File NR G4-35244
WR Doc ID 4629948

DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
DRAFT
REPORT OF EXAMINATION
FOR WATER RIGHT APPLICATION

PRIORITY DATE	WATER RIGHT NUMBER
6/1/2009	G4-35244

MAILING ADDRESS	SITE ADDRESS (IF DIFFERENT)
CITY OF RICHLAND (NANCY ALDRICH) PO BOX 190 MS-26 840 NORTHGATE DRIVE RICHLAND WA 99352-0190	

Quantity Authorized for Withdrawal

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
1500*	GPM	2418**

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Municipal	1500		GPM		2418	01/01 - 12/31

REMARKS

*(Additive to existing water rights.)
(**Non-additive to existing water rights—list provided on page 14.)

PUBLIC WATER SYSTEM INFORMATION	
WATER SYSTEM ID	CALCULATED CONNECTIONS
72250	20,583+

Source (s) Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Benton			37-Lower Yakima

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Well #1: Harrison Well	1239830600060000	145702	09N	28E	23	SWSW	46.24522	-119.28111
Well #2: City Shops	116984020002002	N/A	09N	28E	16	NWSE	46.26233	-119.31237

Place of Use (See Attached Map)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use (POU) of this water right is the service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as the water system is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

Proposed Works

Well #1-(Harrison Well): Completed well depth of 355 feet with a diameter of 12¼ inches as repaired and reported in 1991.
Well #2-(City Shops): Well depth of 500-1000 feet anticipated within the lower Saddle Mountain Formation aquifer in the Richland Subbasin.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
December 31, 2012	December 31, 2015	December 31, 2018

Measurement of Water Use

How often must water use be measured?	Daily
How often must water use data be reported to Ecology?	Annually (Jan 31)
What volume should be reported?	Total Monthly Volumes **and** Total Annual Volume
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm)

Provisions

Wells, Well Logs and Well Construction Standards

The authorized aquifer for the water supply well commonly referred to as the **Harrison well (Well #1)** is within the Saddle Mountain aquifer occurring within the Richland Subbasin and the **City Shops well (Well #2)** shall be drilled and completed in the Saddle Mountain Formation within the Richland Subbasin.

Both 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.

The **combined** instantaneous quantity from both the Harrison and City Shops wells under Permit G4-35244P shall not exceed 1,500 gallons per minute (gpm) of **additive** instantaneous quantity (Qi) and 2,418 acre-feet per year (af/yr) of **non-additive** annual quantity (Qa) to existing water rights. Furthermore, no individual well, either Well #1 or Well #2 shall exceed 1,500 gpm and 2,418 af/yr under Permit G4-35244P. As a result, if groundwater is withdrawn from the proposed Well #1 and Well #2, an equivalent volume of water from all or some of the City's other authorized sources will not be withdrawn. Final beneficial use calculations for each well either independently or combined shall be determined during the investigation at the Proof of Appropriation stage.

The City of Richland shall provide their project manager and well driller with a copy of the permit provisions to ensure compliance with permit construction provisions.

Both 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.

The proposed **Well #2**, to be located within NW¼SE¼ of Section 16, T. 9 N., R. 28 E.W.M. is authorized to be drilled and must comply with the following construction requirements and restrictions:

1. Un-perforated casing shall be set or placed (not driven), at minimum, to a depth corresponding with the first flow interior (the basalt flow colonnade portion) of the Saddle Mountains Formation **occurring below the thrust fault** identified in the Preliminary Hydrogeologic Assessment of the Bauder and Harrison Wells and Proposed City Shops Well Site by Terry L. Tolan, LHG & Stephen P. Reidel, PhD, LHG of GSI Water Solutions, Inc., October 2010, Figure 10 **and as determined by onsite Geologist logging and X-Ray Fluorescence Analysis (XRF) sampling**.
2. The well annulus shall be at least four (4) inches greater in diameter than the permanent casing.
3. The well casing annulus shall be permanently sealed with neat cement grout. The sealing material shall be placed in the annulus by pumping to seal the entire annulus from the bottom of the casing to the land surface.
4. The cement grout shall be allowed to cure for a minimum of **72 hours** prior to any subsequent drilling unless otherwise approved in writing and in advance of drilling by Ecology's Well Construction Coordinator and appended to the permit.
5. The borehole shall terminate **at or above** a depth that corresponds to the top of the Priest Rapids Member of the Wanapum Formation as determined by on-site Geologist logging and XRF sampling.
6. The applicant shall require the driller to collect and retain drill cuttings for the applicant and Ecology to submit for laboratory analysis as follows:
    a. The driller shall collect and retain basalt chip samples starting with the first basalt encountered and every ten (10)-foot interval thereafter and at significant changes in lithology to the bottom of the well. The depth from which each sample is taken shall be recorded on the sample container. Gross sample size should be large enough to provide a net minimum of 8 oz. each, or preferable, the equivalent of a full 5.5" X 8.5" cloth sample bag or a heavy –duty zip-lock type quart-sized plastic bag. Drill cuttings (chip samples) should be washed, free of fines and reasonably dry prior to submittal to Ecology and for lab analysis. Split samples shall be provided to Ecology.
    b. Drill cuttings (chip samples) from selected critical intervals shall be submitted for laboratory XRF method for bulk rock and mineral analyses and include the following 27 major and trace elements: Se, Al, Ti, Fe, Mn, Ca, Mg, K, Na, P, Sc, V, Ni, Cr, Ba, Sr, Zr, Y, Rb, Nb, Ga, Cu, Zn, Pb, La, Ce, and Th.

c. Drill cuttings (chip samples) shall be stratigraphically logged by a professional geologist, licensed in the State of Washington and familiar with the local basalt Formations. A copy of the stratigraphic log shall be provided to Ecology within 30 days of the completion of drilling activities.

7. A completed well report shall be submitted by the driller to Ecology within 30 days of completing Well #2 authorized herein. All pump test data shall be submitted to Ecology as it is obtained.
8. Installation and maintenance of an access port as described in WAC 173-160-291(3) is required.
9. In addition to the required access port, the applicant shall install and maintain, in operating condition, an airline and pressure gauge. The pressure gauge shall be equipped with a standard tire valve and placed in a location accessible to Ecology personnel. The airline shall extend from land surface to the top of the pump bowls and the total airline length shall be reported to Ecology upon completion of the pump system.

Any pump test data or reporting provided to the Washington State Department of Health (DOH) for public water system source approval for the authorized wells shall be provided concurrently to Ecology.

During the final stage of the Development Schedule, the Proof of appropriation stage, the City of Richland shall provide Ecology with a written plan on how the two sources (Harrison and City Shops wells) will be integrated with the City's telemetry system to ensure that neither source independently nor **combined** will exceed 1,500 gpm at any given time under Permit G4-35244P.

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 1000 feet of the boundary of a solid waste landfill.

Measurements, Monitoring, Metering and Reporting
An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use," WAC 173-173.

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.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

Water use data shall be recorded annually and maintained by the property owner for a minimum of five years, and shall be promptly submitted to the Department of Ecology upon request.

In order to maintain a sustainable supply of water and ensure that your water source is not impaired by future withdrawals, static water levels **should** be measured and recorded monthly using a consistent methodology. 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 level data should include the following elements:

- Unique Well ID Number.
- Measurement date and time.
- Measurement method (air line, electric tape, pressure transducer, etc.).
- Measurement accuracy (to nearest foot, tenth of foot, etc.).
- Description of the measuring point (top of casing, sounding tube, etc.).
- Measuring point elevation above or below land surface to the nearest 0.1 foot.
- Land surface elevation at the well head to the nearest foot.
- Static water level below measuring point to the nearest 0.1 foot.

Municipal Place of Use
If the criteria in RCW 90.03.386(2) are not met, the place of use of this water right reverts to the service area described in the City's 2010 Comprehensive Water System Plan.

Department of Health Requirements
Prior to any new construction or alterations of a public water supply system, the State Board of Health rules require public water supply owners to obtain written approval from the Office of Drinking Water of the Washington State Department of Health. Please contact the Office of Drinking Water prior to beginning (or modifying) your project at DOH/Division of Environmental Health, 16201 E. Indiana Avenue, Suite 1500, Spokane Valley, WA 99216, (509) 329-2100.

Water Use Efficiency
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.

Schedule and Inspections
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.

Proof of Appropriation
The water right holder shall file the notice of Proof of Appropriation of water (under which the certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The certificate will reflect the extent of the project perfected within the limitations of the permit. 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.

Other
When approved, this new supply is redundant to three pending applications currently on file with Ecology and as such, the City of Richland shall withdraw pending Application Nos. G4-30990, G4-30981, and G4-30980 as identified in the City's letter dated May 8, 2009, following expiration of the appeal period of this decision.

Findings of Facts

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

Therefore, I ORDER approval of Application No. G4-35244, 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.

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

Signed at Yakima, Washington, this _____ day of _____ 2011.

Melissa Downes, LHG
Acting Section Manager
Water Resource Program/CRO

BACKGROUND

On September 25, 1991, Application for a Water Right Permit Nos. G4-30990, G4-30981, and G4-30980 were received by Ecology, each requesting 500 gpm, 806 acre-feet per year (af/yr) for continuous municipal supply for 800 current homes and up to 60,000 homes each in the 20-year future. Five points of withdrawal (POWs) were requested to be drilled in Section 21, 25, and 26 of T. 9 N., R. 28 E.W.M. The place of use (POU) was described as being the City of Richland's service area per the then, most recent DOH and DOE-approved Water System Plan.On June 1, 2009, Ecology received Application for a Water Right Permit No. G4-35244 to appropriate water in the amount of 1,500 gpm (additive), 2,418 af/yr (non-additive to all other City-owned water rights). Due to the critical and vulnerable nature of the transmission water main, which runs under the Yakima River and is stored in reservoirs in the south Richland Area, the City has filed an application to Ecology to expand the City's options to reduce the risk of failure to the waterline. The City believes that the vulnerability of the Yakima River pipeline crossing , the on-going tritium contaminant risk to the North Richland Water Treatment Facility, and the transition of the City's Duke Well field to non-potable uses due to nitrate contamination, have eroded the security of its potable water supplies to all City residents. Development of additional potable water sources south of the Yakima River could provide an adequate long-term, reliable source. A FEMA grant has been awarded to the City for a replacement pipeline and the City is working toward a bridge crossing for the pipeline in order to remove the existing line from the river bed. At the time of this writing, funding for the bridge has not yet been allocated. The applicant requested five (5) points of withdrawal (POWs) with the original intent to evaluate and compare the proposed locations for water availability, water quality, and cost of development, providing no impact is made to existing rights.

If approved, this new supply would improve the security of the City's overall water supplies by providing an additional source for the south Richland area. Additionally, if approved, the City intends to withdraw redundant, pending Application Nos. G4-30990, G4-30981, and G4-30980 (referenced above).

On March 11, 2011, Ecology received an amendment to the original application reducing the proposed points of withdrawal from five (5) to two (2).

The Development Schedule was determined based on the applicant's own projected ability to Begin Construction as soon as approved and that Completion of Construction would take approximately 36 months, followed by full beneficial use 1 year thereafter. RCW 90.03.320 and case law require that the applicant pursue their project with diligence. The Development Schedule was discussed with the applicant on June 30, 2009, and agreed to as reasonable.

Priority Processing

This application is being priority processed because it qualified under the criteria under which at Ecology's discretion, the department may approve an application for priority processing that addresses a required change in source to meet drinking water quality standards and avoid unreasonable treatment costs as the existing source of supply is or will become unacceptable for human consumption (WAC 173-152-050). This determination was made in consultation with DOH, whose concurrence was described in a letter dated May 22, 2009 (see file).

Description and Purpose of Proposed Application

Table 1: Amended Application Summary

Attributes	Summary
Name	City of Richland
Priority Date	June 1, 2009
Instantaneous Quantity	1500 gpm (additive)
Annual Quantity	2418 af/yr (non-additive)
Source	2 wells
***Points of Withdrawal**	1. SE¼SW¼ of Section 23. 2. NW¼SE¼ of Section 16, all being in T. 9 N., R. 28 E.W.M. in Benton County.
Purpose of Use	Municipal
Period of Use	Continuous, year -round
Place of Use	City of Richland Retail Service Area

*All points of withdrawal were not accurately represented.

Table 2 Proposed Sources of Withdrawal

Source Name	Parcel	Well Log ID	Twn	Rng	Sec	QQ Q	Latitude	Longitude
Well #1—Harrison	123983-060006000	145702	09N.	28E.	23	SWSW	46.24522	-119.28111
Well #2—City Shops	116984-020002002	N/A	09N.	28E.	16	NWSE	46.26233	- 119.31237

Legal Requirements for Approval of Appropriation of Water

RCWs 90.03 and 90.44 authorize the appropriation of public water for beneficial use and describe the process for obtaining water rights. Laws governing the water right permitting process are contained in RCW 90.03.250 through 90.03.340 and RCW 90.44.050. In accordance with RCW 90.03.290, determinations must be made on the following four criteria in order for an application for water rights to be approved:

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

Public Notice

RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the area where the water is to be stored, diverted and used. Notice of this application was published in the Tri-Cities Herald of Richland, Washington during the weeks of September 9 and September 16, 2009. There were no protests during the 30-day protest period.

State Environmental Policy Act (SEPA)

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

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

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

INVESTIGATION

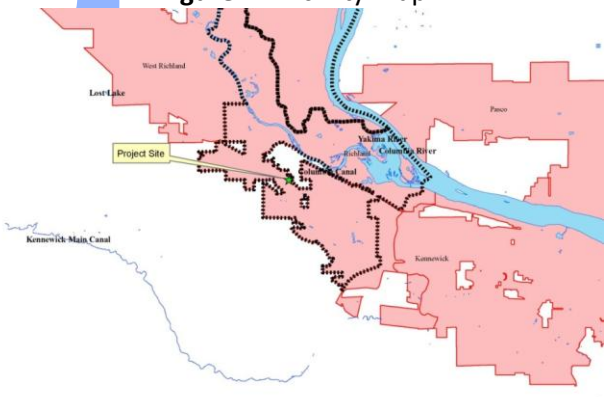
In considering this application and to meet the above-listed legal requirements, the investigation included, but was not limited to, research and review of:

- The State Water Code, administrative rules, and policies.
- Existing water rights on file.
- Well reports.
- Notes from the site visit conducted on July 30, 2009.
- Communication with the applicant.
- Aerial photographs.
- City of Richland's 2010 Comprehensive Water System Plan.
- Other studies, reports, and file notes.

Proposed Use and Basis of Water Demand

The subject property of this application lies on the west bank of the Columbia River and south of the Yakima River, in the City of Richland, WRIA 37 in Benton County, Washington.

Figure 1: Vicinity Map



During the investigation for this application, a site visit was conducted by Ecology employees on July 30, 2009, by Candis Graff, Anna Hoselton, Dan Haller, and Breean Zimmerman. Nancy Aldrich, Special Projects Coordinator for the City of Richland was also present.

In addition to the 2 proposed wells for this application, the City of Richland's water systems depend upon domestic water from the Columbia River and five well fields to supply drinking water to its customers. Columbia River water is pumped from the Columbia to the Water Treatment Plant (WTP) and to the North Richland Well Field (11 total wells with 8 operational). Of the remaining wells, the Duke Wells (2 wells) are out of service with no plans to redevelop. The Willowbrook Well is also out of service but on emergency standby and at some point may be converted to irrigation use. The Wellsian Way Wells (4 total wells with 2 in domestic operation) pump to the 1182 treatment facility. The City also wheels water through its treated system to the City of West Richland. The City of Richland additionally has a total combined storage capacity of 25 million gallons within 15 reservoirs.

According to the City of Richland's 2010 *Comprehensive Water System Plan* (CWSP), the Columbia River Intake and groundwater wells and well fields have the following capacities:

- Columbia River Intake: 62,000 gpm.
- North Richland Well Field: 10,400 gpm.
- Wellisian Way Well Field: 3,000 gpm.
- Columbia Well Field: 730 gpm.
- Duke Well Field: 2,660 gpm.
- Willowbrook Well: (On emergency standby and/or irrigation conversion).
- Harrison Well: (Not yet functional).[1]

The proposed wells for this application are intended to mitigate a Yakima River potential pipeline failure, an ongoing tritium contaminant risk of the North Richland Water Treatment Facility, and high nitrate levels at the Duke Well field.

The City also has stand-alone water systems which supply water for other than domestic purposes and are not treated. Customers can also receive their irrigation water from the Kennewick Irrigation District (KID), Badger Mountain Irrigation District (BMID), Columbia Irrigation District (CID), and from private irrigation systems.

City water use for the past 7-10 years has decreased by nearly 4% on average and current supplies are adequate for 2028 projections; however, the new supply is proposed in this application to reduce risk in the event the pipeline that crosses the Yakima River fails, not because new supplies are necessary at this time.[2]

[1] Paul R. Cross, "*City of Richland Comprehensive Water System Plan*," RH2 Engineering, Inc., Richland, WA, June 2010, p. 3-21-22.
[2] Paul R. Cross, "*City of Richland Comprehensive Water System Plan*," RH2 Engineering, Inc., Richland, WA, June 2010, p. ES-2.

Summary of Other Rights Owned by the Applicant

According to the City's 2010 CWSP, the City reported a use of approximately 16,634 af/yr (4.4% of this use was estimated as unaccounted for water) in the year 2007. Using population growth estimates and estimated average day demand (ADD) figures from the City of Richland's CWSP, Ecology was able to approximate how much af/yr the City would be using in their future projections:

Table 3: ADD Estimates[3]

YEAR	*ADD (MGD)*	*Af/Yr*
2007	14.85	16,634
2013	19.99	22,392
2018	22.00	24,643
2028	24.91	27,902

A review of department records was conducted for existing certificates, permits, and/or claims owned by the applicant, approved and pending changes, and applications. The search resulted in the following records:

***Table 4:** Other Rights Owned by Applicant

Water Right Control #	**Doc #**	**Document Type**	**Purpose**	**Priority Date**	**Qa**	**Source**
G4-23944C	G4-23944C	Cert	IR, EN	4-22-1975	80	1 Well
G4-24262C	G4-24262C	Cert	IR	4-15-1976	54	1 Well
G4-24264C	G4-24264C	Cert	IR	4-15-1976	93	1 Well
G4-24265C	G4-24265C	Cert	IR	4-15-1976	93	1 Well
G4-25960C	G4-25960C	Cert	MU	8-21-1978	1,606	1 Well

[3] Ibid., p. 2-17.

***Table 4:** Other Rights Owned by Applicant—*continued*

Water Right Control #	Doc #	Document Type	Purpose	Priority Date	Qa	Source
G4-28642 G	G4-28642C	Cert	IR, EN	3-18-1985	113	1 Well
G4-28554 W	G4-28554C	Cert	IR, EN	10-26-1984	124.4	1 Well
G4-28515C	G4-28515C	Cert	MU	8-8-1984	1,228	1 Well
G4-28516C	G4-28516C	Cert	MU	8-8-1984	3,422	1 Well
G4-28517CS	G4-28517C	Cert	MU	8-8-1984	890	1 Well
S4-27121C	S4-27121C	Cert	MU	10-27-1980	4,336	1 L. Wallula
S4-26404C	S4-26404C	Cert	MU	9-20-1979	12,257	1 L. Wallula
S4-*16464C	8098	Cert	MU	11-18-1960	Unknown	1 L. Wallula
S4-*16726C	9004	Cert	DG	6-15-1961	Unknown	1 L. Wallula
S4-*17121ALC	09005A	Cert	MU	1-30-1962	32,430	2 L. Wallula
S4-*19192C	9592	Cert	IR	8-11-1965	760	1 L. Wallula
G4-29214P	G4-29214P	Pmt	DM, IR	2-26-1987	37.8	1 Well
G4-28463P	G4-28463P	*Pmt	IR	5-7-1984	364	1 Well(Harrison)
G4-29925P	S4-30976P	Pmt	IR, CI	2-9-1989	520	2 Wells
S4-29799P	S4-29799P	Pmt	IR	6-24-1980	36	1 Columbia
S4-29941P	S4-29941P	Pmt	IR	6-24-1980	12,000	1 Columbia
S4-30976P	S4-30976P	Pmt	MU, CI	9-23-1991	96,619	3 Columbia
G4-063205CL	063205	**Claim	MU	11-1-1943	1,600	1 Well
G4-30990	G4-30990	***NewApp	MU	9-25-1991	806	1 Well
G4-30981	G4-30981	***NewApp	MU	9-25-1991	806	1 Well
G4-30980	G4-30980	***NewApp	MU	9-25-1991	806	1 Well
CG4-28515C	CG4-28515C	ChngApp	MU	10-23-1995	1,228	5 Wells
CG4-28515C@1	CG4-28515C@1	ChngApp	MU	1/31/2005	1,228	4 Wells
CG4-28516C	CG4-28516C	ChngApp	MU	8-11-1994	3,422	4 Wells
CS4-26404C	CS4-26404C	ChngApp	IR	4-29-1993	12,000	1 Columbia
CS4-26404C	CS4-26404C	Chng/ROE	MU	4-16-2001	12,257	2 L. Wallula
CS4-SWC9592	9592	Chng/ROE	IR	4-16-2001	760	1 Columbia
CS4-SWC9005@1	9005	Chng/ROE	MU	4-25-2005	32,430	2 Columbia

DG=Domestic General, DM=Domestic Multiple, MU=Municipal, CI=Commercial and Industrial, IR=Irrigation, EN=Environmental Quality

*G4-28463 is approved for the Harrison Well, which is Well #1 and subject of this application.

**The intent of the Claims Registration Act, RCW 90.14, was to document those uses of surface water in existence prior to the adoption of the State Surface Water Code, RCW 90.03, which was adopted in 1917, and those uses of ground water in existence prior to the adoption of the State Ground Water Code, RCW 90.44, which was adopted in 1945. Since each code(s) adoption, the only means of acquiring a water right within the state is by filing for, and receiving, a permit from the Department of Ecology or one of its predecessors or by establishing a right under the 'domestic exemption" under the ground water code (RCW 90.44.050). The DOE recognizes that the final determination of the validity and extent associated with a claim registered in accordance with RCW 90.14 ultimately lies with the Superior Court through the general adjudication process provided for by RCW 90.03.110 through RCW 90.03.240.

***To be withdrawn upon approval of this application.

Hydrologic/Hydrogeologic Evaluation

GSI Water Solutions, Inc., on behalf of the City of Richland, investigated and submitted the City's proposal and submitted technical evaluative reports to Ecology, which included hydrogeologic conditions, assessments of water availability, and potential for impairment of existing rights. These reports were reviewed by Ecology's licensed staff, Anna Hoselton.

Impairment Considerations

Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection. A water right application may not be approved if it would:

- Interrupt or interfere with the availability of water to an adequately constructed groundwater withdrawal facility of an existing right. An adequately constructed groundwater withdrawal facility is one that (a) is constructed in compliance with well construction requirements and (b) fully penetrates the saturated zone of an aquifer or withdraws water from a reasonable and feasible pumping lift.
- Interrupt or interfere with the availability of water at the authorized point of diversion of a surface water right. A surface water right conditioned with instream flows may be impaired if a proposed use or change would cause the flow of the stream to fall to or below the instream flow more frequently or for a longer duration than was previously the case.
- Interrupt or interfere with the flow of water allocated by rule, water rights, or court decree to instream flows. Degrade the water quality of the source to the point that the water is unsuitable for beneficial use by existing users (e.g., via sea water intrusion).

Impairment, Qualifying Ground Water Withdrawal Facilities, and Well Interference

Qualifying ground water withdrawal facilities are defined as those wells which in the opinion of the Department are adequately constructed. An adequately constructed well is one that (a) is constructed in compliance with well construction requirements; (b) fully penetrates the saturated thickness of an aquifer or withdraws water from a reasonable and feasible pumping lift (WAC 173-150); (c) the withdrawal facilities must be able to accommodate a reasonable variation in seasonal pumping water levels; and (d) the withdrawal facilities including pumping facilities must be properly sized to the ability of the aquifer to produce water.

Well interference may occur when several wells penetrate and withdraw ground water from the same aquifer. Each pumping well creates a drawdown cone. When several wells pump from the same aquifer, well density, aquifer characteristics, and pumping demand may result in individual drawdown cones that intersect and form a composite drawdown cone. At any point in an aquifer, the composite drawdown caused by pumping wells will be greatly influenced by the transmissivity (T) of the aquifer. In aquifers with high Ts, composite drawdown will generally be much less than in aquifers with similar properties but with low Ts. Transmissivity is related to hydraulic conductivity (K) and the saturated thickness (b) of an aquifer by the relationship T=Kb.

An aquifer's hydraulic conductivity (K) is derived from the physical properties of both the fluid and geologic materials that form an aquifer. Once formed, an aquifer's saturated thickness (b) becomes important in evaluating its transmissivity. For regions of similar K in an aquifer, a large saturated thickness will result in a much higher T than a small saturated thickness. As a result, regions of similar K in an aquifer with a large saturated thickness will experience less composite drawdown or well interference than with a small saturated thickness.

Some conditions, however, will increase or steepen composite drawdown in an aquifer. For instance, where characteristics (such as very fine, clay-rich, or poorly sorted sediments) of an unconfined aquifer cause significant drawdown relative to the saturated thickness, the composite drawdown will increase as saturated thickness is reduced and T becomes smaller. Additionally, in regions where negative or no-flow boundaries occur, such as near the edges of a valley fill aquifer where it is bounded by bedrock, composite drawdown will be steeper than in the central part (generally the greatest thickness region) of the aquifer. Consequently, it is commonly understood that the greatest composite drawdown or well interference is more likely to occur in regions of low transmissivities, thin saturated thicknesses and near negative or no-flow boundaries than in regions of high transmissivities, large saturated thicknesses, and away from negative or no-flow boundaries.

Water Availability and Impairment Discussion

For water to be available for appropriation, it must be both physically and legally available. Below is a series of excerpts by Terry L. Tolan, LHG & Stephen P. Reidel, PhD, LHG of GSI Water Solutions, Inc. and quoted in Ecology's hydrogeologist Anna Hoselton's *Technical Memorandum*, dated March 25, 2011.

> "The available information suggests . . . the Harrison well may be capable of meeting the entire target yield for the City. A step-rate test and constant-rate pumping test should be conducted to confirm this . . ."
>
> "On October 18, 2002, the City of Richland reported to the Washington Department of Ecology that a pump had been installed in the Harrison well had been tested at 1200 gpm."
> "Based upon our review…the proposed City Shops well would likely encounter similar hydrogeologic conditions (Figure 10) as observed in the Harrison well. A new well constructed at this location should be cased and sealed in the Saddle Mountains Basalt (Ice Harbor Member) below the thrust fault (Figure 10) and target potential water-bearing zones below the Ice Harbor Member. Given the fact that so few wells utilize the Saddle Mountains Basalt aquifer in this area and apparent [physical] availability of groundwater within the Saddle Mountains Basalt aquifer within the Richland subbasin, it appears likely that a new well at the City Shops site would not result in impairment to the few, existing Saddle Mountains Basalt aquifer wells in this area."
>
> "Based on our review of available well records, nine wells in the immediate vicinity of the Harrison well are completed into the Saddle Mountains Basalt aquifer (Figure 9). Given …that so few wells utilize the Saddle Mountains Basalt aquifer in this area, construction of the Harrison well (20 foot open interval in the bottom of the well), and apparent [physical] availability of groundwater within the Saddle Mountains Basalt aquifer within the Richland subbasin, it is likely that continued pumping of the Harrison well will not result in impairment to the few, existing Saddle Mountains Basalt aquifer wells. (*Preliminary Hydrogeologic Assessment of the Bauder and Harrison Wells and Proposed City Shops Well Site*, October 19, 2010 pgs. 13-15.)

A second report provided to Ecology by GSI Water Solutions Inc., and referred to by Anna Hoselton in her *Technical Memorandum* dated March 25, 2011, states:

> "Estimates of aquifer properties for these Saddle Mountains Basalt aquifers were compiled from the available literature and estimates of available groundwater (static storage – not accounting for any recharge) within these aquifers were made. For the Rattlesnake Ridge and Selah/Cold Creek aquifers, the target aquifers for the proposed City well, our most reasonable estimates of the volume of static groundwater available suggests that they could collectively support [the] projected yearly use (existing production plus new City well at 1500 gpm . . ."
>
> "There appears to be no potential risk of impairment to existing Saddle Mountains Basalt aquifer wells posed by the proposed City [Shops] well." (Stephen P. Reidel, PhD, LHG and Terry L. Tolan, LHG, *Preliminary Hydrogeologic Assessment of the Availability of Saddle Mountains Basalt Groundwater within the Richland Groundwater Subbasin*, December 2010, pgs. 2-3.)

Ms. Hoselton goes on to state in her memorandum that "Ecology concurs that there is physical water available within the Saddle Mountains Basalt aquifer system to support the current request and that withdrawal of groundwater from either the proposed City Shops site well and/or the existing Harrison well will not cause impairment of existing groundwater users."

Beneficial Use

The City of Richland's use of water for municipal purposes is defined in statute as a beneficial use (RCW 90.54.020(1)). Furthermore, the requested quantities are reasonable based on the need for an additional source to serve the South Richland area.

Public Interest Considerations

When investigating an application for a ground water right, Ecology must examine the impact such a right will have on the public interest (RCW 90.03.290). Public interest issues are commonly articulated in the form of protest letters, but Ecology received no letters of protest. Factors considered in determining whether this use of water is in the public interest included but were not limited to: consideration given to exempt wells; existing water right certificates, applications, and claims; potential impacts to the aquifer subject to withdrawal as it pertains to drawdown; and beneficial use of water. The 1971 Water Resources Act, RCW 90.54 provides the most comprehensive list of legislative policies that guide the consideration of public interest in the allocation of water. These policies generally require a balancing of the state's natural resources and values with the state's economic well being. The public interest criteria provide for the greatest level of discretion afforded to Ecology in the permit process and invoke the general environmental and water management policies enacted by the Legislature.

Available data show existing wells in the area are not expected to be impaired by the anticipated operation of the subject wells. Likewise, other wells within close enough proximity are not expected to be affected, or compound the affect of reduced recharge on the water table in the area. Water quality can also be associated with a ground water application; however, in this instance water quality is unlikely to be negatively affected as the proposed wells will meet construction standards and are being evaluated as replacement sites for wells exceeding safe levels of nitrates, the risk of failure of the Yakima River pipeline, and the potential limited use of the North Richland Water Treatment Facility due to a tritium plume from the Hanford Nuclear Reservation. No detriment to the public interest could be identified during the investigation of the subject application.

Currently the City's ability to meet the public health and safety needs of a growing population is restricted by the potential vulnerability of the Yakima River pipeline crossing and the potential tiritium contaminant risk to the North Richland Water Treatment Facility, which has eroded the security of its potable water supplies to all City residents. The requested points of withdrawal will allow the City of Richland to provide safe and reliable water service to their existing service area. The proposal has a non-additive annual quantity to existing water rights and will not result in negative environmental impacts to the target aquifer or to the Columbia River.

Consideration of Protests and Comments

No protests were filed against this application.

Conclusions

In conclusion, approval of this request, under Ground Water Application No. G4-35244 as provisioned above will not cause impairment to existing rights or detriment to the public welfare. Water is legally and physically available and water use for municipal purpose is beneficial.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that this request for a water right be approved in the amounts and within the limitations listed below and subject to the provisions listed above.

Purpose of Use and Authorized Quantities

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

- 1500 gpm (additive to existing water rights).
- 2418 acre-feet per year (non-additive to existing water rights).
- Year-round municipal supply.

Points of Withdrawal
Well #1-(Harrison Well): SW¼SW¼, Section 23, Township 9 North, Range 28 E.W.M.
Well #2-(City Shops Well): NW¼SE¼, Section 16, Township 9 North, Range 28 E.W.M.

Place of Use
As described on Page2 of this Report of Examination.

Candis Graff, Water Resources Report Writer *Date*

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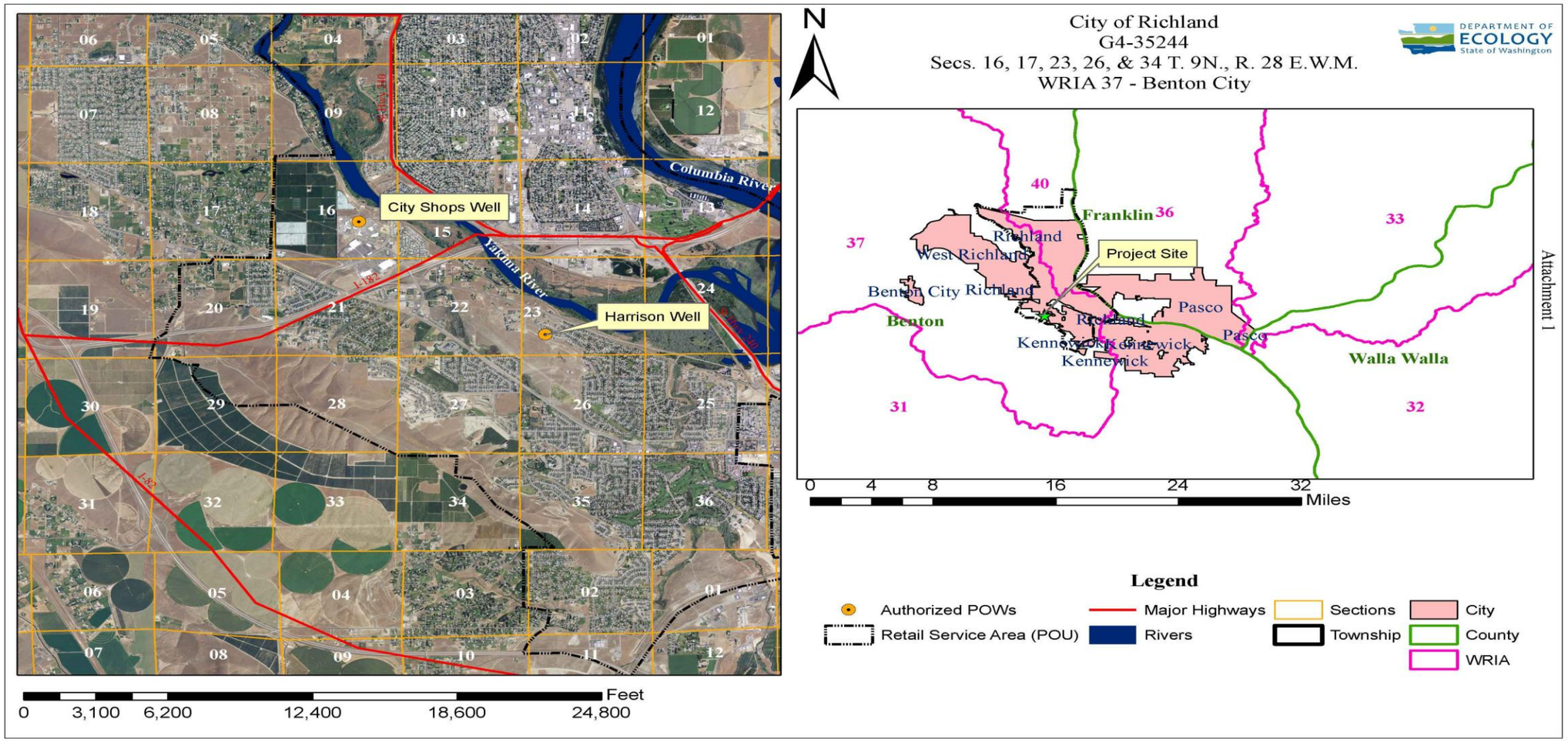
City of Richland
G4-35244
Secs. 16, 17, 23, 26, & 34 T. 9N., R. 28 E.W.M.
WRIA 37 - Benton City
DEPARTMENT OF ECOLOGY
State of Washington
N
City Shops Well
Harrison Well
Columbia River
Yakima River
I-182
SR 240
Feet
0 3,100 6,200 12,400 18,600 24,800
Project Site
Franklin
Richland
West Richland
Benton City
Benton
Pasco
Kennewick
Walla Walla
0 4 8 16 24 32
Miles
Legend
Authorized POWs
Retail Service Area (POU)
Major Highways
Rivers
Sections
Township
City
County
WRIA
Attachment 1