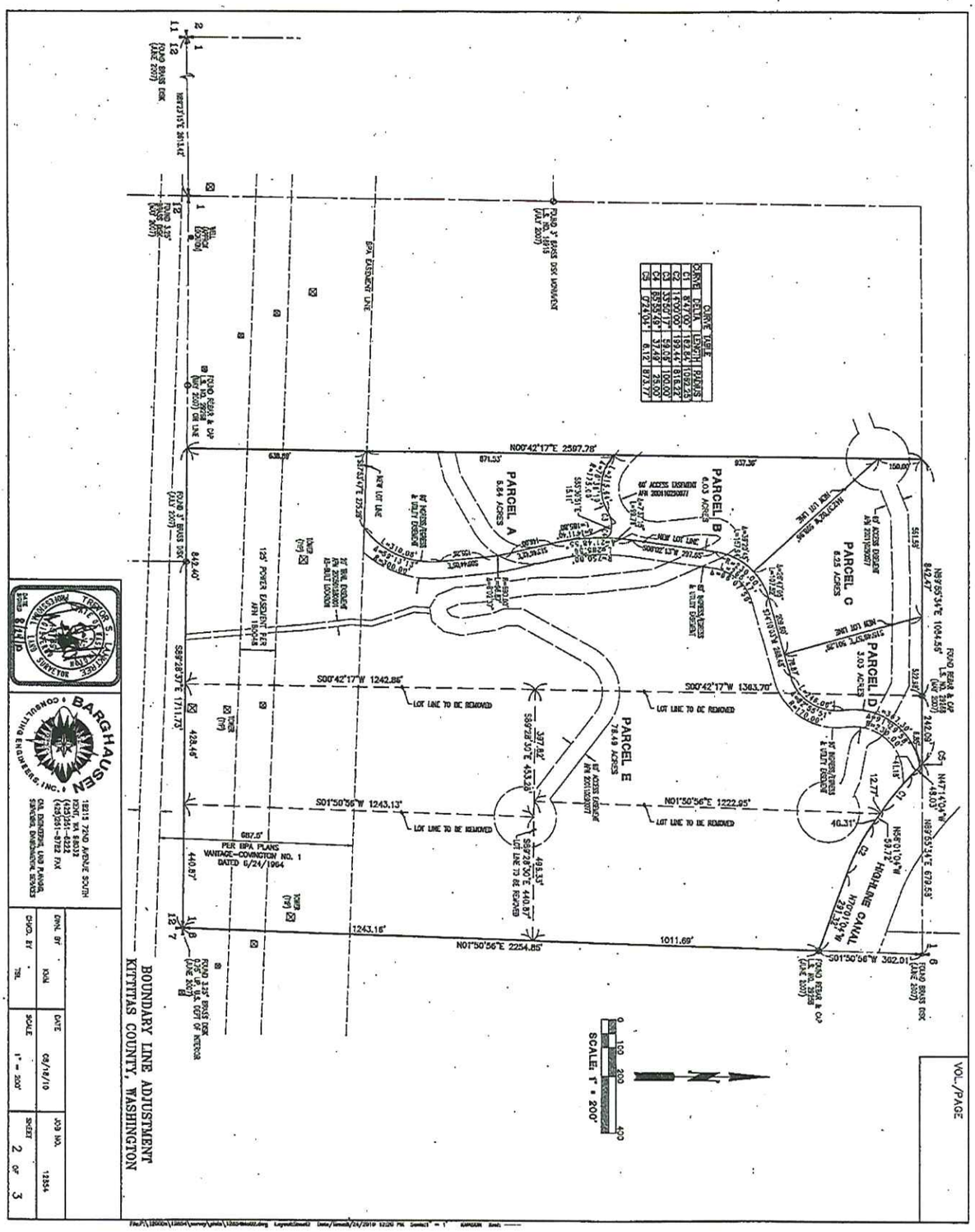
BEGINNING AT THE SOUTHEAST CORNER OF SAID SECTION 1;
THENCE NORTH 01°50'58" EAST, 2,254.85 FEET ALONG THE EAST LINE OF SAID SECTION 1 TO THE SOUTHERLY MARGIN OF HIGHLINE CANAL AS DELINEATED PER K.R.D. MAP 118, RECORDS OF KITTITAS COUNTY RECLAMATION DISTRICT;
THENCE NORTH 70°01'04" WEST, 291.32 FEET ALONG SAID SOUTHERLY MARGIN TO A POINT OF TANGENCY;
THENCE NORTHWESTERLY ALONG SAID SOUTHERLY MARGIN BEING THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 816.22 FEET, THROUGH A CENTRAL ANGLE OF 14°00'00", AND AN ARC LENGTH OF 199.44 FEET;
THENCE NORTH 55°01'04" WEST, 59.72 FEET ALONG SAID SOUTHERLY MARGIN TO A POINT OF TANGENCY;
THENCE NORTHWESTERLY ALONG SAID SOUTHERLY MARGIN BEING THE ARC OF A CURVE CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 1,092.25 FEET, THROUGH A CENTRAL ANGLE OF 08°47'00", AND AN ARC LENGTH OF 162.84 FEET;
THENCE NORTH 47°14'04" WEST, 41.18 FEET ALONG SAID SOUTHERLY MARGIN TO A POINT ON A NON-TANGENT CURVE, THE RADIUS OF WHICH BEARS SOUTH 07°15'50" EAST;
THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE CONCAVE TO THE SOUTHEAST, HAVING A RADIUS OF 230.00 FEET, THROUGH A CENTRAL ANGLE OF 91°29'58", AND AN ARC LENGTH OF 367.30 FEET TO A POINT OF REVERSE CURVATURE;
THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 170.00 FEET, THROUGH A CENTRAL ANGLE OF 82°55'51", AND AN ARC LENGTH OF 246.06 FEET;
THENCE SOUTH 74°10'03" WEST, 288.48 FEET TO A POINT OF TANGENCY;
THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 230.00 FEET, THROUGH A CENTRAL ANGLE OF 66°07'51", AND AN ARC LENGTH OF 265.47 FEET;
THENCE SOUTH 08°02'13" WEST, 297.65 FEET TO A POINT OF TANGENCY;
THENCE SOUTHERLY ALONG THE ARC OF A CURVE TO THE LEFT, HAVING A RADIUS OF 750.00 FEET, THROUGH A CENTRAL ANGLE OF 21°48'55", AND AN ARC LENGTH OF 285.56 FEET;
THENCE SOUTH 13°46'42" EAST, 146.00 FEET TO A POINT OF TANGENCY;
THENCE SOUTHERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 690.00 FEET, THROUGH A CENTRAL ANGLE OF 08°02'37", AND AN ARC LENGTH OF 96.87 FEET;
THENCE SOUTH 05°44'05" EAST, 155.28 FEET TO A POINT OF TANGENCY;
THENCE SOUTHWESTERLY ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 300.00 FEET, THROUGH A CENTRAL ANGLE OF 59°13'12", AND AN ARC LENGTH OF 310.08 FEET TO THE NORTH LINE OF A 687.5 FOOT BONNEVILLE POWER EASEMENT PER VANTAGE-COVINGTON NO. 1 PLANS DATED JUNE 6, 1964;
THENCE NORTH 87°53'47" WEST, 275.28 FEET ALONG SAID NORTH LINE TO THE WEST LINE OF SAID LOT 12-B;
THENCE SOUTH 00°42'17" WEST, 638.89 FEET ALONG SAID WEST LINE TO THE SOUTH LINE OF SAID SECTION 1;
THENCE SOUTH 89°28'37" EAST, 1,711.73 FEET ALONG SAID SOUTH LINE TO THE TRUE POINT OF BEGINNING.

BOUNDARY LINE ADJUSTMENT
KITTITAS COUNTY, WASHINGTON

TREVOR S. LANKTREE — STATE OF WASHINGTON — PROFESSIONAL LAND SURVEYOR

BARGHAUSEN CONSULTING ENGINEERS, INC.
18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX
CIVIL ENGINEERING, LAND PLANNING, SURVEYING, ENVIRONMENTAL SERVICES

PORTION SE/4 SECTION 1, T19N-R14E, W.M.		
DWN. BY KAM	DATE 09/18/10	JOB NO. 12854
CHKD. BY TSL	SCALE N/A	SHEET 3 OF 3


BOUNDARY LINE ADJUSTMENT
KITTITAS COUNTY, WASHINGTON
PARCEL A
PARCEL B
PARCEL C
PARCEL D
PARCEL E
HIGHLINE CANAL
SCALE: 1" = 200'
VOL./PAGE
BARGHAUSEN
CONSULTING ENGINEERS, INC.
DWN. BY
DATE
JOB NO.
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2 OF 3