STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

DRAFT

REPORT OF EXAMINATION
Change of Water Right
WRTS File CG2-GWC2217

PRIORITY DATE	CLAIM NO.	PERMIT NO.	CERTIFICATE NO.
June 23, 1954			2217

NAME
City of Tacoma, Department of Public Utilities, Water Division

ADDRESS/STREET	CITY/STATE	ZIP CODE
POB 11007	Tacoma	WA 98411

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Tideflats Production Well 2 (Tag ABG-635)

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND (cfs)	MAXIMUM GALLONS PER MINUTE (gpm)	MAXIMUM ACRE FEET PER YEAR (ac-ft/yr)
	400	645

QUANTITY, TYPE OF USE, PERIOD OF USE
Municipal Supply

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
1,050 feet south and 650 feet east from the west quarter corner of Section 2, T. 20 N., R. 3 E.W.M.
or

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP	RANGE	WRIA	COUNTY
NW ¼ SW ¼	2	20 N.	3 E.W.M.	10	Pierce

PARCEL NUMBER	LATITUDE	LONGITUDE	DATUM
032002-302-4	47.25	-122.4	

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

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]

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 City of Tacoma is 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.

DESCRIPTION OF PROPOSED WORKS

Production Well ABG-635 16-inch casing, completion depth 753 feet below ground surface.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	WATER PUT TO FULL USE BY THIS DATE
January 1, 2011	January 1, 2012	January 1, 2013

PROVISIONS

This water right is additive to GWP G2-28279 and GWC-1028.

All wells must 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.

Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

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

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

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. Installation, operation and maintenance requirements are enclosed as a document titled "Water Measurement Device Installation and Operation Requirements". http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html

Reported water use data can be submitted via the Internet. To set up an Internet reporting account, access https://fortress.wa.gov/ecy/wrx/wrx/Meteringx/. If you do not have Internet access, contact the Southwest Regional office for forms to submit your data.

" In April and September of each year, the Tideflats Well #2 must be tested for chloride and conductivity. A state-accredited laboratory must perform all chemical analysis. The depth to static water must also be recorded at the same time the water samples are collected. The water level measurement should be taken when the well is not actively pumping and the water level in the well is stable, if possible. The information must be submitted in writing to the Department of Ecology, Southwest Regional Office, Lacey, by January 31 of each year."

"This data will help the applicant and Ecology decide if actions are necessary to prevent chloride concentrations from increasing. Increasing chlorides may signal seawater intrusion. Actions that may prevent seawater intrusion include reducing the instantaneous pumping rate, the annual volume pumped, scheduling pumping to coincide with low tides, raising the pump intake, and limiting the number of service connections."

If the criteria in RCW 90.03.386(2) are not met and a Water System Plan/Small Water System Management Program was approved after September 9, 2003, the place of use of this water right reverts to the service area described in that document. If the criteria in RCW 90.03.386(2) are not met and no Water System Plan/Small Water System Management Program has been approved after September 9, 2003, the place of use reverts to the last place of use described by The Department of Ecology in a water right authorization.

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.

The water right holder shall file the notice of project completion 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 superseding certificate will reflect the extent of beneficial use within the limitations of the change authorization. Elements of the project completion inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and compliance with provisions.

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 change of water right as recommended will not be detrimental to existing rights.

Therefore, I ORDER approval of the recommended change under GWC-2217, subject to existing rights and the provisions listed above.

You have a right to appeal this ORDER. To appeal this you must:

- File your appeal with the Pollution Control Hearings Board within 30 days of the "date of receipt" of this document. Filing means actual receipt by the Board during regular office hours
- Serve your appeal on the Department of Ecology within 30 days of the "date of receipt" of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). "Date of receipt" is defined at RCW 43.21B.001(2).

Be sure to do the following:

- Include a copy of this document that you are appealing with your Notice of Appeal.
- Serve and file your appeal in paper form; electronic copies are not accepted.

1. To file your appeal with the Pollution Control Hearings Board

Mail appeal to:		Deliver your appeal in person to:
The Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903	OR	The Pollution Control Hearings Board 4224 – 6th Ave SE Rowe Six, Bldg 2 Lacey, WA 98503

2. To serve your appeal on the Department of Ecology

Mail appeal to:		Deliver your appeal in person to:
The Department of Ecology Appeals Coordinator P.O. Box 47608 Olympia, WA 98504-7608	OR	The Department of Ecology Appeals Coordinator 300 Desmond Dr SE Lacey, WA 98503

3. And send a copy of your appeal to:

Thomas L. Loranger, Section Manager
Water Resources Program
Southwest Region Office

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov . To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser .

Signed at , Washington, this day of 2008.

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Thomas L. Loranger, Section Manager
Water Resources Program
Southwest Region Office

BACKGROUND

On June 30, 2006, David Sherman, representing City of Tacoma, Department of Public Utilities, Water Division filed an *Application for Change of a Water Right* for Water Right Certificate (GWC)2217. The project is in Water Resources Inventory Area (WRIA) 10, the Puyallup River Basin.

Based on the provisions of Chapters 90.03 and 90.44 Revised Code of Washington (RCW), I recommend approval of this application.

Description and Purpose of Proposed Change

The intent of this *Application for Change* is to transfer water rights associated with the former Kaiser Aluminum Plant to the City of Tacoma. The City wants to change the point of withdrawal from Kaiser Well 4 to the City's Tideflats Well 2 located about 2 ¼ miles to the southwest.

See Attachment 1: Vicinity Map

Site History

The Tacoma Works of Kaiser Aluminum and Chemical Corporation (Kaiser) at 3400 Taylor Way is a 70-acre site near the Hylebos Waterway in Commencement Bay in Pierce County. The Kaiser Aluminum plant was built by the United States Government in 1942 and was operated by Kaiser from 1947 to June 2001. In 2001 the plant had the capacity to produce 81,000 tons of aluminum and aluminum products a year. Aluminum oxide, refined from aluminum ore (bauxite), underwent electrolytic reduction to form metallic aluminum. The finished product was cast either as ingots or rods then sold to manufacturers.

The Port of Tacoma is the current owner of the former Kaiser Aluminum plant. The Port acquired the property in 2003 after Kaiser went bankrupt. Since taking over ownership of the property, the site has been undergoing a formal cleanup action under the State RCRA corrective action. Formal cleanup actions are expected to be completed in about two years. The water rights associated with the Kaiser plant are being transferred to the City of Tacoma because the property is in the City's utility service area.

Attributes of the Certificate and Proposed Change

Table 1 *Summary of Proposed Changes to GWC-2217*

Attributes	*Existing*	*Proposed*
Name	Kaiser Aluminum and Chemical Corporation	City of Tacoma, Department of Public Utilities Water Division
Priority Date | Date of Application for Change	June 23, 1954	June 30, 2006
Instantaneous Quantity (gpm)	650	400
Annual Quantity (ac-ft)	1,048	645
Source	Kaiser Well 4	Tideflats Well 2
Point of Diversion/Withdrawal	450 ft north and 25 ft west of the south quarter corner of Section 36, T. 21 N., R. 3 E., in the SW ¼ SE ¼	1,050 ft south and 650 ft east of the west quarter corner of Section 2, T. 20 N., R. 3 E., in the NW ¼ SW ¼
Purpose of Use	Industrial use	Municipal Supply
Period of Use	Year round	Year round

Place of Use	Kaiser Aluminum Plant Property	Area served by the City of Tacoma and through interties

Legal Requirements for Proposed Change

- **Public Notice**
  Notice of the proposed change was published in The Tacoma Daily Index Inc. from May 27 to June 6, 2008. Ecology received no letters of concerns or protest about this application.

- **State Environmental Policy Act (SEPA)**

A SEPA determination evaluates if a proposed withdrawal will cause significant adverse environmental impacts. A SEPA threshold determination is required for:

- Surface water applications for more than 1 cubic feet per second (cfs). If the project is for agricultural irrigation, the threshold increases to 50 cfs if the project isn't receiving public subsidies.
- Groundwater applications requesting more than 2,250 gpm.
- Projects with several water right applications where the combined withdrawals meet the conditions listed above.
- Projects subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA).
- Applications that are part of several exempt actions that collectively trigger SEPA under WAC 197-11-305.

This application does not meet any of these conditions and is categorically exempt from SEPA.

- **Water Resources Statutes and Case Law**

Before approving a groundwater change, RCW 90.44.100(2) requires Ecology to make the same findings as the original application:

- Water must be available for appropriation.
- The water must be for a beneficial use.
- Existing rights must not be impaired as a result of the change.
- The change must not be detrimental to the public interest.

Ecology can amend a groundwater certificate to allow withdrawals from a replacement well at a different location or change the manner or place of use of the water, if:

- The replacement well taps the same body of public groundwater as the original well.
- Use at the original well stops and it is properly decommissioned.
- The amendment will not enlarge the original water right.

Although only a superior court has the authority to determine the actual extent and validity of a water right or claim, the enlargement test requires Ecology to examine the historical record of beneficial water use and make a tentative determination as to the extent and validity of the right. Quantities tentatively determined to be valid may differ from the stated extent of a right in a water right document. This is because water right documents attempt to define a maximum limitation to a water right, rather than the actual extent to which a water right has been developed and maintained through historic beneficial use. Additionally, except for sufficient cause pursuant to RCW 90.14.140, water rights, in whole or in part, not put to a beneficial use for five consecutive years since 1967 may be subject to relinquishment under Chapter 90.14.130 through 90.14.180 RCW. Water rights may also be lost through abandonment.

INVESTIGATION

The following information was used to evaluate this *Application for Change*:

- Washington Groundwater and Surface Water Codes, administrative rules, and policies.
- Other recorded water rights in the area.
- Water well reports recorded in the Department of Ecology's Well Log Image System.
- Topographic and local area maps
- Technical memorandum by Washington Department of Ecology (WDOE) Licensed Hydrogeologist, Tammy Hall, dated October 9, 2008.

- Written correspondence from Bill Evans (Port of Tacoma) to Michelle Cox (Tacoma Pierce County Health Department) dated December 11, 2003.
- Written correspondence from David Sherman (Tacoma Water) to Tammy Hall (WDOE) dated October 29, 2007.
- Memorandum from CH2MHill to Tacoma Water dated December 13, 2000.
- Written correspondence from David Sherman (Tacoma Water) to Jill Walsh (WDOE) dated June 29, 2006.
- Kaiser Aluminum Operations Manual for the Tacoma Works Plant Water System, September 1999.
- Declaration of William D. Evans, dated June 28, 2006.
- Tacoma Water, *Comprehensive Water Plan Update, Volume 1*, August 2006.
- Notes from a site visit conducted on September 3, 2008.

Exempt from relinquishment

RCW 90.14.140(2)(c) states that a water right not used for more than 5 years is not relinquished if it is claimed for a determined future development to take place within 15 years of the last beneficial use of water under the water right. In order to be valid, a determined future development plan must satisfy a series of tests as established in *R.D. Merrill Company v. Pollution Control Hearings Board ; City of Union Gap and Ahtanum Ridge Business Park LLC v. Washington State Department of Ecology;* and *Protect Our Water v. Islanders for Responsible Water Management (Intervenors),State of Washington, Department of Ecology, and King County Water District No. 19:*

- The project must be sufficiently complex as to require more than 5 years to complete.
- The plan must be determined and fixed within 5 years of the last beneficial use of the water.
- The party exercising the plan must have equity in the water right.
- The plan must remain fixed.
- Affirmative steps must be taken to implement the plan within fifteen years.

The Port of Tacoma had a determined future development plan to transfer the water rights to the City of Tacoma and is exempt from relinquishment. Following is a summary of events related to the history of water use and the acquisition of the property by the Port of Tacoma:

- The plant ceased operations in June 2001 (Correspondence to Jill Walsh (WDOE) from Tacoma Water dated June 29, 2006.) This was the date of the last water use associated with GWC-2217.

- The Port acquired the former Kaiser Aluminum Plant property under bankruptcy proceedings in 2003.

- In a letter From Port of Tacoma, to Michelle L. Cox (Tacoma-Pierce County Health Department) dated December 11, 2003, the Port stated that they intended to continue using the water from the wells and was aware of the water rights issued to Kaiser. The Port wanted to make sure that the Group B permit was properly transferred from Kaiser to the Port.

- Other correspondence from Tacoma Water to Jill Walsh, dated June 29, 2006 was submitted with the change applications. It states "*the Port developed a specific and determined future plan for the water to transfer it to Tacoma for its municipal use.*" The letter also says that the Port intended to redevelop the site and to use the wells to provide water supply to an industrial customer, but bankruptcy and cleanup activities interfered with their plans.

- In correspondence dated October 29, 2007 to Tammy Hall (WDOE), David Sherman (Tacoma Water) states:

  "*It was not feasible to develop other uses for the water during the past 5 years as such uses would have required installation and maintenance of a conveyance system within areas which have not yet been cleaned up. The wells are located between the (now former) Rod Mill and potlines, within areas known to be impacted by federally listed hazardous waste. During demolition activities, this portion of the site was also heavily used by several contractors, either for removal of structures or construction staging. For safety reasons, power was turned off over most of the site, including the wells and nearby buildings. These conditions precluded the Port from using water from the wells for commercial or industrial uses, although some water was apparently used for dust control.*"

History of Water Use

Kaiser Aluminum & Chemical Corporation used water from on-site wells for aluminum processing and domestic supply for their employees until the plant closed in 2001. The Kaiser Aluminum Water System operated as a Group B system permitted by the Washington Department of Health (WDOH).

The sources were not metered and detailed pumping records did not survive the bankruptcy. However, a water audit report prepared in 2001 by CH2MHill described use at the plant. According to the audit information, the plant historically used about 760 gpm or 1.09 million gallons per day (mgd) under normal production. The main

use of the water was for both non-contact and contact surface cooling. About 6 gpm was used for domestic supply. This amounted to 1,225 ac-ft per year.

The plant had three sources of water, two on-site wells and an intertie to the Tacoma water system. Records show the plant used 86,000 gallons a day or 96 ac-ft per year through this intertie.

Most of the water used by the plant was from Wells 1 and 4. Well 4 pumped continuously at a rate of 400 gpm. If well 4 ran continuously, it would produce 645 ac-ft.

Amount of Water Eligible for Transfer

CWC-2217 allowed withdrawals of 650 gpm and 1,048 ac-ft per year. Information provided by the applicant shows 400 gpm and 645 ac-ft per year was put to beneficial use and is eligible for transfer.

Industrial use by Kaiser Aluminum is considered fully consumptive. Municipal water use is also considered fully consumptive. The consumptive use of this water right will not increase as a result of this change.

Proposed Use

The applicant requests to change the purpose of use from industrial to municipal supply. According to RCW 90.03.015(4)(a), municipal water supply purposes means beneficial use of water by a publicly owned system for residential purposes for 15 or more residential service connections. Commercial, industrial, irrigation of parks and open spaces, institutional, fire flow, water system maintenance and repair, or related purposes by a municipality under a municipal water right are also municipal uses. Tacoma Water is publicly owned and considered a municipal supplier as defined in RCW 90.03.015.

Other Rights Appurtenant to the Place of Use

Kaiser Aluminum Corporation holds three more water right certificates that served the former aluminum plant. *Applications for Change* were filed on these certificates at the same time as the *Application for Change* was filed for GWC-2217. The attributes of these certificates are described below:

- GWC-1449 was issued June 1953. Documentation provided by the Port indicates the well used has been abandoned and paved over. This water right has been relinquished because of non-use.

- GWC-6850 was issued May 1970 and also applies to Well 1. This certificate authorizes withdrawals of 1,100 gpm and 1,732 ac-ft, non-additive (supplemental) to existing rights. Because GWC-6850 has no additive (primary) rights associated, this certificate cannot be transferred to another well.

- GWC-1028 was issued September 1951 and applies to Well 1. This certificate authorizes withdrawals of 400 gpm and 648 ac-ft per year.

Other Water Rights Held by the City of Tacoma

Tacoma Water provides retail water service to around 94,000 connections or an estimated population of 302,392. Tacoma Water serves homes, businesses, and industries found in Tacoma, University Place, and Ruston. Tacoma water also serves areas in Puyallup, Orting, Bonney Lake, Fircrest, Lakewood, Federal Way, and parts of Pierce and southern King county. Tacoma Water provides water through interties to 14 independent systems operating in Pierce and King counties and provides management services to the Tacoma Narrows Airport located on the Gig Harbor Peninsula.

Tacoma Water relies on surface and groundwater to meet demands. The Green River, located in King County, is Tacoma Water's primary source. The City also operates several water supply wells throughout their service area.

A water rights self assessment in the 2006 Comprehensive Water Plan Update shows that the City has 64 surface and groundwater certificates, permits, and claims for a total of 235,565 gpm and 245,644 ac-ft per year. Approval of this water right change will transfer an additional 400 gpm and 645 ac-ft to the City's water right portfolio.

See Attachment 2: City of Tacoma Water Rights Self-Assessment

Area Hydrogeology

The landscape in the Tacoma area was the result of at least four major glacial episodes where continental glaciers originating in British Columbia advanced and retreated. With each glacial advance, the glacier overrode and compacted earlier deposits and left behind new deposits. As the ice melted and the glacier receded, meltwater streams transported sediments away from the glacier. In some areas, lakes would form and deposit fine-grained sediments. Through this process, a complex subsurface stratigraphy developed. (Crandell, 1965.)

The geologic history of the Port of Tacoma began with the last advance of glacial ice. During this time, earlier glacial deposits in several major glacial troughs in Puget Sound, including the Puyallup trough, were scoured out (Crandell, 1965). When the glaciers retreated, the troughs became filled with meltwater and large lakes formed along the fronts of the glaciers. Eventually, the glaciers retreated north of the Straits of Juan De Fuca and the lakes became interconnected forming complex of marine waterways.

The Puyallup trough was a bay with its head near Sumner. The ancestral Puyallup River dumped its load of sediment and began to build its first delta, 200 feet below the present-day delta (Hart Crowser, undated). As the glaciers continued to melt and sea level rose, the sea flooded the estuary. Depending on the elevation of sea level, sediments either spread across the flooded tidal marshes or off the end of the delta.

Sea level changes and sediment availability control how fast a delta develops. Delta growth (progradation) produces an arrangement of deposits that usually begin with deeper water deposits (prodelta deposits), overlain by inclined sandy foreset beds (delta front deposits). Top set beds, organic clay and silt, deposited in shallow water overlie these, except in channels. The constantly changing conditions in the Puyallup River produced a series of repeated silts and sands. (Hart Crowser, undated.)

The Port property was originally a tidal marsh until about where 11th Street is located. A tidal flat, exposed only during the lowest tides, extended beyond the tidal marsh to about the present position of the developed port area. A 1886 chart of Commencement Bay shows the main waterways were the Puyallup River, Wapato Creek, and Hylebos Creek. A network of tidal channels and tributary streams laced the lower delta area. The size of the Puyallup River and the restricted distributary stream system suggests the delta was no longer growing in 1886. (Hart Crowser, undated.)

Filling the tidal flats began in 1946 and continued until about 1965. The character of the fill material varied depending on how and when it was filled, its depth, and the eventual use of the property. The 1886 chart shows the area around former Kaiser Aluminum plant was filled around 1965 with 1.5 million cubic yards of material. (Hart Crowser, undated.)

Site Conditions

Groundwater Conditions
Details for both Kaiser Well 4 and Tideflats Well 2 are below in Table 2.

Table 2. *Details for Kaiser Well 1 and Tideflats Well 2*

Well	***Kaiser Well 4***	***Tideflats Well 2***
Date Drilled	November 1954	April 1994
Diameter, inches (in)	16	16
Total Depth, Feet below ground surface (bgs)	901	755
Screened interval(s), Feet bgs	863-875 878-899	651-700
Static Water level Feet above ground surface (ags)	11	30

The original point of withdrawal, Kaiser Well 4, is roughly 500 feet west from the southern limit of the Hylebos Waterway. The proposed new point of withdrawal is Tideflats Well 2, about 2 ¼ miles north westward, between the Puyallup River and the Blair Waterway.

See Attachment 3: Locations of Original and Proposed Points of Withdrawal

Well reports for Kaiser Well 4 and Tideflats Well 2 describe a similar assemblage of materials that consist of layers of sand, silt, and clay. Occasional silt and peat layers are interbedded with some sequences. The assemblage of deposits from ground surface until about 460 feet bgs were identified as delta deposits by Hart Crowser (undated).

Deeper deposits consist of alternating layers of silt, sand, and gravel mixed with wood fragments followed by clay, peat and organic silt until about 655 feet bgs. Materials from 460 to 655 feet were identified as older interglacial deposits by Hart Crowser (undated).

Both wells are screened in a layer of water-bearing sand interpreted as older glacial drift by Hart Crowser (undated) that extends from about 655 feet to the completed depth of Well 1. Because both wells are screened

across the same geologic unit and are in close proximity to one another, both wells draw tap the same body of public groundwater.

Groundwater flow is generally upward and toward Commencement Bay. The static water levels for both wells is at or above ground surface indicating that water from depth is moving upward and discharging to marine water.

Tideflats Well 2
Currently, withdrawals from Tideflats Well 2 are allowed by Groundwater Permit (GWP) G2-28279 for 1,300 gpm and 1,400 ac-ft (non-additive) per year. Tideflats Well 2 is not equipped with a pump and water is not in use. The development schedule on GWP-G2-28279 specifies a construction completion date of January 2012. The City intends to outfit the well with a pump in 2011 and begin using the well in 2012. The City would like the same dates for beginning and completion of construction to apply to this transfer.

This transfer will move additive (primary) water rights to the well. Following the approval of this *Application for Change*, a Superseding Permit will be issued for GWP-G2-28279 reflecting this change in additive quantities to Tideflats Well 2.

GWP-G2-28279 requires regular chloride monitoring. However, since Tideflats Well 2 has not been in use, chloride data has not been collected.

Future Plans for Kaiser Well 1
The Port of Tacoma intends to properly abandon Kaiser Well 4 in accordance with RCW 18.104 by 2012. All buildings associated with Kaiser Aluminum have been demolished. The area surrounding the Kaiser wells has been converted to a parking lot to store automobiles shipped from overseas to sale in the United States.

Impairment Considerations

Effects on Existing Water Users
Water right changes have greatest potential to affect users near the new point of withdrawal with wells completed in the same aquifer. WAC 173-150-060 specifies only withdrawals that negatively impact "qualifying withdrawal facilities" can fit the legal definition of impairment. Qualifying withdrawal facilities are considered to be fully penetrating wells completed in the same aquifer as the new point of withdrawal. A fully penetrating well spans the aquifer's entire saturated thickness and allows a reasonable variation in seasonal water levels. This definition allows wells to be affected, especially shallower wells, but the impacts are not considered impairment.

This change will transfer 400 gpm from Kaiser Well 4 to Tideflats Well 2, roughly 2 ¼ miles to the northwest.

Ecology's databases were queried to determine the number of water right certificates, permits, claims, and water wells in the six sections surrounding Tideflats Well 2. The distance from Tideflats Well 2 in the search area ranged from ½ mile to more than 2 miles. The size of search area was chosen to make records retrieval easier. The search identified four groundwater certificates. None of these certificates had wells completed in the same aquifer as Tideflats Well 2. It is uncertain if these water rights are in use, since aerial photographs do not show irrigation in these areas. The attributes of these certificates are summarized below in Table 3.

Table 3. *Summary of Water Right Certificates*

Cert #	Name	Priority Date	Purpose	gpm	Ac-ft	Well depth Feet bgs	Distance from Tideflats Well 2 (ft)
1679	A R Bunge	3/31/1952	Domestic Supply Irrigation	150	30	67	1,000
542	G Kawasaki	6/8/1950	Irrigation	120	45	82	3,000
3999	City of Tacoma	9/18/1959	Commercial Irrigation	350	560	534	4,000
1942	K. Yotsuuye	7/14/1952	Irrigation	200	54	157	7,000

In addition to the groundwater certificates issued, Ecology records show:

- One surface water certificate issued for use from Wapato Creek for irrigation.
- Seventy-six claims are on file for both surface water and groundwater use. Most of these are for domestic supply.
- Twelve water wells have been drilled in the area. These wells range from 30 to 901 feet deep.

Service area maps for Tacoma Water show that the area surrounding Tideflats Well 2 is supplied by municipal water systems and it is unlikely that private wells are in use. Aerial photographs show land use in area is industrial or commercial. Because Tideflats Well 2 draws water from a deep aquifer, it is unlikely this change will affect area water right holders in the area.

Effects to Surface Water
The Instream Resources Protection Program (IRPP) for the Puyallup River Basin Water Resource Inventory Area (WRIA) 10 established instream flows for the Puyallup River and other rivers in the WRIA. The IRPP also closed many creeks to surface water diversions and groundwater withdrawals that negatively impact surface water.

Minimum instream flows were established for the Puyallup River in 1980 at several locations. Gage 12-1015.00 measures streamflow from the influence of the mean annual high tide in Section 20 of T. 20 N., R. 4 E., roughly 5 miles upstream of Tideflats Well 2. The IRPP closes Wapato Creek and Hylebos Creek.

It is not expected that this change will negatively impact regulated surface water in the area. Although the point of withdrawal will move roughly 2 ¼ miles west, closer to the Puyallup River, the well draws water from a deep aquifer not in direct hydraulic communication with surface water. Tideflats Well 2 is in the tidally influenced zone, downstream of Gage 12-1015.00. Groundwater in the area discharges to Commencement Bay.

Potential for Seawater Intrusion

Withdrawals close to marine can cause seawater intrusion by drawing down the hydraulic head of the fresh groundwater relative to seawater. When pumping depresses the water table, the offshore flow of freshwater either decreases or reverses, causing the front of the seawater to move landward. Where confined aquifers extend offshore, an aquifer could undergo seawater intrusion for many years before seawater is detected in wells. The potential for saltwater encroachment varies with aquifer, as well as within aquifers, because of variations in hydrologic properties.

The presence of chloride in wells can indicate seawater intrusion. According to the Federal Environmental Protection Agency, the recommended the Secondary Maximum Contaminant Level (SMCL) allowed according to Federal standards for chloride is 250 mg/l. Concentrations of 100 mg/L or greater provide evidence of seawater intrusion, unless other natural chloride sources exist in the area.

Tideflats Well 2 is roughly one mile from Commencement Bay in a tidally influenced area. The provisions of GWP-G2-28279 require regular chloride monitoring. Regular recording and reporting will also be required under this change to help administrators manage withdrawals so that degradation of the aquifer does not occur. If chlorides eventually are detected in Tideflats Well 2, Tacoma Mutual Water will need to take mitigation actions. These actions may include keeping pumping rates low so a pronounced cone of depression that draws up salt water does not develop.

Public Interest Considerations

Approving this change will transfer valid water rights associated with the former Kaiser Aluminum Plant to the City of Tacoma. The former Kaiser property is in the City's service area. The change will not cause new impacts to regulated surface water or groundwater. Approval of this change is not detrimental to the public interest and consistent with WAC 173-510 and RCW 90.54.

CONCLUSIONS

To approve a groundwater change under RCW 90.44.100(2), Ecology must to make the same findings as the original application. This investigation confirms:

- Water continues to be available for appropriation.
- The proposed use, municipal supply, is a beneficial use.
- Existing rights will not be impaired by this change.
- Approving this change is not detrimental to the public interest.

Ecology can amend a groundwater certificate to allow withdrawals from a replacement well at a different location or change the manner or place of use of the water as long as three conditions are met. This investigation confirms:

- The replacement well, Tideflats Well 2, taps the same body of public groundwater as the original well, Kaiser Well 4.
- Use at Kaiser Well 1 will discontinue. Well 4 will be decommissioned in accordance with RCW 18.104.
- Approval of this change will not enlarge GWC-2217.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that the request for change to GWC-2217 be approved in the amounts and within the limitations listed below and subject to the provisions beginning on Page 2, et seq.

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:

- 400 gpm.
- 645 ac-ft per year.
- Municipal Supply Purposes.

Point of Withdrawal

NW¼, SW¼, Section 2, T. 20 N., R. 3 E.W.M.

Place of Use

As described on Page 1 of this Report of Examination.

Report by: _____ _____

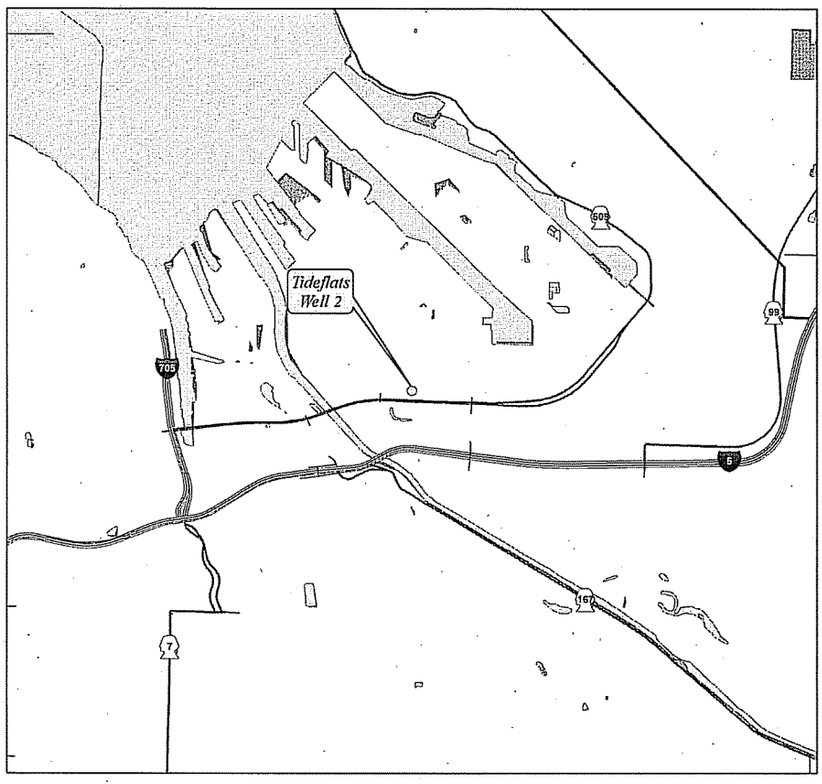
Date

Water Resources Program

If you need this publication in an alternate format, please call Water Resources Program at . Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

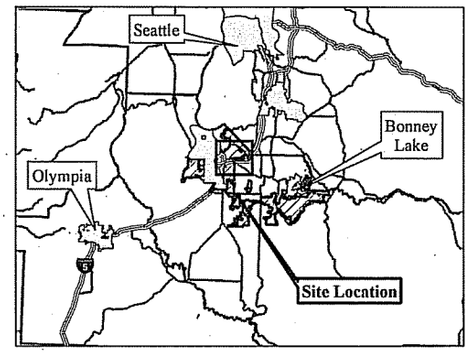
Crandell, D.R., and Mullineaux, D.R., 1965, *Age and origin of the Puget Sound trough in western Washington:* U.S. Geological Survey Professional Paper 525-B, p. B132-397.

Hart Crowser & Associates Inc., undated, *Geology of the Port of Tacoma*



CG2-GWC2217 - City of Tacoma
Twp 20, Rng 3E, Sec 2
WRIA 10 - Pierce County

DEPARTMENT OF ECOLOGY
State of Washington



Service Area
Well
County
City
Interstate
State Route
Local Road

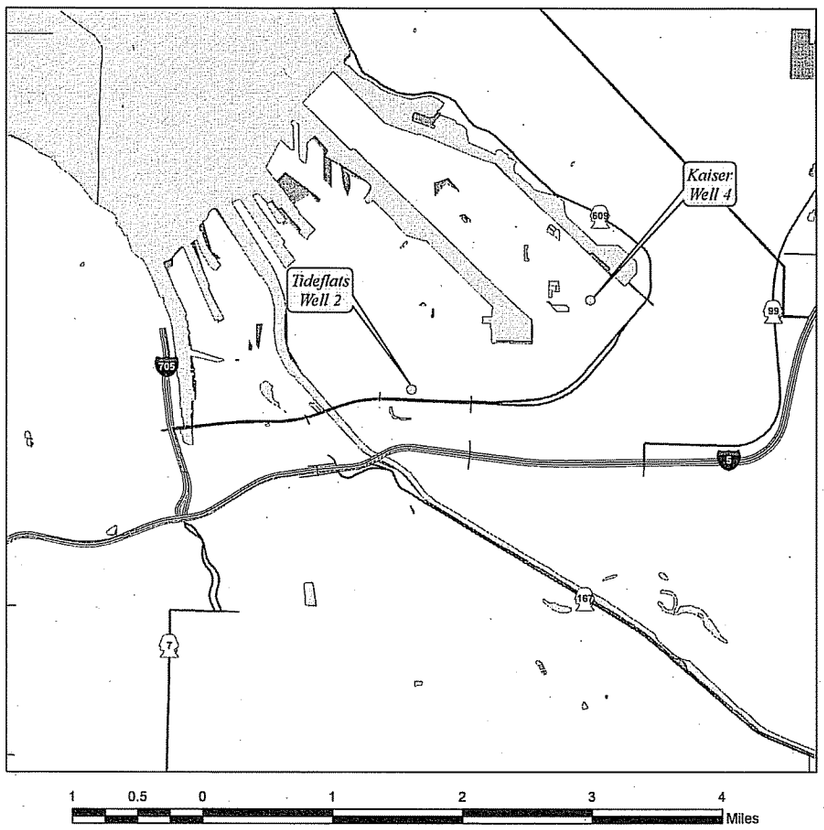
Comments:

Place of use, points of withdrawal/diversion are as defined on the cover sheet under the heading, 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Map Created: 7/28/2008 srh

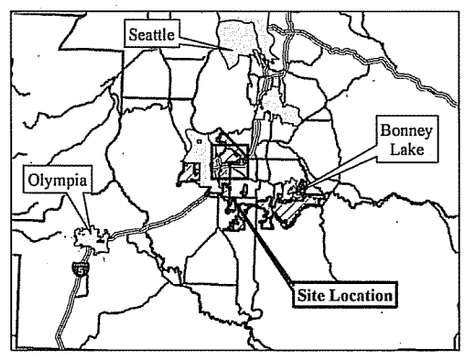
1 0.5 0 1 2 3 4 Miles

Attachment 1



CG2-GWC2217 - City of Tacoma
Twp 20, Rng 3E, Sec 2
WRIA 10 - Pierce County

DEPARTMENT OF ECOLOGY
State of Washington



Service Area
Well
County
City
Interstate
State Route
Local Road

Comments:

Place of use, points of withdrawal/diversion are as defined on the cover sheet under the heading, 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Map Created: 7/28/2008 srh

Attachment 3

A

Water Right Self-Assessment *for Existing Water Right Status*

	Permit Certificate or Claim #	Name of Rightholder or Claimant	Priority Date	Source Name/Number	Primary or Supplemental	Existing Water Rights: Maximum Instantaneous Flow Rate (Qi) gpm	Existing Water Rights: Maximum Annual Volume (Qa) A/F	Existing Consumption: Maximum Instantaneous Flow Rate (Qi) gpm	Existing Consumption: Maximum Annual Volume (Qa) A/F	Current Water Right Status (Excess/Deficiency): Maximum Instantaneous Flow Rate (Qi) gpm	Current Water Right Status (Excess/Deficiency): Maximum Annual Volume (Qa) A/F
1	WRC2298	City of Tacoma	2/8/1906	Green River	P	50,725	81,800	50,725	63,460	0	18,340
2	S1-00726P	City of Tacoma	2/7/1933	Green River	P	44,890	72,397	45,139	New source	0	New source
3	C10616	City of Tacoma	11/21/1968	Prairie Ridge Springs	P	565	450	400	30	50	420
4	C216D	City of Tacoma	12/1/1930	Well 1B	P	3075	603	2800	603	275	0
5	C783A	City of Tacoma	3/1/1948	Well 1B	P	incl above	1028	incl above	864	incl above	164
6	C217D	City of Tacoma	5/1/1930	Well 2A	P	2025	393	0	0	2025	393
7	C784A	City of Tacoma	3/1/1948	Well 2A	P	incl above	681	0	0	incl above	681
8	C1207A	City of Tacoma	12/8/1948	Well 2B	P	3600	2122	1950	12	1650	2110
9	C218D	City of Tacoma	2/1/1931	Well 3A	P	3820	749	3020	749	800	0
10	C783A	City of Tacoma	3/1/1948	Well 3A	P	incl above	1277	incl above	1130	incl above	147
11	C219D	City of Tacoma	12/1/1930	Well 4A	P	1572	322	915	75	657	247
12	C784A	City of Tacoma	3/1/1948	Well 4A	P	incl above	512	0	0	incl above	512
13	C220D	City of Tacoma	12/1/1930	Well 5A	P	5900	1154	4550	1154	1350	0
14	C783A	City of Tacoma	3/1/1948	Well 5A	P	incl above	1975	incl above	1538	incl above	437
15	C221D	City of Tacoma	7/1/1940	Well 6B	P	3210	629	2910	629	300	0
16	C784A	City of Tacoma	3/1/1948	Well 6B	P	incl above	1073	incl above	88	incl above	985
17	C222DC	City of Tacoma	9/1/1939	Well 7B	P	1126	221	975	221	151	0
18	C783A	City of Tacoma	3/1/1948	Well 7B	P	incl above	375	incl above	54	incl above	321
19	C223D	City of Tacoma	7/1/1940	Well 8B	P	4337	853	3280	853	1057	0
20	C783A	City of Tacoma	3/1/1948	Well 8B	P	incl above	1447	incl above	395	incl above	1052
21	C1566A	City of Tacoma	3/1/1949	Well 9A	P	5500	3730	0	0	5500	3730
22	C2665AC	City of Tacoma	9/16/1947	Well 10C	P	600	968	560	164	40	804
23	C2665BC	City of Tacoma	9/16/1947	Well 10B	P	600	952	0	0	600	952
24	C513A	City of Tacoma	9/16/1947	Well 11A	P	9500	5100	7750	1467	1750	3633
25	C2873A	City of Tacoma	8/22/1955	Well 12A	P	6000	4242	3480	1140	2520	3102
26	G2-27860C	City of Tacoma	8/14/1990	Well 13A	P	750	890	750	386	0	504
27	G2-27861P	City of Tacoma	8/14/1990	Well 14A	S	2700	3000	0	0	2700	3000
28	C131A	City of Tacoma	9/12/1946	Well SE-2	P	350	526	350	82	0	444
29	C1036A	City of Tacoma	2/5/1951	Well SE-2	P	250	146	100	0	150	146
30	C5686A	City of Tacoma	1/24/1966	Well SE-6	S	750	1210	430	79	320	1131
31	C5687A	City of Tacoma	9/28/1966	Well SE-6	S	50	80	0	0	50	80
32	C6490A	City of Tacoma	5/8/1968	Well SE-7	S	800	466	0	0	800	466
33	C3374A	City of Tacoma	3/11/1959	Well SE-7	S	230	370	0	0	230	370
34	C7085A	City of Tacoma	10/24/1969	Well SE-8	S	500	400	400	60	100	340
35	G2-20021C	City of Tacoma	3/7/1972	Well SE-10	S	1000	800	0	0	1000	800
36	G2-26094C	City of Tacoma	2/25/1982	Well SE-11	S	1000	800	790	132	210	668
37	C130A	City of Tacoma	9/15/1945	Well SE-11A	P	500	811	425	75	75	736
38	C2872A	City of Tacoma	4/9/1957	Well SE-11A	P	260	416	0	0	260	416
39	G1-00469C	City of Tacoma	8/24/1970	North Fork Well Field	S	58,300	30,244	36,800	16,870	21500	13374
40	G2-27023C	City of Tacoma	12/9/1986	Tide Flats #1 Well	P	1,050	740	0	0	1050	740

From 2006 Comprehensive Water Plan Update, Tacoma Water, July 2007

Water Right Self-Assessment *for Existing Water Right Status*

	Permit Certificate or Claim #	Name of Rightholder or Claimant	Priority Date	Source Name/Number	Primary or Supplemental	Existing Water Rights: Maximum Instantaneous Flow Rate (Qi) gpm	Existing Water Rights: Maximum Annual Volume (Qa) A/F	Existing Consumption: Maximum Instantaneous Flow Rate (Qi) gpm	Existing Consumption: Maximum Annual Volume (Qa) A/F	Current Water Right Status (Excess/Deficiency): Maximum Instantaneous Flow Rate (Qi) gpm	Current Water Right Status (Excess/Deficiency): Maximum Annual Volume (Qa) A/F
41	G2-27023C	City of Tacoma	12/9/1986	Tide Flats #1 Well	S	incl above	100	0	0	incl above	100
42	C215D	City of Tacoma	1/1/1928	Tide Flats #1 Well	P	1,050	100	0	0	1050	100
43	G2-28279P	City of Tacoma	9/23/1991	Tide Flats #2 Well	S	1,300	1400	0	0	1300	1400
44	C7318A	City of Tacoma	12/19/1962	Gravity Wells #1 and #2	S	6,400	5,120	5550	473	850	4647
45	G2-28977P	City of Tacoma	12/16/1993	Fred 1 Well	S	1,000	1,075	0	0	1000	1075
46	G2-23895C	City of Tacoma	7/14/1975	Portland Avenue Well	P	1,200	1,130	1040	101	160	1029
47	C715B	City of Tacoma	5/1/1946	Well UP-1	P	300	460	300	369	0	111
48	C1053A	City of Tacoma	11/29/1950	Well UP-1	S	1,000	700	740	0	260	700
49	C5858A	U.P. Water Co.	8/15/1966	Well UP-10	S	1,500	2,400	0	0	1500	2400
50	590D	U.P. Water Co.	5/1/1945	UP Well 4	P	500	356	0	0	500	356
51	591 D	U.P. Water Co.	5/1/1945	UP Well 3	P	300	214	0	0	300	214
52	2904A	U.P. Water Co.	10/7/1952	UP Well 8	P	750	528	0	0	750	528
53	2904A	U.P. Water Co.	10/7/1952	UP Well 8	S	incl above	672	0	0	incl above	672
54	4261A	U.P. Water Co.	5/9/1961	UP Well 9	P	1,200	1,920	0	0	1200	1920
55	G2-00097C	U.P. Water Co.	6/11/1970	UP Well 11	S	1,000	800	0	0	1000	800
56	G2-00033C	U.P. Water Co.	11/18/1971	UP Well 12	P	1,400	143	0	0	1400	143
57	G2-00033C	U.P. Water Co.	11/19/1971	UP Well 12	S	incl above	1457	0	0	incl above	1457
58	C49D	City of Tacoma		Flowing #1	P	25	33	0	0	25	33
59	C50D	City of Tacoma		Flowing #3	P	5	7	0	0	5	7
60	C51D	City of Tacoma		Flowing #5	P	100	115	0	0	100	115
61	C52D	City of Tacoma		Flowing #6	P	100	115	0	0	100	115
62	C159A	City of Tacoma	4/23/1948	DP#2	P	400	200	0	0	400	200
63	C5632A	City of Tacoma	9/26/1966	DP#1	S	250	314	0	0	250	314
64	C5656A	City of Tacoma	9/26/1966	DP#3	S	250	314	0	0	250	314
	Totals	*	*	*	*	**235,565**	**245,644**	**176,129**	**93,253**	**59,570**	**79,994**