

Name BAY CITY, OREGON
 By _____
 Address City Hall, P.O. Box 307 3309
Bay City, OR 97107
ph 377-2258

Date filed August 10, 1973
 Priority August 10, 1973
 Action suspended until BC 2000

Return to applicant _____
 Date of approval MAR 2 1979

CONSTRUCTION

Date for beginning MAR 2 1980
 Date for completion OCT 1 1980
 Extended to 10-1-85, 10-1-90, 10-1-95,
10-1-2000
 Date for application of water OCT 1 1981
 Extended to 10-1-85, 10-1-90, 10-1-95,
10-1-2000

PROSECUTION OF WORK

Form "A" filed March 25, 1980
 Form "B" filed _____
 Form "C" filed _____

FINAL PROOF

Blank mailed _____
 Proof received _____
 Date certificate issued _____

Application No. 51053

Permit No. 43858

Certificate No. _____

Stream Index, Page No. 1-6Y

FEES PAID

Date	Amount	Receipt No.
8-10-73	69.75	36040
4-15-96	100.00	001458
8/04/03	100.00	61835

\$1 Cert. Fee

FEES REFUNDED

Date	Amount	Check No.

ASSIGNMENTS

Date	To Whom	Address	Volume	Page

REMARKS

CARD FOR A MAR 19 1980

CARD FOR B OCT 25 1980

20 cts from Kilchis River for Municipal

Card for BC OCT 1 8 1985

CARD FOR C OCT 25 1990

Firm 100 sent JAN 24 1991

C Rem. 10/25/95

(BC Ext. 10-1-2000 V50 P213)

MESSAGE

Message For

WR / City of City Bay

from Brook

date 10/3/11

number

503-581-6198

time 12:07 AM

message

S-51053 App / Pull ALE
S-43858 per

2:00 pm - will be here to view

4B Engineering

taken by

best call back time

date

Oregon Water Resources Department
Water Rights Information Query

Permit: S 43858 *

[Main](#) [Help](#)
[Return](#) [Contact Us](#)

Contact Information (Click to Collapse...)

▼ Contact Information

OWNER:
CITY OF BAY CITY
PO BOX 3309
BAY CITY, OR 97107

Water Right Information (Click to Collapse...)

Status: Non-Cancelled
County: Tillamook
Basin: North Coast
File Folder Location: Salem
Watermaster District: 1

Scanned Documents (Click to Expand...)

Point(s) of Diversion (Click to Collapse...)

▶ POD 1 - KILCHIS RIVER > TILLAMOOK BAY

Place(s) of Use (Click to Collapse...)

[Add TRS grouping](#)

▶ **Use - MUNICIPAL USES**
(Primary); Priority Date: 8/10/1973

Water Right Genealogy (Click to Collapse...)

—No genealogy records available for this water right, try the family link below instead.

[View Water Rights in same Family](#)[Report Errors with Water Right Data](#)

Processing History (Click to Collapse...)

▶ Application: S 51053

▼ Permit: S 43858 [document](#), [paper map](#)

▶ Signature: 3/2/1979

Process Step	Date Completed	Result	Completed By
Completion Date [C Date]	10/1/2000		
Extension Application Received	8/4/2003		ANN REECE
Extension Comment Period Ends	8/19/2003		ANN REECE

▼ Order(s)

Order Origin	Volume-Page	Signature	Description
Special	40-70	3/21/1986	EXTENDS 224 PERMITS
▶ Special	45-301	5/31/1991	ORDER EXTENDING TIME LIMITS ON PERMITS
Special	50-213	4/25/1996	EXTENDS TIME LIMITS ON CERTAIN PERMITS

▶ [View right with Web Mapping](#)▶ [View Places of Use from Water Rights in the Same Area](#)▶ [View Reported Water Use](#)



Oregon

Kate Brown, Governor

Water Resources Department

North Mall Office Building
725 Summer St NE, Ste A
Salem, OR 97301
Phone: 503-986-0900
Fax: 503-986-0904
www.Oregon.gov/OWRD

January 14, 2020

SHN

Daniel P. Graber, P.P.E.
275 Market Ave
Coos Bay, OR 97420-2228

Reference: Application S-51053; Permit S-43858

Dear Mr. Graber,

The Department is in receipt of the request by the City of Bay City for an administrative hold on the Application for Extension of Time for permit S-43858. Upon review of the request, the Department has determined that the request for additional time to implement a test program in the Kilchis River Well Field is reasonable. The Department will suspend further processing of the Application for Extension of Time until July 2, 2020, to allow for sufficient time to complete the report following the completion of the test program and analysis of the data. Please submit the report to the Department by no later than July 2, 2020.

Once received, the report will be evaluated by the Department Ground Water Section for determination of the significance of the influence of pumping from the City's municipal wells on the flows of the Kilchis River.

If it does not appear that the report will be submitted by July 2, 2020, please contact us, and the Department may allow additional time for the preparation and submittal of the report. The Department may begin to proceed with the issuance of the Proposed Final Order after July 2, 2020, without further notice.

If you have any questions or concerns, please do not hesitate to contact Jeffrey Pierceall, Extension Specialist, at 503-986-0802.

Sincerely,

Dwight French
Water Right Services Division Administrator
Oregon Water Resources Department



551653
Bay City

Lisa Brown
WaterWatch of Oregon
213 SW Ash Street, Suite 208
Portland, OR 97204

January 9, 2013

Dwight French
Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301-1271

**RE: Request for Notification of Proposed Municipal Extension Fishery
Resource Protection Conditions (December 18, 2012 Public Notice)**

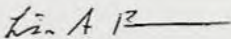
Dear Mr. French:

I am writing to request notification of any proposed fishery resource protection conditions for the 12 coastal municipal permit extension applications listed on the attached pages from the December 18, 2012 OWRD Public Notice (omitting the two noted that were not sent to ODFW according to the December 25, 2012 Public Notice).

This request is made pursuant to OAR 690-315-0080(2)(f) ("Upon receiving ODFW's written advice, the Department shall notify the applicant and any persons that requested notification of any fishery resource protection conditions that may be proposed in the proposed final order under OAR 690-315-0050").

Please do not hesitate to contact me at 503.295.4039 x4 or lisa@waterwatch.org if there are any questions regarding this request. Thank you for your assistance.

Sincerely,



Lisa Brown

Attachment: excerpt of Public Notice (2 pages)

cc: Ann Reece (by email only)

RECEIVED
JAN 11 2013
WATER RESOURCES DEPT
SALEM, OREGON



Lisa Brown
WaterWatch of Oregon
213 SW Ash Street, Suite 208
Portland, OR 97204

January 9, 2013

Dwight French
Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301-1271

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Please do not hesitate to contact me at 503.295.4039 x4 or lisa@waterwatch.org if there are any questions regarding this request. Thank you for your assistance.

Sincerely,

Lisa A Brown

Lisa Brown

Attachment: excerpt of Public Notice (2 pages)

cc: Ann Reece (by email only)

RECEIVED

JAN 11 2013

WATER RESOURCES DEPT
SALEM, OREGON

**Pending Municipal Permit Extension Applications Sent to Oregon Department of Fish and
Wildlife for Review**

Consistent with OAR 690-315-0080 the Department must notify Oregon Department of Fish and Wildlife of certain pending municipal water use extension applications. If applicable under OAR 690-315-0080 any undeveloped portion of a municipal permit must be conditioned to maintain the persistence of listed fish species in the portions of waterways affected by water use under the permit. The following applications were referred to the Oregon Department of Fish and Wildlife on December 14, 2012.

Application File Number: S-73332
Permit Number: S-53492
Applicant: Arch Cape Water Service District
Water Source: Asbury Creek, a Tributary of Pacific Ocean
Authorized Use of Water Under Permit: Municipal

Application File Number: S-6320
Permit Number: S-3945
Applicant: Astoria Water Commission
Water Source: Big Creek, tributary to Columbia River
Authorized Use of Water Under Permit: Domestic

Application File Number: S-10226
Permit Number: S-7257
Applicant: City Astoria
Water Source: Youngs River, tributary to the Columbia River
Authorized Use of Water Under Permit: Municipal

Application File Number: S-25856 (NOT SENT TO ODFW ACCORDING
Permit Number: S-27092 TO 12/25/2012 PUBLIC NOTICE)
Applicant: City of Astoria
Water Source: Youngs River and Youngs River Reservoir, tributary of the
Columbia River
Authorized Use of Water Under Permit: Municipal

Application File Number: S-51053 ✓
Permit Number: S-43858
Applicant: City of Bay City
Water Source: Kilchis River, tributary to the Tillamook Bay
Authorized Use of Water Under Permit: Municipal

Application File Number: R-25855
Permit Number: R-2568
Applicant: City of Astoria
Water Source: The Youngs River Reservoir, Youngs River, a tributary to the
Columbia River
Authorized Use of Water Under Permit: Municipal

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JAN 11 2013

WATER RESOURCES DEPT
SALEM, OREGON

Application File Number: R-32825 (NOT SENT TO ODFW ACCORDING TO
Permit Number: R-2653 12/25/2012 PUBLIC NOTICE)
Applicant: City of McMinnville
Water Source: McMinnville 4B, Walker Creek, tributary of Nestucca River and
Pacific Ocean
Authorized Use of Water Under Permit: Municipal

Application File Number: S-32770
Permit Number: S-27520
Applicant: City of McMinnville
Water Source: Nestucca River and McMinnville Reservoir 4C, Walker Creek and
McMinnville Reservoir 4B, tributary to the Pacific Ocean
Authorized Use of Water Under Permit: Municipal

Application File Number: S-59448
Permit Number: S-45008
Applicant: City of Nehalem
Water Source: West branch of Coal Creek, an unnamed tributary of Coal Creek,
Coal Creek, all tributary to North Fork Nehalem River
Authorized Use of Water Under Permit: Municipal

Application File Number: G-7902
Permit Number: G-5070
Applicant: City of Warrenton
Water Source: The Lewis and Clark River, a tributary to the Columbia River
Authorized Use of Water Under Permit: Municipal

Application File Number: G-13479
Permit Number: G-12196
Applicant: City of Wheeler
Water Source: Wells #4, #6, #13, and #10 within the Nehalem River Basin
Authorized Use of Water Under Permit: Municipal

Application File Number: S-45629
Permit Number: S-34032
Applicant: Neahkahnie Water District
Water Source: Pirate Springs
Authorized Use of Water Under Permit: Municipal

Application File Number: S-72306
Permit Number: S-51578
Applicant: Neahkahnie Water District
Water Source: Three Springs, tributaries of Nehalem Bay
Authorized Use of Water Under Permit: Municipal

Application File Number: G-10574
Permit Number: G-9829
Applicant: City of Tillamook
Water Source: A Well
Authorized Use of Water Under Permit: Municipal

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JAN 11 2013
WATER RESOURCES DEPT
SALEM, OREGON



Phone: (541) 266-9890 Email: info@shn-engr.com Web: shn-engr.com
275 Market Avenue, Coos Bay, OR 97420-2228

Reference: 611012.102

December 19, 2019

Mr. Jeffrey D. Pierceall, Extension and Adjudication Specialist
Oregon Water Resources Department
725 Summer St. NE, Suite A
Salem, OR 97301

**Subject: Administrative Hold Pending Application for Extension of Time,
Application S-51053; Permit S-43858**

Dear Mr. Pierceall:

On behalf of the City of Bay City, SHN is requesting additional time for the administrative hold on the Application for Extension of Time for permit S-43858.

SHN has received dry weather data but will need additional time to gather wet weather data, and for preparation and submittal of the report.

SHN is requesting an additional six (6) months to complete the testing and update the water master plan. This request would extend the submittal date from January 2, 2020 to July 2, 2020.

Respectfully submitted,

SHN

Daniel P. Graber, PE
Senior Engineer

DPG:dkl

c. Chance Steffey, City of Bay City

RECEIVED

DEC 23 2019

OWRD



Oregon

Kate Brown, Governor

Water Resources Department

North Mall Office Building

725 Summer St NE, Suite A

Salem, OR 97301

Phone (503) 986-0900

Fax (503) 986-0904

www.Oregon.gov/OWRD

May 17, 2019

SHN

Ronald F. Stillmaker

275 Market Ave

Coos Bay, OR 97420-2228

Reference: Application S-51053; Permit S-43858

Dear Mr. Stillmaker,

The Department is in receipt of the request by the City of Bay City for an administrative hold on the Application for Extension of Time for permit S-43858. Upon review of the request, the Department has determined that the request for additional time to implement a test program in the Kilchis River Well Field is reasonable. The Department will suspend further processing of the Application for Extension of Time until January 2, 2020, to allow for sufficient time to complete the report following the completion of the test program and analysis of the data. Please submit the report to the Department by no later than January 2, 2020.

Once received, the report will be evaluated by the Department Ground Water Section for determination of the significance of the influence of pumping from the City's municipal wells on the flows of the Kilchis River.

If it does not appear that the report will be submitted by January 2, 2020, please contact us, and the Department may allow additional time for the preparation and submittal of the report. The Department may begin to proceed with the issuance of the Proposed Final Order after January 2, 2020, without further notice.

If you have any questions or concerns, please do not hesitate to contact Jeffrey Pierceall, Extension Specialist, at 503-986-0802.

Sincerely,

Dwight French

Water Right Services Division Administrator

Oregon Water Resources Department



275 Market

Civil Engineering, E

541-266-9890

Permitting, Surveying

Reference: 611012.102

May 7, 2019

Mr. Jeffrey D. Pierceall
Extension and Adjudication Specialist
Oregon Water Resources Department
725 Summer St. NE, Suite A
Salem, OR 97301

When the hydro report
is submitted, inform
WW of its arrival

Subject: Pending Application for Extension of Time, Application S-51053; Permit S-43858

Dear Mr. Pierceall:

On behalf of the City of Bay City, SHN is requesting an Administration Hold on the application. The City of Bay City requests additional consideration of its point of diversion (POD) and its influence on the Kilchis River. The POD for the City incorporates ground water wells under the influence of surface water. The City believes the effects of withdrawal of groundwater flow on the surface water flow in the Kilchis River will be minimal and significantly less than the undeveloped portion of the City's water right. The City's method of diversion should, therefore, be considered further before considering the effects of fish persistence rules on the POD.

It is the City's goal to meet both the fish persistence regulations while at the same time ensuring the City can meet the future water demands. The City will work with SHN to complete the following tasks:

- Update the Water Master Plan for a 50-year source water demand projection, and
- Evaluate diversion rates on ground water and the impact to river water flows.

Over the next 6 months, the City will implement a test program for the Kilchis River Well Field. The test program will utilize existing Wells 1 and 2 and the aquifer for testing and two monitoring wells to measure water table drawdown during an extended pump test. The monitoring wells will also be used to determine static and dynamic elevations of the ground water. While the production well is operating, data from the pump test will be used to determine the ground water gradients in the immediate vicinity of the well field. Water level transducers capable of continuously recording water levels will be installed in Well 2, Well 1, and both monitoring wells during the pump test. At least one of the monitoring wells will need to be located down gradient of Well 2.

Pumping will occur over a period of at least 24 hours without drawing the pumping well level below the screened section (20 to 40 feet below ground surface based on water well reports produced during installation of existing municipal wells). We anticipate that the two new monitor wells will be 2 inches in diameter. One monitoring well will be in proximity to Well 2 and the other closer to the river.

An engineering geologist with experience in analysis of ground water flow and hydraulics will evaluate the pump test data and geologic characteristics of the well field site to establish design criteria for a new production well. The focus will be on evaluating diversion rates relative to ground water gradient and area of influence under sustained withdrawal conditions. The analysis will include a discussion of the effects of

RECEIVED

MAY 10 2019

OWRD



Reference: 611012.102

May 7, 2019

Mr. Jeffrey D. Pierceall
Extension and Adjudication Specialist
Oregon Water Resources Department
725 Summer St. NE, Suite A
Salem, OR 97301

Subject: Pending Application for Extension of Time, Application S-51053; Permit S-43858

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MAY 10 2019

OWRD

Mr. Jeffrey Pierceall

Pending Application for Extension of Time, Application S-51053; Permit S-43858

May 7, 2019

Page 2 of 2

withdrawal of groundwater on the surface water flow in the Kilchis River. A comprehensive report will be produced following completion of the test program and analysis of all data.

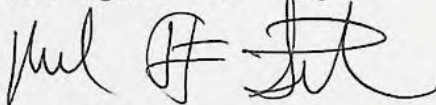
Conclusions and recommendations will be developed based on the information obtained that will be helpful to the Department as it evaluates the City's undeveloped water rights and its PODs relating to fish persistence river flows.

SHN proposes to complete the draw down test and update of the Water Master Plan by November 4, 2019.

In addition, this master plan update and hydrogeologic analysis will be used to review findings regarding water quality, security, and sustainability concerns. Based on the findings SHN will prepare recommendations and alternative solutions for master plan improvements at the well field site, including repairs and upgrades to existing facilities and selecting locations for one new well, and one future well.

Respectfully submitted,

SHN Engineers & Geologists



Ronald F. Stillmaker, PE
Principle Engineer

WEW/RFS:dkl



EXPIRES: 06-30-20

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MAY 10 2019

OWRD



Oregon

Kate Brown, Governor

Department of Fish and Wildlife

Fish Division
4034 Fairview Industrial Drive SE
Salem, OR 97302
(503) 947-6201
FAX (503) 947-6202
www.dfw.state.or.us/

March 11, 2019

Tom Byler, Director
Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301



Re: Advice on Maintaining Persistence of Listed Fish Species for Municipal Extension (OAR 690-315): City of Bay City's Application S-51053 (Permit S-43858)

Director Byler:

The City of Bay City (City) has requested an extension of time to develop the municipal water right application S-51053 (Permit S-43858). The undeveloped portion of their permit is 18.08 cubic feet per second (cfs) from the Kilchis River. ORS 537.230(3)(d) and 537.630(3)(d) direct the Oregon Water Resources Department (OWRD) to find that the undeveloped portion of the permit is conditioned to maintain, in the portions of waterways affected by water use under the permit, the persistence of fish species listed as sensitive, threatened or endangered (STE) under state or federal law. OWRD is to base their findings on existing data and advice from the Oregon Department of Fish and Wildlife (ODFW). This letter is the advice provided to OWRD by ODFW.

Summary

- The City of Bay City has a municipal water right (Permit S-43858) for 20.0 cfs. The developed portion of the permit (1.92 cfs) as of the date of the extension final order is not subject to conditioning. The undeveloped portion of the permit (18.08 cfs) is subject to conditioning to maintain persistence for STE fish species.
- Potentially affected listed STE fish species include Coho Salmon, Chum Salmon, Pacific Lamprey and Western Brook Lamprey. Other affected salmonids that are not listed include Winter Steelhead, Fall Chinook Salmon and Coastal Cutthroat.
- An instream water right (application IS-71263, certificate 73009) was established in 1991 for the Kilchis River above Myrtle Creek based on recommended flows reported in the North Coast Basin Investigation Report (BIR)¹. This instream water right overlaps the POD. The instream water right (IS-71263) was used to set target flows for fish persistence.

¹ Oregon State Game Commission. 1972. Basin Investigation Report: Supplement to the Fish and Wildlife Resources of the North Coast Basin, Oregon and Their Water Requirements – BIR.

- When flows are below target flows to provide fish persistence, ODFW recommends curtailment of the undeveloped portion of S-43858.

Analysis of Flows for Fish Persistence

Water Availability

According to OWRD's Water Availability Reporting System² (WARS) for the Kilchis River above Myrtle Creek, water is not available for consumptive use from April – October based on the 80% exceedance flows. Both the City's municipal water right (Permit S-43858) for 20 cfs and the instream water right (IS-71263) are used in the availability calculations.

ODFW has applied for an instream water right on the Kilchis River downstream of Myrtle Creek (IS-88527) dated March 21 2018.

Listed TES Fish Species with Designation

Coho Salmon (*Oncorhynchus kisutch*) – Federal - Threatened, State Sensitive
Chum Salmon (*Oncorhynchus keta*) – State Sensitive-Critical
Pacific Lamprey (*Lampetra pacifica*) – State Sensitive
Western Brook Lamprey (*Lampetra richarsoni*) – State Sensitive

Other Affected Native Salmonids (not listed)

Winter Steelhead (*Oncorhynchus mykiss*)
Fall Chinook Salmon (*Oncorhynchus tshawytscha*)
Coastal Cutthroat (*Oncorhynchus clarkii*)

Analysis of Risk to Fish Persistence

According to the most recent status assessment in the Coastal Multi-species Conservation and Management Plan³, Winter Steelhead, Fall Chinook Salmon, Chum Salmon, and Coastal Cutthroat are all viable populations in the overall Tillamook watershed.

Coho Salmon – Coho Salmon are federally listed as a threatened species. Migration and rearing are known to occur downstream of the POD.

Chum Salmon – Even though Chum Salmon are a viable population in the Tillamook watershed, they are State listed as critically sensitive throughout their coastal range. It is especially important to protect the Tillamook population.

² https://apps.wrd.state.or.us/apps/wars/wars_display_wa_tables/search_for_WAB.aspx

³ https://www.dfw.state.or.us/fish/CRP/docs/coastal_multispecies/CMP_main_final.pdf

Pacific Lamprey – Per the 2005 Oregon Native Fish Status Report⁴, only four of six stock status criteria for this species are being met on the coast; populations are declining and there is little information about flow needs. Pacific Lamprey are considered at risk.

Western Brook Lamprey – Only four of six stock status criteria for this species are being met on the coast⁴; populations are declining and there is little information about flow needs. Western Brook Lamprey are considered at risk.

Flow Restoration Priorities

Based on the 1998 Oregon Plan Flow Restoration Priorities developed by ODFW and OWRD⁵, flow restoration is not a priority in the Kilchis River basin. During summer months (July – September), this sub-basin has a “moderate” need for flow restoration. ODFW is in the process of updating flow restoration priorities.

Existing Fish Protection Agreement

No existing fish protection agreement noted.

Explanation of Monthly Target Flows for Fish Persistence

Target flows for fish persistence in all months are equal to the monthly instream flows established by IS-71263. These instream flows were based on the recommended flows as reported in the Basin Investigation Report (BIR). Monthly target flows to maintain persistence of STE listed species as measured at a location on the Kilchis River, downstream of the City's points of diversion and upstream of the confluence with Myrtle Creek are noted in Table 1.

⁴ Oregon Department of Fish and Wildlife (ODFW). 2005. Oregon Native Fish Status Report. Vol. II Assessment Methods & Population Results. Salem, OR. <https://www.dfw.state.or.us/fish/ONFSR/docs/volume-1-final.pdf>

⁵ <https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=streamflowmaps#NorthCoast>

Table 1. Monthly flow information (cfs) for the Kilchis River above Myrtle Creek (WAB #71263).

Month	OWRD 50% Exceedance	OWRD 80% Exceedance	Target Flows (IS-71263)
Jan	862	420	300
Feb	945	573	300
Mar	786	483	300
Apr	408	259	300
May	219	122	180
Jun	129	76.2	120
Jul	72.4	43.5	72.4
Aug	48.4	11.2	48.4
Sept	69.5	24	69.4
Oct	201	52.6	201
Nov	595	442	300
Dec	962	589	300

ODFW's Advice to OWRD on Maintaining the Persistence of Listed Fish Species as the City of Bay City Develops the Undeveloped Portions of its Water Right Permit S-43858 for the Kilchis River above Myrtle Creek

General Considerations

As directed by ORS 537.230 (3)(d) and ORS 537.630 (3)(d) ODFW provides the following advice to OWRD to maintain, in the portions of waterways affected by water use under the permit, the persistence of fish species listed as sensitive, threatened or endangered under state or federal law. ODFW's advice is based on existing data. ODFW recommends the target flows listed in Table 2 and advises OWRD to develop conditions which allow the City to meet its water needs while maintaining the persistence of listed fish species.

ODFW recognizes that long-term climatic variations will affect the amount of water in the Kilchis River system. In favorable water years, fish populations tend to increase and in unfavorable water years fish populations contract. The long-term objective for a listed species is to have the population increase to a sustainable level over time and be able to maintain itself through natural fluctuations in the environment. The approach of setting curtailment relative to a percent missed of the target flow provides flexibility for maintaining fish persistence in light of climate change effects of flow regimes.

ODFW also recognizes that municipalities return a certain amount of flow to a river or stream through their effluent discharge. If the withdrawal point(s) and effluent discharge(s) are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, then ODFW recommends that curtailment of the water right extension be based on the monthly estimated ratio of the difference between the return flows and their total water withdrawals under this permit.

Specific Advice

The recommended target flows at a location on Kilchis River, downstream of the City's points of diversion, and upstream of the confluence of Myrtle Creek, are shown below in Table 2.

Table 2. Recommended target flows (cfs) by month for the persistence of listed fish in the Kilchis River above Myrtle Creek.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
300	300	300	300	180	120	72.4	48.4	69.4	201	300	300

Measured at a location on the Kilchis River downstream of the City's points of diversion and upstream of the confluence with Myrtle Creek.

ODFW uses a formula for curtailing extensions based on the percentage shortfall of existing measured flow (Q_a) versus target flow (Q_t). The percent shortfall is defined below in Equation 1.

$$\left(1 - \left[\frac{(Q_a - E)}{Q_t}\right]\right) * 100$$

Q_a is the gaged flow (cfs) downstream of the POD

E is the undeveloped portion of the permit (cfs)

Q_t is the target flow (cfs)

Equation 1. Curtailment formula to identify percent shortfall of existing flow versus target flow.

The amount of diverted water is reduced by the percent by which a flow target is missed. When $(Q_a - E) \geq Q_t$, the amount of water diverted would not need to be reduced. When Q_a gets close to 18.08 cfs (the undeveloped portion of the permit) this formula results in a recommended diversion of zero, because the numerator in the equation $(Q_a - E)$ goes to zero. The percent by which the target flow is missed applied to the amount of flow conditioned for fish persistence provides the maximum recommended withdrawal rate and is defined as:

$$E - (E * \% \text{ missed target flow}) = \text{conditioned undeveloped portion of permit}$$

Equation 2. Formula for curtailing the undeveloped portion of permit

Sample Curtailment Calculations

To exemplify ODFW's curtailment equation, Table 3 demonstrates how the equations would apply to the extension for the month of August.

Table 3. Example of curtailment at various flows (cfs) in August.

Stream Flow Q_a	% Target Flow Missed	Amount Curtailed	Extension Diversion	Total Permit Diversion	Comment
70	0	0.00	18.08	20.0	No curtailment
60	13	2.42	15.66	17.58	Curtailed
50	34	6.16	11.92	13.84	Curtailed
40	55	9.89	8.19	10.11	Curtailed
35	65	11.76	6.32	8.24	Curtailed
30	75	13.63	4.45	6.37	Curtailed
25	86	15.50	2.58	4.5	Curtailed
20	96	17.36	0.72	2.64	Curtailed
15	100	18.08	0.00	1.92	Cutoff
10	100	18.08	0.00	1.92	Cutoff

For example: the August recommended target flow is 48.4 cfs (Table 2). If the stream flow is 30 cfs the target flow is missed by 75%:

$$(1 - [(30 - 18.08)/48.4]) * 100 = 75.4\%$$

Thus, the amount curtailed of the undeveloped portion of the permit is 13.63 cfs as:

$$18.08 * 0.754 = 13.63 \text{ cfs}$$

The amount of the conditioned undeveloped portion of the permit is 4.45 cfs as:

$$18.08 - 13.63 = 4.45 \text{ cfs}$$

The total permit diversion (when $Q_a=30\text{cfs}$) is 6.37 cfs as:

$$1.92 + 4.45 = 6.37 \text{ cfs}$$

Frequency of Curtailment to Maintain Fish Persistence

The historical OWRD stream gage No. 14301450 (Kilchis River above Murphy Creek) was located approximately two miles downstream of the POD. OWRD calculated flow exceedances for natural flows for gage No. 14301450 based on the period of record 1958 – 1987. The drainage basin for the POD encompasses 97% of the drainage basin for gage No. 14301450. A correction factor based on drainage area can be applied to data from the downstream gage to estimate historical flow statistics at the POD.

Use of the presently-undeveloped portion of the City of Bay City's water right for the Kilchis River represents approximately one third the median natural streamflow during a typical August and all natural streamflow during a dry August. During the winter months, this undeveloped portion is the equivalent of 2-4% the median natural flow.

Table 3 provides an estimate of the percent of time by month that use of the undeveloped portion of permit S-43858 would be curtailed. When stream flow is less than the target flow, the undeveloped portion of the permit would be curtailed. Curtailment would rarely occur during November through March, and curtailment in April through October would be likely. Cutoff is probable during extreme low flow events in August and September.

Table 3. Estimated percent time that curtailment occurs.

Month	% Time Curtailed	% Time Cutoff
Jan	< 10%	--
Feb	~5%	--
Mar	6%	--
Apr	35%	--
May	45%	--
Jun	47%	--
Jul	65%	--
Aug	63%	22%
Sep	53%	10%
Oct	53%	--
Nov	< 10%	--
Dec	< 5%	--

Streamflow Measurement Point

Based on an analysis of flow records, ODFW has determined that measuring flows at a location on the Kilchis River, downstream of the City's points of diversion, and upstream of the confluence with Myrtle Creek is sufficient for ensuring that flows to maintain the persistence of listed fish are met at the POD.

Conclusion

Use of water under the portion of this permit that was undeveloped as of the date of the extension final order should be conditioned to maintain persistence of listed fish species consistent with the target flows listed in Table 2. If streamflow falls below target flow levels, the City of Bay City should have the amount of water available to divert through this extension be curtailed through conditioning the permit. The severity of the curtailment measures taken should reflect the degree to which the target flows are being missed. An adjustment of the amount to be curtailed based on the ratio of the difference between the return flow/effluent discharge and the total water diverted is acceptable, provided the point of return flow and POD are within reasonable proximity to each other (such that fish habitat between the two points is not impacted significantly). The City needs to supply appropriate documentation to quantify the ratio. The effluent should meet water quality standards and not impair water quality or habitat in the Kilchis River.

ODFW recommends the fish persistence conditions as set forth in Appendix A. These conditions were formulated in coordination with OWRD and are consistent with the advice given to OWRD in this letter.

ODFW Fish Persistence Advice for Application S-51053 (Permit S-43858)

March 11, 2019

Page 9

This concludes ODFW's advice to OWRD on the City of Bay City's Municipal Extension Application S-51053 (Permit S-43858). If you have questions about our advice or need further clarification please contact me at 503-947-6072 or Anna Pakenham Stevenson, Water Quality/Quantity Section Manager at 503-947-6084.

Sincerely,

Mark A. Vagos, Deputy Director (acting)

Folk
Shannon Hurn
ODFW Deputy Director

Bc: Chance Steffey, PE, City of Bay City Public Works Director
Robert Bradley, ODFW North Coast District Fish Biologist
Anna Pakenham Stevenson, ODFW Water Quality/Quantity Section Manager

Attachment:

Appendix A - OWRD Kilchis River - Proposed Fish Persistence Conditions for Extension of Time Proposed Final Order (PFO) for Application S-51053 (Permit S-43858) City of Bay City

Appendix A

Kilchis River – Proposed Fish Persistence Conditions for Extension of Time Proposed Final Order (PFO) for Application S-51053 (Permit S-43858) City of Bay City

Note: The developed portion (1.92 cfs) used in these conditions was diverted prior to June 29, 2005

Findings

1. Summary and Excerpts of Advice from ODFW:

Use of water under the portion of this permit that is undeveloped as of June 29, 2005, should be conditioned to maintain, in the portions of waterways affected by water use under the permit, the persistence of listed fish species. ODFW has determined that the Kilchis River will be affected by water use under this permit. ODFW's advice is based on the best available information and existing data.

ODFW recognizes that long-term climatic variations will affect the amount of water in the Kilchis River system. In favorable water years, fish populations tend to increase and in unfavorable water years fish populations contract. The long-term objective for a listed species is to have the population increase to a sustainable level over time and be able to maintain itself through natural fluctuations in the environment. The approach of setting curtailment relative to a percent missed of the Target Flow provides flexibility for maintaining fish persistence in light of climate change effects of flow regimes.

The Target Flows, in Table 1, below, are ODFW's recommended flows measured at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, and are based on the flows established through instream water right Certificate 73009. ODFW advises the Water Resources Department to develop conditions that allow municipalities to meet their water needs while maintaining the persistence of listed fish species.

ODFW also recognizes that municipalities return a certain amount of flow to a river or stream through their effluent discharge. If the withdrawal point(s) and effluent discharge(s) are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, then ODFW recommends that curtailment of the water right extension be based on the monthly estimated ratio of the difference between the return flows and their total water withdrawals under this permit.

Table 1

ODFW'S RECOMMENDED FISH PERSISTENCE TARGET FLOWS IN THE KILCHIS RIVER, ABOVE MYRTLE CREEK MEASURED AT A LOCATION ON KILCHIS RIVER, BELOW THE CITY'S POINTS OF DIVERSION, AND ABOVE THE CONFLUENCE OF MYRTLE CREEK	
Month	Cubic Feet per Second
October	201
November	300
December	300
January	300
February	300
March	300
April	300
May	180
June	120
July	72.4
August	48.4
September	69.4

Streamflow Measurement Point

After analysis of flow records, ODFW has determined that measuring stream flows at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, gage is sufficient for ensuring that Target Flows are met throughout the Kilchis River.

2. Department's Findings Based on Review of ODFW's Advice:

There is an undeveloped portion of 18.08 cfs of water under Permit S-43858 as per ORS 537.230(1) and OAR 690-315-0010(6)(g). Authorization to incrementally expand use of water under this permit beyond 1.92 cfs up to the permitted quantity of 20.0 cfs can only be granted through the Department's review and approval of the municipal permit holder's future WMCPs (OAR 690-086). When ODFW's recommended Target Flows are missed, the Department's proposed conditions may result in a reduction in the amount of the undeveloped portion of water under Permit S-43858 that can be appropriated. The proposed conditions in this extension of time are based on the following

findings:

- a. The Target Flows needed to maintain the persistence of fish must be determined or measured by the water user at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, or its equivalent.
- b. When Target Flows are not met, use of the undeveloped portion of the permit that impacts Kilchis River must be reduced in proportion to the degree to which the recommended Target Flows are being missed. ODFW's formula for determining the percent shortfall, or missed target flow is defined as:

$$1 - [(Q - E) / Q_T],$$

where Q is the flow at the point of interest, E is the undeveloped portion of the permit as of this extension, and Q_T is the Target Flow (from Table 1).

- c. ODFW's advice recognizes that the use of the undeveloped portion of the permit represents about one third the median natural stream flow during a typical August and all stream flow during a dry August. During the winter months, the undeveloped portion is equivalent of 2-4% the median natural stream flow.
- d. ODFW's advice recognizes that municipalities may return a certain amount of flow to a river or stream through their effluent discharge. If the withdrawal points and effluent discharges are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, then ODFW recommends that any reduction to use of the amount of the undeveloped portion of Permit S-43858 should be adjusted by the monthly estimated percentage of the difference between the total water withdrawals and their return flows. Therefore, consistent with ODFW's advice, when appropriate, the Department proposes to adjust any reduction by a "Consumptive Use Percentage," as generally determined by $(1 - [\text{total municipal wide returned flows} / \text{total municipal wide appropriated flows}])$.

1. **Conditions to Maintain the Persistence of Listed Fish**

The first 1.92 cfs of water under Permit S-43858 or any subsequent water right(s) originating from Permit S-43858 is not and will not be conditioned for maintaining fish persistence.

The portion of Permit S-43858 subject to these fish persistence conditions is established as 18.08 cfs in accordance with ORS 537.230(1). The use of 18.08 cfs as authorized under this permit must be hereafter conditioned with these fish persistence conditions. Therefore, all subsequent water right(s) originating from this portion of Permit S-43858 implemented will include these Conditions to Maintain the Persistence of Listed Fish. If more than one

resulting water right is subject to these Conditions to Maintain the Persistence of Listed Fish, then legal use of the 18.08 cfs conditioned to maintain the persistence of listed fish species shall be determined among all the permit/water right holders of record; all the permit/water right holders of record subject to these Conditions to Maintain the Persistence of Listed Fish must ensure that these fish persistence conditions are met.

A. Fish Persistence Target Flows

- a. Fish persistence Target Flows in the Kilchis River as recommended by ODFW are in Table 2, below; flows are to be measured at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, or its equivalent).

Table 2

ODFW'S RECOMMENDED FISH PERSISTENCE TARGET FLOWS IN THE KILCHIS RIVER, ABOVE MYRTLE CREEK MEASURED AT A LOCATION ON KILCHIS RIVER, BELOW THE CITY'S POINTS OF DIVERSION, AND ABOVE THE CONFLUENCE OF MYRTLE CREEK	
Month	Cubic Feet per Second
October	201
November	300
December	300
January	300
February	300
March	300
April	300
May	180
June	120
July	72.4
August	48.4
September	69.4

- b. Alternate Streamflow Measurement Point(s)
The location of a steam flow measurement point as established in these Conditions to Maintain the Persistence of Listed Fish may be revised if the Permit Holder provides evidence in writing that ODFW has determined that persistence flows may be measured at an alternate streamflow measurement point and the Permit Holder provides an adequate description of the location of the alternate streamflow measurement point, and the

Water Resources Director concurs in writing.

B. Determining Water Use Reductions - Generally

The maximum amount of the 18.08 cfs of water conditioned for fish persistence that can be diverted is determined in proportion to the amount by which the Target Flows (Q_T) shown in Table 2 are missed based on a seven-day rolling average of mean daily flows as determined or measured by the water user at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, or its equivalent. The percent of missed target flows is defined as:

$$(1 - [(Q - E) / Q_T]) \times 100\%,$$

where Q is the seven-day rolling average of mean daily flows below the POD; E is the amount of water conditioned for fish persistence, being 18.08 cfs; and Q_T is the Target Flow (from Table 2).

The percent by which the target flow is missed applied the amount of water conditioned for fish persistence provides the maximum amount of water that can be diverted as a result of this fish persistence condition, and is defined as:

$$E - (E \times \% \text{ missed target flows}),$$

where E is the amount of water conditioned for fish persistence, being 18.08 cfs.

The maximum amount water conditioned for fish persistence may be adjusted by a Consumptive Use Percentage, when applicable, as per Item 1.C., below.

When $Q_A - E \geq Q_T$, the amount of water conditioned for fish persistence that can be diverted would not need to be reduced.

C. Consumptive Use Percentages

a. Initial Consumptive Use Percentages

The City of Bay City has not identified any Consumptive Use Percentages based on the return of flows to the Kilchis River through effluent discharge. Thus, at this time the City may not utilize Consumptive Use Percentages for the purpose of calculating the maximum amount of the portion of Permit S-43858 that can be appropriated as a result of this fish persistence condition.

b. First Time Utilization of Consumptive Use Percentages

Utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition may begin after the issuance of the

Final Order for this extension of time.

First time utilization of Consumptive Use Percentages is contingent upon the City (1) providing evidence in writing that ODFW has determined that withdrawal points and effluent discharges are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting monthly Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages. Utilization of Consumptive Use Percentages is subject to an approval period described in 1.C.f., below.

Consumptive Use Percentages submitted to the Department for review must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The proposed Consumptive Use Percentages should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for this extension of time.

c. Consumptive Use Percentages Updates

Continuing the utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition beyond an approval period (as described in 1.C.f., below) is contingent upon the City submitting updated Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the Consumptive Use Percentages Updates. Utilization of Consumptive Use Percentages Updates is subject to an approval period described in 1.C.f., below.

The updates to the Consumptive Use Percentages must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The updates should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for this extension of time.

d. Changes to Wastewater Technology and/or Wastewater Treatment Plant Practices

If there are changes to either wastewater technology or the practices at the City's waste water treatment facility resulting in 25% or more reductions in average monthly return flows to the Kilchis River, then the Consumptive Use Percentages in effect at that time may no longer be utilized for the purposes of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition. The 25% reduction is based on a 10-year rolling average of monthly wastewater return flows to the Kilchis River as

compared to the average monthly wastewater return flows from the 10 year period just prior to date of the first approval period described in 1.C.f., below.

If such changes to either wastewater technology or the practices at the City's waste water treatment facility occur resulting in 25% reductions, further utilization of Consumptive Use Percentages is contingent upon the City submitting Consumptive Use Percentages Updates as per 1.C.c., above, and receiving the Water Resources Director's concurrence with the updated Consumptive Use Percentages.

e. Relocation of the Point(s) of Diversion(s) and/or Return Flows

If the point(s) of diversion(s) and/or return flows are relocated, Consumptive Use Percentages in effect at that time may no longer be utilized for the

purposes of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition.

After relocation of the point(s) of diversion(s) and/or return flows, further utilization of Consumptive Use Percentages is contingent upon the City (1) providing evidence in writing that ODFW has determined that any relocated withdrawal points and effluent discharge points are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting Consumptive Use Percentages Updates as per 1.C.c., above, and receiving the Water Resources Director's concurrence with the updated Consumptive Use Percentages.

f. Approval Periods for Utilization of Consumptive Use Percentages

The utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition may continue for a 10 year approval period that begins 10 years from the Water Resources Director's most recent date of concurrence with Consumptive Use Percentages Updates as evidenced by the record, unless sections 1.C.d., or 1.C.e. (above) are applicable.

Consumptive Use Percentages (first time utilization or updates) which are submitted and receive the Director's concurrence will begin a new 10 year approval period. The approval period begins on the date of the Water Resources Director's concurrence with Consumptive Use Percentages Updates, as evidenced by the record. The City at its discretion may submit updates prior to the end of an approval period.

D. Examples

Example 1: Target Flow met.

On June 15, the last seven mean daily flows below the point of diversion were 123, 119, 120, 125, 119, 120, and 118, cfs. The seven day rolling average (Q_A) is 139.0 cfs. Given that the amount of water conditioned for fish persistence of this permit (E) is 18.08 cfs, then the 7 day average of mean daily flows minus the amount of water conditioned for fish persistence is greater than the 120 cfs Target Flow (Q_T) for June 15. In this example, $Q_A - E \geq Q_T$.

$$139.0 - 18.08 \geq 120$$

The amount of water conditioned for fish persistence of the permit that can be appropriated would not be reduced because the Target Flow is considered met.

Example 2: Target Flow missed.

Step 1: Given that the amount of water conditioned for fish persistence of this permit (E) is 18.08 cfs, if on June 15, the average of the last seven mean

daily flows (Q_A) was 62.0 cfs, and the Target Flow (Q_T) is 120, then the Target Flow would be missed by 63.4%.

$$(1 - [(62.0 - 18.08) / 120]) \times 100\% = 63.4\%$$

Step 2: Assuming the Consumptive Use Percentage is 78.7%⁶ during the month of June and the utilization of this percentage is authorized, and the Target Flow is missed by 63.4% (from Step 1), then the amount of water conditioned for fish persistence of the permit that could be diverted would be reduced by 49.9%.

$$(78.7\% \times 63.4\%) / 100 = 49.9\%$$

(If adjustments are not to be made by a Consumptive Use Percentage, then the amount of water conditioned for fish persistence of the permit would only be reduced by the % by which the target flow is missed, being 63.4% in this example).

Step 3: The amount of water conditioned for fish persistence of this permit (E) is 18.08 cfs. Therefore, in this example, the maximum amount of water conditioned for fish persistence of

⁶ Currently, the City of Bay City may not utilize Consumptive Use Percentages for the purpose of calculating the amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition. The utilization of the Consumptive Use Percentage 78.7% is only for illustrative purposes in this example.

Permit S-43858 that can be appropriated as a result of this fish persistence condition is 9.06 cfs. (This maximum may further be limited as illustrated in Step 4 below.)

$$18.08 - ((18.08 \times 49.9\%) / 100) = 9.06$$

Step 4: The calculated maximum amount of water that could be diverted due to the fish persistence condition may not exceed the amount of water to which the permit or water right holder is legally entitled to divert under this extended permit or subsequent water right(s). Under the extended permit or subsequent water right(s) the maximum amount that could be legally diverted is 20.0 cfs.

In this example, if the amount of water legally authorized for diversion under the permit or subsequent water right is 10.0 cfs (for this example, authorization provided through a WMCP or partial perfection), then 10.0 cfs would be the maximum amount of diversion allowed under this water right including amounts of water not conditioned for maintaining fish persistence as authorized under this or any subsequent water right(s) originating from Permit S-43858, being up to a total of 1.92 cfs.

$$1.92 + 9.06 \geq 10.0$$

(Conversely, if the amount of water legally authorized for diversion under the permit or subsequent water right is 20.0 cfs, then 10.98 cfs (9.06 cfs as limited by conditions to maintain the persistence of listed fish species from Step 3 + the 1.92 cfs not conditioned for fish persistence) would be the maximum amount of diversion allowed under the water right.)

Mailing List FP Conditions Received

Date March 21, 2019

Application S-51053; Permit S-43858

City of Bay City
ATTN: Brian Bettis
8000 Elliot St.
Bay City, OR 97107

SHN Consulting Engineers
ATTN Steven Donovan
275 Market Ave
Coos Bay, OR 97420

WaterWatch of Oregon
ATTN: Lisa Brown
213 SW Ash St. Suite 208
Portland, OR 97204

Municipal or Quasi-Municipal

Extension PFO Checklist for Water Use Permits

issued on or prior to November 2, 1998

(OAR 690-315-0010 through OAR 690-315-0060)

Application: S- 51053 Permit: S- 43858 Permit Amendment? No ☒ Yes ☐ T- ☐ pending ☐ approved

Permit Holder's Name: City of Bay City Attn: David Pace Brian Bettis

Permit Holder's Mailing Address: PO Box 3309, Bay City, OR 97107 email baycity@ci.bay-city.or.us

Phone Number: 503-377-4121 or 503-812-1285

POD Location: Township 1N Range 9W Section 32 1/4 SWSE

Drainage Basin: 1 County: Tillamook Watermaster District: 1 Watermaster: Greg Beaman

Date Permit was issued: 3/2/1979

Priority Date: 8/10/1973

Date of PN: 8/19/2003

Source: Kilchis River, Tributary to Tillamook Bay

Use: ☒ Municipal ☐ Quasi Municipal

"Q": 20.0

Orig "A" Date: 3/2/1980

Orig "B" Date: 10/1/1980

Orig "C" Date: 10/1/1981

Extension
request rec'd: 8/4/2003

Last Authorized
"B" Date: 10/1/2000

Last Authorized
"C" Date: 10/1/2000

updated 1/17/2012

Proposed
"B" Date: 10/1/2090

Proposed
C Date: 10/1/2090

Request Number (1, 2, 3...): 5th

Conditions of Permit:

Condition Met?	Condition Not Met?	Permit Condition
☐	☐	none
☐	☐	
☐	☐	

Factors to consider in determining "Reasonable Diligence" [OAR 690-315-0040(3)]:

Yes No

- ☒ ☐ Work was accomplished within the time allowed in the permit or previous extension
- ☒ ☐ Water right permit holder conformed with the permit or previous extension conditions
- ☒ ☐ Beneficial use made of the water during the permit or previous extension time limits

• Permit holder has beneficially used 2.68 ☒ cfs ☐ gpm ☐ af Undeveloped portion 1731 ☒ cfs ☐ gpm ☐ af

- ☒ ☐ Financial investments were made toward developing the beneficial water use.

• Amount Invested to date: \$2,515,000 Estimated Remaining Cost: \$2,000,000

GW REVIEW: Y N

MITIGATION REVIEW: Y N

Has the applicant pursued perfection of the right in good faith and with reasonable diligence? Yes ☒ No ☐

Population 2,095 (Year) 2010 ☐ Growth 2.0% ☐ Population 9,510 by (Year) 2090 Calculated? Yes ☐

Peak Demand 2.11 + .13 commercial use cfs (Year) 2011 ☐ Peak Demand 22.43 including commercial development cfs by (Year) 2090 Calculated? Yes ☐

For MUNICIPAL permits ONLY.

Yes No

- ☒ ☐ Is this a Municipal use Permit (If YES, proceed. If NO, skip to "Good Cause")
- ☐ ☒ Has full "Q" been beneficially used? (If YES, skip to "Good Cause")
- ☒ ☐ Is this the first extension issued since 6/29/05? (If NO, skip to "Good Cause")
- ☐ ☐ If GW permit, does it have PSI? (If NO, skip to "Good Cause")
- ☐ ☐ Does the permit holder have any existing fish protection agreements with a state or federal agency?

Date sent to ODFW for review _____

Date returned from ODFW _____

Based on the written record, can the Department make a finding of "Good Cause" to approve the extension request?

Yes... "Good Cause" can be found. ☐ Approval of Extension Request

No ... "Good Cause" cannot be found. ☐ Denial of Extension Request

Conditions to be included in Extension PFO (if applicable)? Yes ☒ No ☐

(NOTE: Check the file record for documentation to add a condition(s) at the extension stage.)

- ☒ Max "Q" Development Limitations and Div. 86 Water Management and Conservation Plan
- ☐ Other: _____

Footnote regarding Claim of Beneficial Use. Choose the appropriate language below and insert as a footnote in the PFO:

☐ **COBU Requirement - Surface/Ground Water - on or prior to July 9, 1987**

"For permits applied for or received on or before July 9, 1987, upon complete development of the permit, you must notify the Department that the work has been completed and either: (1) Hire a water right examiner certified under ORS 537.798 to conduct a survey, the original to be submitted as required by the Water Resources Department, for issuance of a water right certificate; or (2) Continue to appropriate water under the water right permit until the Water Resources Department conducts a survey and issues a water right certificate under ORS 537.250 or 537.625."

☒ **COBU Requirement - Surface Water - post July 9, 1987**

"Pursuant to ORS 537.230(4), upon the completion of beneficial use of water allowed under the permit, the permit holder shall hire a certified water rights examiner to survey the appropriation. Within one year after the complete application of water to a beneficial use (or by the date allowed for the complete application of water to a beneficial use), the permit holder shall submit a map of the survey and the claim of beneficial use."

☐ **COBU Requirement - Ground Water - post July 9, 1987**

"Pursuant to ORS 537.630(4), upon the completion of beneficial use of water allowed under the permit, the permit holder shall hire a certified water rights examiner to survey the appropriation. Within one year after the complete application of water to a beneficial use (or by the date allowed for the complete application of water to a beneficial use), the permit holder shall submit a map of the survey and the claim of beneficial use."

NOTES:

CC Brooke Saltarello
4B Engineering & Consulting LLC
3700 River Rd N, Suite 2
Keizer, OR 97303

Fee Paid for Copy of PFO/FO:

WaterWatch

Attn: Lisa Brown

213 SW Ash, Suite 208

Portland, OR 97204

Extension "PFO" Dates

Mailing / Issuance Date: _____ Protest Deadline Date: _____

Reviewer's Name: _____ Date: _____

Municipal/Quasi-Municipal Extension of Time Review

TO: Water Rights Section Date 03/20/2018

FROM: Ground Water/Hydrology Section Dennis Orlowski
Reviewer's Name

SUBJECT: File S- 51053 Supersedes review of _____
Date of Review(s) _____

Criteria for Department Review of Extension Applications for Municipal and Quasi-Municipal Water Use Permits (Ground Water)

OAR 690-315-0080 (2)(c): For ground water permits submitted to ODFW under this rule (permits determined to have the potential for substantial interference), the Department shall provide to ODFW and the applicant the Department's estimate of surface water impacts that would result from the use of the undeveloped portion of the ground water permit. This review is based upon available information and agency policies in place at the time of evaluation.

A. GENERAL INFORMATION: Applicant's Name: City of Bay City County: Tillamook

Applicant(s) seek(s) 17.32 cfs from 2 well(s) in the North Coast Basin,
Kilchis River subbasin Quad Map: Kilchis River

Proposed use: Municipal Seasonality: Year round

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

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate (cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	TILL 222	1	Alluvium	See NOTE	T1N/R9W-32 SW-SE	935'N, 1345'W fr SE cor S 32
2	TILL 535	2	Alluvium	See NOTE	T1N/R9W-32 SE-SE	950'N, 1270'W fr SE cor S32
EPC	See NOTE	EPC	Alluvium	17.32	Similar	Similar

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	55	17	17	9/23/75	60	0-25	+2-46	--	20-40	1200	3	Pump
2	55	15	15	5/12/80	50	0-20	+2-21	--	20-40	1000	3.5	Pump
EPC	55				60					1000		

Use data from application for proposed wells.

Comments: Application S-51053/permit S-43858 is a municipal surface water right for the City of Bay City, Oregon. The POD for permit S-43858 is located on the Kilchis River, and the maximum permitted instantaneous withdrawal rate is 20.0 cfs (~8976 gpm). However, despite this being a surface water permit, the City has apparently always used wells located very near the Kilchis River to obtain water under this permit (in fact, the intent to use wells is actually included in the original permit language).

NOTE: The undeveloped portion of this allocation is 17.32 cfs (~7774 gpm) (pers. comm., J. Pierceall, OWRD, 2/5/2018). Technically, this entire rate is to be evaluated for the Groundwater/Surface Water Consideration portion of this review. Maximum utilization of this undeveloped rate would require pumping from perhaps an additional 7 or 8 wells, based on the reported pumping capacities of existing wells TILL 222 and TILL 535. Therefore, for this review the existence of an "effective pumping center", located generally near the existing wells within the same tax lot, was assumed. It was further assumed that the entire undeveloped allocation, 17.32 cfs, would be pumped simultaneously from within the "effective pumping center", or EPC. From a hydrogeologic perspective, this is a fairly valid assumed scenario because instantaneously pumping this rate from multiple wells in close proximity would result in coalescing cones of depression that would eventually approximate a single large cone.

☐ Well(s) # _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: _____
Comments: Not applicable

GROUND WATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040**690-09-040 (1): Evaluation of aquifer confinement:**

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Recent alluvium (Kilchis River)	☐	☒
2	Recent alluvium (Kilchis River)	☐	☒
EPC	Recent alluvium (Kilchis River)	☐	☒

Basis for aquifer confinement evaluation: Both existing Wells 1 and 2 are shallow (46 and 50 ft deep), are located between about 150-180 feet from the Kilchis River, and obtain groundwater from recent alluvium deposited by the Kilchis. There are no thick deposits of confining clays or silts noted on either well log, and groundwater levels in both wells are approximately coincident with the first encountered water-bearing sand and gravel deposits. These facts indicate that both Well 1 and Well 2 are unconfined; likewise, any number of additional shallow wells at this general location (i.e., an "effective pumping center") would also obtain groundwater from the same unconfined aquifer.

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

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
EPC	1	Kilchis River	35-37	35-40	200 (avg)	☒	☐	☒	☒	☐

Basis for aquifer hydraulic connection evaluation: The wells comprising an EPC would be completed in an unconfined aquifer located less than ¼ mile from SW 1, and would thus be assumed to be hydraulically connected. Similar groundwater and surface water elevations substantiate this assumption.

Water Availability Basin the well(s) are located within: WID 71263: Kilchis River > Tillamook Bay – above Myrtle Creek

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

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
EPC	1	☒	☒	IS71263A	48.40	☒	11.20	☒	33	☒

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

	SW #	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
		☐			☐		☐		☐

Comments: _____

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

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Total Interf. CFS													

Comments: _____

Extension Review Remarks / Conditions: _____

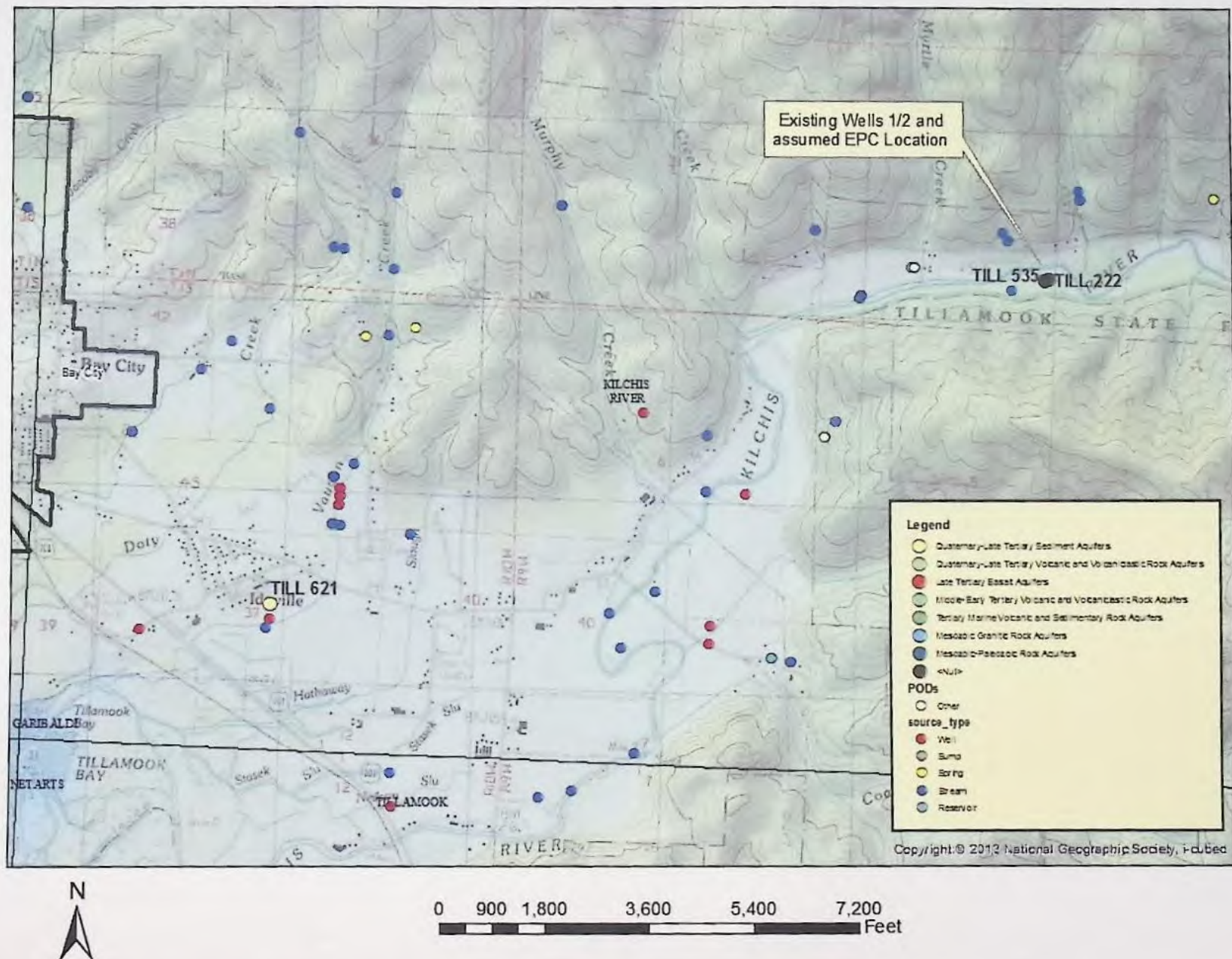
Attach estimates of surface water impacts to this review

References Used:

Application S-51053 file

OWRD Water Availability Analysis, WID 71263 (Kilchis River) (online, queried 3/20/2018)

App S-51053 / Permit S-43858 City of Bay City
T1N / R9W, Section 32





Water Availability Analysis

Detailed Reports

KILCHIS R > TILLAMOOK BAY - AB MYRTLE CR
NORTH COAST BASIN

Water Availability as of 3/13/2018

Watershed ID # 71263 [\(Map\)](#)
Date 3/13/2018

Exceedance Level 60%
Time 2 11 PM

[Water Availability Calculation](#)
[Consumptive Uses and Storages](#)
[Instream Flow Requirements](#)
[Reservations](#)
[Water Rights](#)
[Watershed Characteristics](#)

Water Availability Calculation

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

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	420.00	20.00	400.00	0.00	300.00	100.00
FEB	573.00	20.00	553.00	0.00	300.00	253.00
MAR	483.00	20.00	463.00	0.00	300.00	163.00
APR	259.00	20.00	239.00	0.00	300.00	-61.00
MAY	122.00	20.00	102.00	0.00	180.00	-78.00
JUN	76.20	20.00	56.20	0.00	120.00	-63.80
JUL	43.50	20.00	23.50	0.00	72.40	-48.90
AUG	11.20	20.00	-8.80	0.00	48.40	-59.60
SEP	24.00	20.00	4.00	0.00	69.40	-65.40
OCT	52.60	20.00	32.60	0.00	201.00	-168.40
NOV	442.00	20.00	422.00	0.00	300.00	122.00
DEC	599.00	20.00	579.00	0.00	300.00	279.00
ANN	318,000.00	14,500.00	304,000.00	0.00	150,000.00	154,000.00

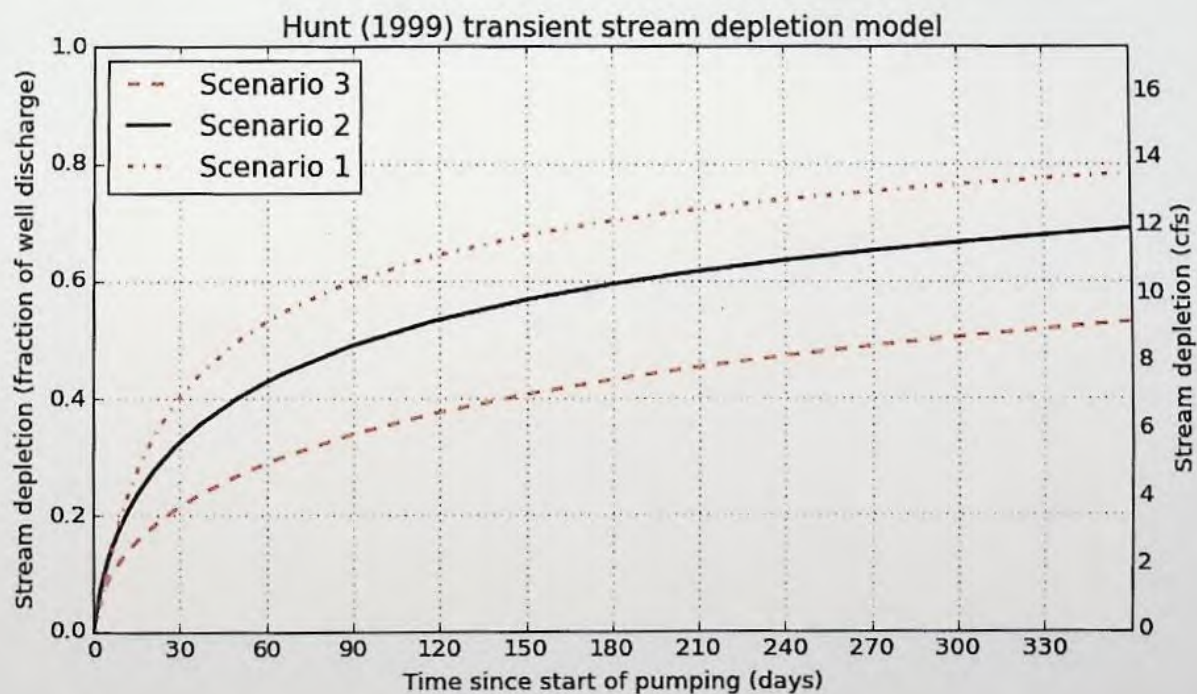
PyHunt stream depletion analysis tool

Application type: G
 Application number: 43858
 Well number: 1
 Stream Number: 1
 Pumping rate (cfs): 17.32
 Pumping duration (days): 1000.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	200.0	200.0	200.0	ft
Aquifer transmissivity	T	1000.0	5000.0	20000.0	ft ² /day
Aquifer storativity	S	0.2	0.2	0.2	-
Aquitard vertical hydraulic conductivity	Kva	0.1	0.1	0.1	ft/day
Not used		10.0	20.0	30.0	
Aquitard thickness below stream	babs	3.0	3.0	3.0	ft
Not used		0.2	0.2	0.2	
Stream width	ws	180.0	180.0	180.0	ft

Stream depletion for Scenario 2:

Days	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	33	43	49	53	57	59	62	63	65	66	68	69
Depletion (cfs)	5.63	7.41	8.49	9.25	9.82	10.29	10.67	10.99	11.27	11.51	11.73	11.92





Oregon

Kate Brown, Governor

Water Resources Department

North Mall Office Building

725 Summer St NE, Suite A

Salem, OR 97301

Phone (503) 986-0900

Fax (503) 986-0904

www.Oregon.gov/OWRD

March 21, 2019

City of Bay City
ATTN: Brian Bettis
8000 Elliot St.
Bay City, OR 97107

REFERENCE: Pending Application for Extension of Time
Application S-51053; Permit S-43858

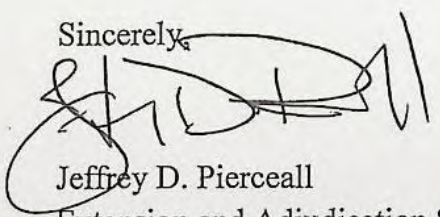
Dear Municipal Permit Holder:

The purpose of this letter is to provide you with notification as per OAR 690-315-0080(2)(f) of fishery resource protection conditions that may be proposed in the proposed final order under OAR 690-315-0050.

This letter will also act to provide you notice of your opportunity to request the Department place any of the above referenced municipal permit extension applications on administrative hold.

If you should have any questions concerning your extension request you may contact me at (503) 986-0802.

Sincerely,



Jeffrey D. Pierceall

Extension and Adjudication Specialist
Oregon Water Resources Department
725 Summer St. NE, Suite A
Salem, OR 97301

Jeffrey.D.Pierceall@oregon.gov

cc: SHN Consulting;
WaterWatch of Oregon

PIERCEALL Jeffrey D * WRD

From: FRENCH Dwight W * WRD
Sent: Friday, April 12, 2019 8:57 AM
To: PIERCEALL Jeffrey D * WRD
Subject: FW: Advice on Maintaining Persistence of Listed Fish Species for Municipal Extension (OAR 690-315): City of Bay City's Application S-51053 (Permit S-43858)

Dwight French

Water Right Services Division Administrator
Oregon Water Resources Department
dwight.w.french@oregon.gov
503-986-0819



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From: Anna Pakenham Stevenson [<mailto:Anna.P.Stevenson@state.or.us>]
Sent: Wednesday, April 03, 2019 12:36 PM
To: FRENCH Dwight W * WRD
Cc: DOUGHTY Kenton C
Subject: Advice on Maintaining Persistence of Listed Fish Species for Municipal Extension (OAR 690-315): City of Bay City's Application S-51053 (Permit S-43858)

Dwight,
Per our conversation this morning.

Oregon Department of Fish and Wildlife is withdrawing its letter to the Oregon Water Resources Department dated March 11, 2019 regarding advice on maintaining persistence of listed fish species for the City of Bay City municipal extension Application S-51053 (Permit S-43858). We intend to re-submit the advice letter within a relatively short period following further internal review. Please feel free to contact me if you have any questions or concerns regarding this request or require additional information.

Thank you,
Anna

Anna Pakenham Stevenson
ODFW Water Program Manager
503-947-6084 (office)
971-718-2058 (cell)
anna.p.stevenson@state.or.us



Oregon

Kate Brown, Governor

Department of Fish and Wildlife

Fish Division
4034 Fairview Industrial Drive SE
Salem, OR 97302
(503) 947-6201
FAX (503) 947-6202
www.dfw.state.or.us/

March 11, 2019

Tom Byler, Director
Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301



Re: Advice on Maintaining Persistence of Listed Fish Species for Municipal Extension (OAR 690-315): City of Bay City's Application S-51053 (Permit S-43858)

Director Byler:

The City of Bay City (City) has requested an extension of time to develop the municipal water right application S-51053 (Permit S-43858). The undeveloped portion of their permit is 18.08 cubic feet per second (cfs) from the Kilchis River. ORS 537.230(3)(d) and 537.630(3)(d) direct the Oregon Water Resources Department (OWRD) to find that the undeveloped portion of the permit is conditioned to maintain, in the portions of waterways affected by water use under the permit, the persistence of fish species listed as sensitive, threatened or endangered (STE) under state or federal law. OWRD is to base their findings on existing data and advice from the Oregon Department of Fish and Wildlife (ODFW). This letter is the advice provided to OWRD by ODFW.

Summary

- The City of Bay City has a municipal water right (Permit S-43858) for 20.0 cfs. The developed portion of the permit (1.92 cfs) as of the date of the extension final order is not subject to conditioning. The undeveloped portion of the permit (18.08 cfs) is subject to conditioning to maintain persistence for STE fish species.
- Potentially affected listed STE fish species include Coho Salmon, Chum Salmon, Pacific Lamprey and Western Brook Lamprey. Other affected salmonids that are not listed include Winter Steelhead, Fall Chinook Salmon and Coastal Cutthroat.
- An instream water right (application IS-71263, certificate 73009) was established in 1991 for the Kilchis River above Myrtle Creek based on recommended flows reported in the North Coast Basin Investigation Report (BIR)¹. This instream water right overlaps the POD. The instream water right (IS-71263) was used to set target flows for fish persistence.

¹ Oregon State Game Commission. 1972. Basin Investigation Report: Supplement to the Fish and Wildlife Resources of the North Coast Basin, Oregon and Their Water Requirements – BIR.

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- When flows are below target flows to provide fish persistence, ODFW recommends curtailment of the undeveloped portion of S-43858.

Analysis of Flows for Fish Persistence

Water Availability

According to OWRD's Water Availability Reporting System² (WARS) for the Kilchis River above Myrtle Creek, water is not available for consumptive use from April – October based on the 80% exceedance flows. Both the City's municipal water right (Permit S-43858) for 20 cfs and the instream water right (IS-71263) are used in the availability calculations.

ODFW has applied for an instream water right on the Kilchis River downstream of Myrtle Creek (IS-88527) dated March 21 2018.

Listed TES Fish Species with Designation

Coho Salmon (*Oncorhynchus kisutch*) – Federal - Threatened, State Sensitive
Chum Salmon (*Oncorhynchus keta*) – State Sensitive-Critical
Pacific Lamprey (*Lampetra pacifica*) – State Sensitive
Western Brook Lamprey (*Lampetra richarsoni*) – State Sensitive

Other Affected Native Salmonids (not listed)

Winter Steelhead (*Oncorhynchus mykiss*)
Fall Chinook Salmon (*Oncorhynchus tshawytscha*)
Coastal Cutthroat (*Oncorhynchus clarkii*)

Analysis of Risk to Fish Persistence

According to the most recent status assessment in the Coastal Multi-species Conservation and Management Plan³, Winter Steelhead, Fall Chinook Salmon, Chum Salmon, and Coastal Cutthroat are all viable populations in the overall Tillamook watershed.

Coho Salmon – Coho Salmon are federally listed as a threatened species. Migration and rearing are known to occur downstream of the POD.

Chum Salmon – Even though Chum Salmon are a viable population in the Tillamook watershed, they are State listed as critically sensitive throughout their coastal range. It is especially important to protect the Tillamook population.

² https://apps.wrd.state.or.us/apps/wars/wars_display_wa_tables/search_for_WAB.aspx

³ https://www.dfw.state.or.us/fish/CRP/docs/coastal_multispecies/CMP_main_final.pdf

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Pacific Lamprey – Per the 2005 Oregon Native Fish Status Report⁴, only four of six stock status criteria for this species are being met on the coast; populations are declining and there is little information about flow needs. Pacific Lamprey are considered at risk.

Western Brook Lamprey – Only four of six stock status criteria for this species are being met on the coast⁴; populations are declining and there is little information about flow needs. Western Brook Lamprey are considered at risk.

Flow Restoration Priorities

Based on the 1998 Oregon Plan Flow Restoration Priorities developed by ODFW and OWRD⁵, flow restoration is not a priority in the Kilchis River basin. During summer months (July – September), this sub-basin has a “moderate” need for flow restoration. ODFW is in the process of updating flow restoration priorities.

Existing Fish Protection Agreement

No existing fish protection agreement noted.

Explanation of Monthly Target Flows for Fish Persistence

Target flows for fish persistence in all months are equal to the monthly instream flows established by IS-71263. These instream flows were based on the recommended flows as reported in the Basin Investigation Report (BIR). Monthly target flows to maintain persistence of STE listed species as measured at a location on the Kilchis River, downstream of the City's points of diversion and upstream of the confluence with Myrtle Creek are noted in Table 1.

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⁴ Oregon Department of Fish and Wildlife (ODFW). 2005. Oregon Native Fish Status Report. Vol. II Assessment Methods & Population Results. Salem, OR. <https://www.dfw.state.or.us/fish/ONFSR/docs/volume-1-final.pdf>

⁵ <https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=streamflowmaps#NorthCoast>

Table 1. Monthly flow information (cfs) for the Kilchis River above Myrtle Creek (WAB #71263).

Month	OWRD 50% Exceedance	OWRD 80% Exceedance	Target Flows (IS-71263)
Jan	862	420	300
Feb	945	573	300
Mar	786	483	300
Apr	408	259	300
May	219	122	180
Jun	129	76.2	120
Jul	72.4	43.5	72.4
Aug	48.4	11.2	48.4
Sept	69.5	24	69.4
Oct	201	52.6	201
Nov	595	442	300
Dec	962	589	300

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ODFW's Advice to OWRD on Maintaining the Persistence of Listed Fish Species as the City of Bay City Develops the Undeveloped Portions of its Water Right Permit S-43858 for the Kilchis River above Myrtle Creek

General Considerations

As directed by ORS 537.230 (3)(d) and ORS 537.630 (3)(d) ODFW provides the following advice to OWRD to maintain, in the portions of waterways affected by water use under the permit, the persistence of fish species listed as sensitive, threatened or endangered under state or federal law. ODFW's advice is based on existing data. ODFW recommends the target flows listed in Table 2 and advises OWRD to develop conditions which allow the City to meet its water needs while maintaining the persistence of listed fish species.

ODFW recognizes that long-term climatic variations will affect the amount of water in the Kilchis River system. In favorable water years, fish populations tend to increase and in unfavorable water years fish populations contract. The long-term objective for a listed species is to have the population increase to a sustainable level over time and be able to maintain itself through natural fluctuations in the environment. The approach of setting curtailment relative to a percent missed of the target flow provides flexibility for maintaining fish persistence in light of climate change effects of flow regimes.

ODFW also recognizes that municipalities return a certain amount of flow to a river or stream through their effluent discharge. If the withdrawal point(s) and effluent discharge(s) are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, then ODFW recommends that curtailment of the water right extension be based on the monthly estimated ratio of the difference between the return flows and their total water withdrawals under this permit.

Specific Advice

The recommended target flows at a location on Kilchis River, downstream of the City's points of diversion, and upstream of the confluence of Myrtle Creek, are shown below in Table 2.

Table 2. Recommended target flows (cfs) by month for the persistence of listed fish in the Kilchis River above Myrtle Creek.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
300	300	300	300	180	120	72.4	48.4	69.4	201	300	300

Measured at a location on the Kilchis River downstream of the City's points of diversion and upstream of the confluence with Myrtle Creek.

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ODFW uses a formula for curtailing extensions based on the percentage shortfall of existing measured flow (Q_a) versus target flow (Q_t). The percent shortfall is defined below in Equation 1.

$$\left(1 - \left[\frac{(Q_a - E)}{Q_t}\right]\right) * 100$$

Q_a is the gaged flow (cfs) downstream of the POD

E is the undeveloped portion of the permit (cfs)

Q_t is the target flow (cfs)

Equation 1. Curtailment formula to identify percent shortfall of existing flow versus target flow.

The amount of diverted water is reduced by the percent by which a flow target is missed. When $(Q_a - E) \geq Q_t$, the amount of water diverted would not need to be reduced. When Q_a gets close to 18.08 cfs (the undeveloped portion of the permit) this formula results in a recommended diversion of zero, because the numerator in the equation $(Q_a - E)$ goes to zero. The percent by which the target flow is missed applied to the amount of flow conditioned for fish persistence provides the maximum recommended withdrawal rate and is defined as:

$$E - (E * \% \text{ missed target flow}) = \text{conditioned undeveloped portion of permit}$$

Equation 2. Formula for curtailing the undeveloped portion of permit

Sample Curtailment Calculations

To exemplify ODFW's curtailment equation, Table 3 demonstrates how the equations would apply to the extension for the month of August.

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Table 3. Example of curtailment at various flows (cfs) in August.

Stream Flow Q_a	% Target Flow Missed	Amount Curtailed	Extension Diversion	Total Permit Diversion	Comment
70	0	0.00	18.08	20.0	No curtailment
60	13	2.42	15.66	17.58	Curtailed
50	34	6.16	11.92	13.84	Curtailed
40	55	9.89	8.19	10.11	Curtailed
35	65	11.76	6.32	8.24	Curtailed
30	75	13.63	4.45	6.37	Curtailed
25	86	15.50	2.58	4.5	Curtailed
20	96	17.36	0.72	2.64	Curtailed
15	100	18.08	0.00	1.92	Cutoff
10	100	18.08	0.00	1.92	Cutoff

For example: the August recommended target flow is 48.4 cfs (Table 2). If the stream flow is 30 cfs the target flow is missed by 75%:

$$(1 - [(30 - 18.08)/48.4]) * 100 = 75.4\%$$

Thus, the amount curtailed of the undeveloped portion of the permit is 13.63 cfs as:

$$18.08 * 0.754 = 13.63 \text{ cfs}$$

The amount of the conditioned undeveloped portion of the permit is 4.45 cfs as:

$$18.08 - 13.63 = 4.45 \text{ cfs}$$

The total permit diversion (when $Q_a=30\text{cfs}$) is 6.37 cfs as:

$$1.92 + 4.45 = 6.37 \text{ cfs}$$

Frequency of Curtailment to Maintain Fish Persistence

The historical OWRD stream gage No. 14301450 (Kilchis River above Murphy Creek) was located approximately two miles downstream of the POD. OWRD calculated flow exceedances for natural flows for gage No. 14301450 based on the period of record 1958 – 1987. The drainage basin for the POD encompasses 97% of the drainage basin for gage No. 14301450. A correction factor based on drainage area can be applied to data from the downstream gage to estimate historical flow statistics at the POD.

Use of the presently-undeveloped portion of the City of Bay City's water right for the Kilchis River represents approximately one third the median natural streamflow during a typical August and all natural streamflow during a dry August. During the winter months, this undeveloped portion is the equivalent of 2-4% the median natural flow.

Table 3 provides an estimate of the percent of time by month that use of the undeveloped portion of permit S-43858 would be curtailed. When stream flow is less than the target flow, the undeveloped portion of the permit would be curtailed. Curtailment would rarely occur during November through March, and curtailment in April through October would be likely. Cutoff is probable during extreme low flow events in August and September.

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Table 3. Estimated percent time that curtailment occurs.

Month	% Time Curtailed	% Time Cutoff
Jan	< 10%	--
Feb	~5%	--
Mar	6%	--
Apr	35%	--
May	45%	--
Jun	47%	--
Jul	65%	--
Aug	63%	22%
Sep	53%	10%
Oct	53%	--
Nov	< 10%	--
Dec	< 5%	--

Streamflow Measurement Point

Based on an analysis of flow records, ODFW has determined that measuring flows at a location on the Kilchis River, downstream of the City's points of diversion, and upstream of the confluence with Myrtle Creek is sufficient for ensuring that flows to maintain the persistence of listed fish are met at the POD.

Conclusion

Use of water under the portion of this permit that was undeveloped as of the date of the extension final order should be conditioned to maintain persistence of listed fish species consistent with the target flows listed in Table 2. If streamflow falls below target flow levels, the City of Bay City should have the amount of water available to divert through this extension be curtailed through conditioning the permit. The severity of the curtailment measures taken should reflect the degree to which the target flows are being missed. An adjustment of the amount to be curtailed based on the ratio of the difference between the return flow/effluent discharge and the total water diverted is acceptable, provided the point of return flow and POD are within reasonable proximity to each other (such that fish habitat between the two points is not impacted significantly). The City needs to supply appropriate documentation to quantify the ratio. The effluent should meet water quality standards and not impair water quality or habitat in the Kilchis River.

ODFW recommends the fish persistence conditions as set forth in Appendix A. These conditions were formulated in coordination with OWRD and are consistent with the advice given to OWRD in this letter.

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ODFW Fish Persistence Advice for Application S-51053 (Permit S-43858)

March 11, 2019

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This concludes ODFW's advice to OWRD on the City of Bay City's Municipal Extension Application S-51053 (Permit S-43858). If you have questions about our advice or need further clarification please contact me at 503-947-6072 or Anna Pakenham Stevenson, Water Quality/Quantity Section Manager at 503-947-6084.

Sincerely,

Mark A. Vargas, Deputy Director (acting)

For

Shannon Hurn

ODFW Deputy Director

Bc: Chance Steffey, PE, City of Bay City Public Works Director
Robert Bradley, ODFW North Coast District Fish Biologist
Anna Pakenham Stevenson, ODFW Water Quality/Quantity Section Manager

Attachment:

Appendix A - OWRD Kilchis River - Proposed Fish Persistence Conditions for Extension of Time Proposed Final Order (PFO) for Application S-51053 (Permit S-43858) City of Bay City

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Appendix A

Kilchis River – Proposed Fish Persistence Conditions for Extension of Time Proposed Final Order (PFO) for Application S-51053 (Permit S-43858) City of Bay City

**Note: The developed portion (1.92 cfs) used in these conditions was diverted
prior to June 29, 2005**

Findings

1. Summary and Excerpts of Advice from ODFW:

Use of water under the portion of this permit that is undeveloped as of June 29, 2005, should be conditioned to maintain, in the portions of waterways affected by water use under the permit, the persistence of listed fish species. ODFW has determined that the Kilchis River will be affected by water use under this permit. ODFW's advice is based on the best available information and existing data.

ODFW recognizes that long-term climatic variations will affect the amount of water in the Kilchis River system. In favorable water years, fish populations tend to increase and in unfavorable water years fish populations contract. The long-term objective for a listed species is to have the population increase to a sustainable level over time and be able to maintain itself through natural fluctuations in the environment. The approach of setting curtailment relative to a percent missed of the Target Flow provides flexibility for maintaining fish persistence in light of climate change effects of flow regimes.

The Target Flows, in Table 1, below, are ODFW's recommended flows measured at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, and are based on the flows established through instream water right Certificate 73009. ODFW advises the Water Resources Department to develop conditions that allow municipalities to meet their water needs while maintaining the persistence of listed fish species.

ODFW also recognizes that municipalities return a certain amount of flow to a river or stream through their effluent discharge. If the withdrawal point(s) and effluent discharge(s) are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, then ODFW recommends that curtailment of the water right extension be based on the monthly estimated ratio of the difference between the return flows and their total water withdrawals under this permit.

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Table 1

ODFW'S RECOMMENDED FISH PERSISTENCE TARGET FLOWS IN THE KILCHIS RIVER, ABOVE MYRTLE CREEK MEASURED AT A LOCATION ON KILCHIS RIVER, BELOW THE CITY'S POINTS OF DIVERSION, AND ABOVE THE CONFLUENCE OF MYRTLE CREEK	
Month	Cubic Feet per Second
October	201
November	300
December	300
January	300
February	300
March	300
April	300
May	180
June	120
July	72.4
August	48.4
September	69.4

Streamflow Measurement Point

After analysis of flow records, ODFW has determined that measuring stream flows at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, gage is sufficient for ensuring that Target Flows are met throughout the Kilchis River.

2. Department's Findings Based on Review of ODFW's Advice:

There is an undeveloped portion of 18.08 cfs of water under Permit S-43858 as per ORS 537.230(1) and OAR 690-315-0010(6)(g). Authorization to incrementally expand use of water under this permit beyond 1.92 cfs up to the permitted quantity of 20.0 cfs can only be granted through the Department's review and approval of the municipal permit holder's future WMCPs (OAR 690-086). When ODFW's recommended Target Flows are missed, the Department's proposed conditions may result in a reduction in the amount of the undeveloped portion of water under Permit S-43858 that can be appropriated. The proposed conditions in this extension of time are based on the following

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findings:

- a. The Target Flows needed to maintain the persistence of fish must be determined or measured by the water user at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, or its equivalent.
- b. When Target Flows are not met, use of the undeveloped portion of the permit that impacts Kilchis River must be reduced in proportion to the degree to which the recommended Target Flows are being missed. ODFW's formula for determining the percent shortfall, or missed target flow is defined as:

$$1 - [(Q - E) / Q_T],$$

where Q is the flow at the point of interest, E is the undeveloped portion of the permit as of this extension, and Q_T is the Target Flow (from Table 1).

- c. ODFW's advice recognizes that the use of the undeveloped portion of the permit represents about one third the median natural stream flow during a typical August and all stream flow during a dry August. During the winter months, the undeveloped portion is equivalent of 2-4% the median natural stream flow.
- d. ODFW's advice recognizes that municipalities may return a certain amount of flow to a river or stream through their effluent discharge. If the withdrawal points and effluent discharges are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, then ODFW recommends that any reduction to use of the amount of the undeveloped portion of Permit S-43858 should be adjusted by the monthly estimated percentage of the difference between the total water withdrawals and their return flows. Therefore, consistent with ODFW's advice, when appropriate, the Department proposes to adjust any reduction by a "Consumptive Use Percentage," as generally determined by $(1 - [\text{total municipal wide returned flows} / \text{total municipal wide appropriated flows}])$.

1. **Conditions to Maintain the Persistence of Listed Fish**

The first 1.92 cfs of water under Permit S-43858 or any subsequent water right(s) originating from Permit S-43858 is not and will not be conditioned for maintaining fish persistence.

The portion of Permit S-43858 subject to these fish persistence conditions is established as 18.08 cfs in accordance with ORS 537.230(1). The use of 18.08 cfs as authorized under this permit must be hereafter conditioned with these fish persistence conditions. Therefore, all subsequent water right(s) originating from this portion of Permit S-43858 implemented will include these Conditions to Maintain the Persistence of Listed Fish. If more than one

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resulting water right is subject to these Conditions to Maintain the Persistence of Listed Fish, then legal use of the 18.08 cfs conditioned to maintain the persistence of listed fish species shall be determined among all the permit/water right holders of record; all the permit/water right holders of record subject to these Conditions to Maintain the Persistence of Listed Fish must ensure that these fish persistence conditions are met.

A. Fish Persistence Target Flows

- a. Fish persistence Target Flows in the Kilchis River as recommended by ODFW are in Table 2, below; flows are to be measured at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, or its equivalent).

Table 2

ODFW'S RECOMMENDED FISH PERSISTENCE TARGET FLOWS IN THE KILCHIS RIVER, ABOVE MYRTLE CREEK MEASURED AT A LOCATION ON KILCHIS RIVER, BELOW THE CITY'S POINTS OF DIVERSION, AND ABOVE THE CONFLUENCE OF MYRTLE CREEK	
Month	Cubic Feet per Second
October	201
November	300
December	300
January	300
February	300
March	300
April	300
May	180
June	120
July	72.4
August	48.4
September	69.4

- b. Alternate Streamflow Measurement Point(s)
The location of a steam flow measurement point as established in these Conditions to Maintain the Persistence of Listed Fish may be revised if the Permit Holder provides evidence in writing that ODFW has determined that persistence flows may be measured at an alternate streamflow measurement point and the Permit Holder provides an adequate description of the location of the alternate streamflow measurement point, and the

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Water Resources Director concurs in writing.

B. Determining Water Use Reductions - Generally

The maximum amount of the 18.08 cfs of water conditioned for fish persistence that can be diverted is determined in proportion to the amount by which the Target Flows (Q_T) shown in Table 2 are missed based on a seven-day rolling average of mean daily flows as determined or measured by the water user at a location on Kilchis River, below the City's points of diversion, and above the confluence of Myrtle Creek, or its equivalent. The percent of missed target flows is defined as:

$$(1 - [(Q - E) / Q_T]) \times 100\%,$$

where Q is the seven-day rolling average of mean daily flows below the POD; E is the amount of water conditioned for fish persistence, being 18.08 cfs; and Q_T is the Target Flow (from Table 2).

The percent by which the target flow is missed applied the amount of water conditioned for fish persistence provides the maximum amount of water that can be diverted as a result of this fish persistence condition, and is defined as:

$$E - (E \times \% \text{ missed target flows}),$$

where E is the amount of water conditioned for fish persistence, being 18.08 cfs.

The maximum amount water conditioned for fish persistence may be adjusted by a Consumptive Use Percentage, when applicable, as per Item 1.C., below.

When $Q_A - E \geq Q_T$, the amount of water conditioned for fish persistence that can be diverted would not need to be reduced.

C. Consumptive Use Percentages

a. Initial Consumptive Use Percentages

The City of Bay City has not identified any Consumptive Use Percentages based on the return of flows to the Kilchis River through effluent discharge. Thus, at this time the City may not utilize Consumptive Use Percentages for the purpose of calculating the maximum amount of the portion of Permit S-43858 that can be appropriated as a result of this fish persistence condition.

b. First Time Utilization of Consumptive Use Percentages

Utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition may begin after the issuance of the

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Final Order for this extension of time.

First time utilization of Consumptive Use Percentages is contingent upon the City (1) providing evidence in writing that ODFW has determined that withdrawal points and effluent discharges are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting monthly Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages. Utilization of Consumptive Use Percentages is subject to an approval period described in 1.C.f., below.

Consumptive Use Percentages submitted to the Department for review must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The proposed Consumptive Use Percentages should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for this extension of time.

c. Consumptive Use Percentages Updates

Continuing the utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition beyond an approval period (as described in 1.C.f., below) is contingent upon the City submitting updated Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the Consumptive Use Percentages Updates. Utilization of Consumptive Use Percentages Updates is subject to an approval period described in 1.C.f., below.

The updates to the Consumptive Use Percentages must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The updates should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for this extension of time.

d. Changes to Wastewater Technology and/or Wastewater Treatment Plant Practices

If there are changes to either wastewater technology or the practices at the City's waste water treatment facility resulting in 25% or more reductions in average monthly return flows to the Kilchis River, then the Consumptive Use Percentages in effect at that time may no longer be utilized for the purposes of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition. The 25% reduction is based on a 10-year rolling average of monthly wastewater return flows to the Kilchis River as

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compared to the average monthly wastewater return flows from the 10 year period just prior to date of the first approval period described in 1.C.f., below.

If such changes to either wastewater technology or the practices at the City's waste water treatment facility occur resulting in 25% reductions, further utilization of Consumptive Use Percentages is contingent upon the City submitting Consumptive Use Percentages Updates as per 1.C.c., above, and receiving the Water Resources Director's concurrence with the updated Consumptive Use Percentages.

e. Relocation of the Point(s) of Diversion(s) and/or Return Flows

If the point(s) of diversion(s) and/or return flows are relocated, Consumptive Use Percentages in effect at that time may no longer be utilized for the

purposes of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition.

After relocation of the point(s) of diversion(s) and/or return flows, further utilization of Consumptive Use Percentages is contingent upon the City (1) providing evidence in writing that ODFW has determined that any relocated withdrawal points and effluent discharge points are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting Consumptive Use Percentages Updates as per 1.C.c., above, and receiving the Water Resources Director's concurrence with the updated Consumptive Use Percentages.

f. Approval Periods for Utilization of Consumptive Use Percentages

The utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition may continue for a 10 year approval period that begins 10 years from the Water Resources Director's most recent date of concurrence with Consumptive Use Percentages Updates as evidenced by the record, unless sections 1.C.d., or 1.C.e. (above) are applicable.

Consumptive Use Percentages (first time utilization or updates) which are submitted and receive the Director's concurrence will begin a new 10 year approval period. The approval period begins on the date of the Water Resources Director's concurrence with Consumptive Use Percentages Updates, as evidenced by the record. The City at its discretion may submit updates prior to the end of an approval period.

D. Examples

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Example 1: Target Flow met.

On June 15, the last seven mean daily flows below the point of diversion were 123, 119, 120, 125, 119, 120, and 118, cfs. The seven day rolling average (Q_A) is 139.0 cfs. Given that the amount of water conditioned for fish persistence of this permit (E) is 18.08 cfs, then the 7 day average of mean daily flows minus the amount of water conditioned for fish persistence is greater than the 120 cfs Target Flow (Q_T) for June 15. In this example, $Q_A - E \geq Q_T$.

$$139.0 - 18.08 \geq 120$$

The amount of water conditioned for fish persistence of the permit that can be appropriated would not be reduced because the Target Flow is considered met.

Example 2: Target Flow missed.

Step 1: Given that the amount of water conditioned for fish persistence of this permit (E) is 18.08 cfs, if on June 15, the average of the last seven mean

daily flows (Q_A) was 62.0 cfs, and the Target Flow (Q_T) is 120, then the Target Flow would be missed by 63.4%.

$$(1 - [(62.0 - 18.08) / 120]) \times 100\% = 63.4\%$$

Step 2: Assuming the Consumptive Use Percentage is 78.7%⁶ during the month of June and the utilization of this percentage is authorized, and the Target Flow is missed by 63.4% (from Step 1), then the amount of water conditioned for fish persistence of the permit that could be diverted would be reduced by 49.9%.

$$(78.7\% \times 63.4\%) / 100 = 49.9\%$$

(If adjustments are not to be made by a Consumptive Use Percentage, then the amount of water conditioned for fish persistence of the permit would only be reduced by the % by which the target flow is missed, being 63.4% in this example).

Step 3: The amount of water conditioned for fish persistence of this permit (E) is 18.08 cfs. Therefore, in this example, the maximum amount of water conditioned for fish persistence of

⁶ Currently, the City of Bay City may not utilize Consumptive Use Percentages for the purpose of calculating the amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition. The utilization of the Consumptive Use Percentage 78.7% is only for illustrative purposes in this example.

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Permit S-43858 that can be appropriated as a result of this fish persistence condition is 9.06 cfs. (This maximum may further be limited as illustrated in Step 4 below.)

$$18.08 - ((18.08 \times 49.9\%) / 100) = 9.06$$

Step 4: The calculated maximum amount of water that could be diverted due to the fish persistence condition may not exceed the amount of water to which the permit or water right holder is legally entitled to divert under this extended permit or subsequent water right(s). Under the extended permit or subsequent water right(s) the maximum amount that could be legally diverted is 20.0 cfs.

In this example, if the amount of water legally authorized for diversion under the permit or subsequent water right is 10.0 cfs (for this example, authorization provided through a WMCP or partial perfection), then 10.0 cfs would be the maximum amount of diversion allowed under this water right including amounts of water not conditioned for maintaining fish persistence as authorized under this or any subsequent water right(s) originating from Permit S-43858, being up to a total of 1.92 cfs.

$$1.92 + 9.06 \geq 10.0$$

(Conversely, if the amount of water legally authorized for diversion under the permit or subsequent water right is 20.0 cfs, then 10.98 cfs (9.06 cfs as limited by conditions to maintain the persistence of listed fish species from Step 3 + the 1.92 cfs not conditioned for fish persistence) would be the maximum amount of diversion allowed under the water right.)

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Advice on Maintaining Persistence of Listed Fish Species for Municipal Extension (OAR 690-315): City of Bay City's Application S-51053 (Permit S-43858)

The City of Bay City (City) has requested an extension of time to develop the municipal water right application S-51053 (Permit S-43858). The undeveloped portion of their permit is 18.08 cubic feet per second (cfs) from the Kilchis River. ORS 537.230(3)(d) and 537.630(3)(d) direct the Oregon Water Resources Department (OWRD) to find that the undeveloped portion of the permit is conditioned to maintain, in the portions of waterways affected by water use under the permit, the persistence of fish species listed as sensitive, threatened or endangered (STE) under state or federal law. OWRD is to base their findings on existing data and advice from the Oregon Department of Fish and Wildlife (ODFW). This letter is the advice provided to OWRD by ODFW.

Summary

- The City of Bay City has a municipal water right (Permit S-43858) for 20.0 cfs. The developed portion of the permit (1.92 cfs) as of the date of the extension final order is not subject to conditioning. The undeveloped portion of the permit (18.08 cfs) is subject to conditioning to maintain persistence for STE fish species.
- Potentially affected listed STE fish species include Coho Salmon, Chum Salmon, Pacific Lamprey and Western Brook Lamprey. Other affected salmonids that are not listed include Winter Steelhead, Fall Chinook Salmon and Coastal Cutthroat.
- An instream water right (application IS-71263, certificate 73009) was established in 1991 for the Kilchis River above Myrtle Creek based on recommended flows reported in the North Coast Basin Investigation Report (BIR)¹. This instream water right overlaps the POD. The instream water right (IS-71263) was used to set target flows for fish persistence (Table 1).
- The City's point of diversion (POD) is within the OWRD Water Availability Basin (WAB) #71263 Kilchis River, tributary to Tillamook Bay, above Myrtle Creek. OWRD has estimated the monthly natural median flows and 80% exceedance flows for this WAB (Table 1). Monthly flow percent exceedances were used to evaluate the frequency of curtailment (Table 3).
- When flows are below target flows to provide fish persistence, ODFW recommends curtailment of the undeveloped portion of S-43858.

¹ Oregon State Game Commission. 1972. Basin Investigation Report: Supplement to the Fish and Wildlife Resources of the North Coast Basin, Oregon and Their Water Requirements – BIR.

Analysis of Flows for Fish Persistence

Water Availability

According to OWRD's Water Availability Reporting System² (WARS) for the Kilchis River above Myrtle Creek, water is not available for consumptive use from April – October based on the 80% exceedance flows. Both the City's municipal water right (Permit S-43858) for 20 cfs and the instream water right (IS-71263) are used in the availability calculations.

ODFW has applied for an instream water right on the Kilchis River downstream of Myrtle Creek (IS-88527) dated March 2018.

Listed TES Fish Species with Designation

Coho Salmon (*Oncorhynchus kisutch*) – Federal - Threatened, State Sensitive
Chum Salmon (*Oncorhynchus keta*) – State Sensitive-Critical
Pacific Lamprey (*Lampetra pacifica*) – State Sensitive
Western Brook Lamprey (*Lampetra richarsoni*) – State Sensitive

Other Affected Native Salmonids (not listed)

Winter Steelhead (*Oncorhynchus mykiss*)
Fall Chinook Salmon (*Oncorhynchus tshawytscha*)
Coastal Cutthroat (*Oncorhynchus clarkii*)

Analysis of Risk to Fish Persistence

According to the most recent status assessment in the Coastal Multi-species Conservation and Management Plan³, Winter Steelhead, Fall Chinook Salmon, Chum Salmon, and Coastal Cutthroat are all viable populations in the overall Tillamook watershed. Although viable as a population, sea-run life history variants of Coastal Cutthroat have shown declining trends.

Coho Salmon – Coho Salmon are federally listed as a threatened species. Migration and rearing are known to occur downstream of the POD.

Chum Salmon – Even though Chum Salmon are a viable population in the Tillamook watershed, they are State listed as critically sensitive throughout their coastal range. It is especially important to protect the Tillamook population.

Pacific Lamprey – Per the 2005 Oregon Native Fish Status Report⁴, only four of six stock status criteria for this species are being met on the coast; populations are declining and there is little information about flow needs. Pacific Lamprey are considered at risk.

² https://apps.wrd.state.or.us/apps/wars/wars_display_wa_tables/search_for_WAB.aspx

³ https://www.dfw.state.or.us/fish/CRP/docs/coastal_multispecies/CMP_main_final.pdf

⁴ Oregon Department of Fish and Wildlife (ODFW). 2005. Oregon Native Fish Status Report. Vol. II Assessment Methods & Population Results. Salem, OR. <https://www.dfw.state.or.us/fish/ONFSR/docs/volume-1-final.pdf>

Western Brook Lamprey – Only four of six stock status criteria for this species are being met on the coast⁴; populations are declining and there is little information about flow needs. Western Brook Lamprey are considered at risk.

Flow Restoration Priorities

Based on the 1998 Oregon Plan Flow Restoration Priorities developed by ODFW and OWRD⁵, flow restoration is not a priority in the Kilchis River basin. During summer months (July – September), this sub-basin has a “moderate” need for flow restoration. ODFW is in the process of updating flow restoration priorities.

Existing Fish Protection Agreement

No existing fish protection agreement noted.

Explanation of Monthly Target Flows for Fish Persistence

Target flows for fish persistence in all months are equal to the monthly instream flows established by IS-71263. These instream flows were based on the recommended flows as reported in the Basin Investigation Report (BIR). Monthly target flows to maintain persistence of STE listed species as measured at a location on the Kilches River, downstream of the City’s points of diversion and upstream of the confluence with Myrtle Creek are noted in Table 1.

Table 1. Monthly flow information (cfs) for the Kilchis River above Myrtle Creek.

Month	OWRD 50% Exceedance	OWRD 80% Exceedance	Target Flows (IS-71263)
Jan	862	420	300
Feb	945	573	300
Mar	786	483	300
Apr	408	259	300
May	219	122	180
Jun	129	76.2	120
Jul	72.4	43.5	72.4
Aug	48.4	11.2	48.4
Sept	69.5	24	69.4
Oct	201	52.6	201
Nov	595	442	300
Dec	962	589	300

⁵ <https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=streamflowmaps#NorthCoast>

ODFW's Advice to OWRD on Maintaining the Persistence of Listed Fish Species as the City of Bay City Develops the Undeveloped Portions of its Water Right Permit S-43858 for the Kilchis River above Myrtle Creek

General Considerations

As directed by ORS 537.230 (3)(d) and ORS 537.630 (3)(d) ODFW provides the following advice to OWRD to maintain, in the portions of waterways affected by water use under the permit, the persistence of fish species listed as sensitive, threatened or endangered under state or federal law. ODFW's advice is based on existing data. ODFW recommends the target flows listed in Table 2 and advises OWRD to develop conditions which allow the City to meet its water needs while maintaining the persistence of listed fish species.

ODFW recognizes that long-term climatic variations will affect the amount of water in the Kilchis River system. In favorable water years, fish populations tend to increase and in unfavorable water years fish populations contract. The long-term objective for a listed species is to have the population increase to a sustainable level over time and be able to maintain itself through natural fluctuations in the environment. The approach of setting curtailment relative to a percent missed of the target flow provides flexibility for maintaining fish persistence in light of climate change effects of flow regimes.

ODFW also recognizes that municipalities return a certain amount of flow to a river or stream through their effluent discharge. If the withdrawal point(s) and effluent discharge(s) are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, then ODFW recommends that curtailment of the water right extension be based on the monthly estimated ratio of the difference between the return flows and their total water withdrawals under this permit.

Specific Advice

The recommended target flows at a location on Kilches River, downstream of the City's points of diversion, and upstream of the confluence of Myrtle Creek, are shown below in Table 2.

Table 2. Recommended target flows (cfs) by month for the persistence of listed fish in the Kilchis River above Myrtle Creek.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
300	300	300	300	180	120	72.4	48.4	69.4	201	300	300

Measured at a location on the Kilches River downstream of the City's points of diversion and upstream of the confluence with Myrtle Creek.

ODFW uses a formula for curtailing extensions based on the percentage shortfall of existing measured flow (Q_a) versus target flow (Q_t). The percent shortfall is defined below in Equation 1.

$$\left(1 - \left[\frac{(Q_a - E)}{Q_t}\right]\right) * 100$$

Q_a is the gaged flow (cfs) downstream of the POD

E is the undeveloped portion of the permit (cfs)

Q_t is the target flow (cfs)

Equation 1. Curtailment formula to identify percent shortfall of existing flow versus target flow.

The amount of diverted water is reduced by the percent by which a flow target is missed. When $(Q_a - E) \geq Q_t$, the amount of water diverted would not need to be reduced. When Q_a gets close to 18.08 cfs (the undeveloped portion of the permit) this formula results in a recommended diversion of zero, because the numerator in the equation ($Q_a - E$) goes to zero. The percent by which the target flow is missed applied to the amount of flow conditioned for fish persistence provides the maximum recommended withdrawal rate and is defined as:

$$E - (E * \% \text{ missed target flow}) = \text{conditioned undeveloped portion of permit}$$

Equation 2. Formula for curtailing the undeveloped portion of permit

Sample Curtailment Calculations

To exemplify ODFW's curtailment equation, Table 3 demonstrates how the equations would apply to the extension for the month of August.

Table 3. Example of curtailment at various flows (cfs) in August.

Stream Flow Q_a	% Target Flow Missed	Amount Curtailed	Extension Diversion	Total Permit Diversion	Comment
70	0	0.00	18.08	20.0	No curtailment
60	13	2.42	15.66	17.58	Curtailed
50	34	6.16	11.92	13.84	Curtailed
40	55	9.89	8.19	10.11	Curtailed
35	65	11.76	6.32	8.24	Curtailed
30	75	13.63	4.45	6.37	Curtailed
25	86	15.50	2.58	4.5	Curtailed
20	96	17.36	0.72	2.64	Curtailed
15	100	18.08	0.00	1.92	Cutoff
10	100	18.08	0.00	1.92	Cutoff

For example: the August recommended target flow is 48.4 cfs (Table 2). If the stream flow is 30 cfs the target flow is missed by 75%:

$$(1 - [(30 - 18.08)/48.4]) * 100 = 75.4\%$$

Thus, the amount curtailed of the undeveloped portion of the permit is 13.63 cfs as:

$$18.08 * 0.754 = 13.63 \text{ cfs}$$

The amount of the conditioned undeveloped portion of the permit is 4.45 cfs as:

$$18.08 - 13.63 = 4.45 \text{ cfs}$$

The total permit diversion (when $Q_a=30\text{cfs}$) is 6.37 cfs as:

$$1.92 + 4.45 = 6.37 \text{ cfs}$$

Frequency of Curtailment to Maintain Fish Persistence

The historical OWRD stream gage No. 14301450 (Kilchis River above Murphy Creek) was located approximately two miles downstream of the POD. OWRD calculated flow exceedances for natural flows for gage No. 14301450 based on the period of record 1958 – 1987. The drainage basin for the POD encompasses 97% of the drainage basin for gage No. 14301450. A correction factor based on drainage area can be applied to data from the downstream gage to estimate historical flow statistics at the POD.

Use of the presently-undeveloped portion of the City of Bay City's water right for the Kilchis River represents approximately one third the median natural streamflow during a typical August and all natural streamflow during a dry August. During the winter months, this undeveloped portion is the equivalent of 2-4% the median natural flow.

Table 3 provides an estimate of the percent of time by month that use of the undeveloped portion of permit S-43858 would be curtailed. When stream flow is less than the target flow, the undeveloped portion of the permit would be curtailed. Curtailment would rarely occur during November through March, and curtailment in April through October would be likely. Cutoff is probable during extreme low flow events in August and September.

Table 3. Estimated percent time that curtailment occurs.

Month	% Time Curtailed	% Time Cutoff
Jan	< 10%	--
Feb	~5%	--
Mar	6%	--
Apr	35%	--
May	45%	--
Jun	47%	--
Jul	65%	--
Aug	63%	22%
Sep	53%	10%
Oct	53%	--
Nov	< 10%	--
Dec	< 5%	--

Streamflow Measurement Point

Based on an analysis of flow records, ODFW has determined that measuring flows at a location on Kilches River, downstream of the City's points of diversion, and upstream of the confluence with Myrtle Creek is sufficient for ensuring that flows to maintain the persistence of listed fish are met at the POD.

Conclusion

Use of water under the portion of this permit that was undeveloped as of the date of the extension final order should be conditioned to maintain persistence of listed fish species consistent with the target flows listed in Table 2. If streamflow falls below target flow levels, the City of Bay City should have the amount of water available to divert through this extension be curtailed through conditioning the permit. The severity of the curtailment measures taken should reflect the degree to which the target flows are being missed. An adjustment of the amount to be curtailed based on the ratio of the difference between the return flow/effluent discharge and the total water diverted is acceptable, provided the point of return flow and POD are within reasonable proximity to each other (such that fish habitat between the two points is not impacted significantly). The City needs to supply appropriate documentation to quantify the ratio. The effluent should meet water quality standards and not impair water quality or habitat in the Kilchis River.

**Kilchis River – Proposed Fish Persistence Conditions
for Extension of Time Proposed Final Order (PFO)
for Application S-51053 (Permit S-43858)
City of Bay City**

**Note: The developed portion (1.92 cfs) used in these conditions was diverted
prior to June 29, 2005**

Findings

1. Summary and Excerpts of Advice from ODFW:

Use of water under the portion of this permit that is undeveloped as of June 29, 2005, should be conditioned to maintain, in the portions of waterways affected by water use under the permit, the persistence of listed fish species. ODFW has determined that the Kilchis River will be affected by water use under this permit. ODFW's advice is based on the best available information and existing data.

ODFW recognizes that long-term climatic variations will affect the amount of water in the Kilchis River system. In favorable water years, fish populations tend to increase and in unfavorable water years fish populations contract. The long-term objective for a listed species is to have the population increase to a sustainable level over time and be able to maintain itself through natural fluctuations in the environment. The approach of setting curtailment relative to a percent missed of the Target Flow provides flexibility for maintaining fish persistence in light of climate change effects of flow regimes.

The Target Flows, in Table 1, below, are ODFW's recommended flows measured at a location on Kilches River, below the City's points of diversion, and above the confluence of Myrtle Creek, and are based on the flows established through instream water right Certificate 73009. ODFW advises the Water Resources Department to develop conditions that allow municipalities to meet their water needs while maintaining the persistence of listed fish species.

ODFW also recognizes that municipalities return a certain amount of flow to a river or stream through their effluent discharge. If the withdrawal point(s) and effluent discharge(s) are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, then ODFW recommends that curtailment of the water right extension be based on the monthly estimated ratio of the difference between the return flows and their total water withdrawals under this permit.

Table 1

ODFW'S RECOMMENDED FISH PERSISTENCE TARGET FLOWS IN THE KILCHIS RIVER, ABOVE MYRTLE CREEK MEASURED AT A LOCATION ON KILCHES RIVER, BELOW THE CITY'S POINTS OF DIVERSION, AND ABOVE THE CONFLUENCE OF MYRTLE CREEK	
Month	Cubic Feet per Second
October	201
November	300
December	300
January	300
February	300
March	300
April	300
May	180
June	120
July	72.4
August	48.4
September	69.4

Streamflow Measurement Point

After analysis of flow records, ODFW has determined that measuring stream flows at a location on Kilches River, below the City's points of diversion, and above the confluence of Myrtle Creek, gage is sufficient for ensuring that Target Flows are met throughout the Kilchis River.

2. Department's Findings Based on Review of ODFW's Advice:

There is an undeveloped portion of 18.08 cfs of water under Permit S-43858 as per ORS 537.230(1) and OAR 690-315-0010(6)(g). Authorization to incrementally expand use of water under this permit beyond 1.92 cfs up to the permitted quantity of 20.0 cfs can only be granted through the Department's review and approval of the municipal permit holder's future WMCPs (OAR 690-086). When ODFW's recommended Target Flows are missed, the Department's proposed conditions may result in a reduction in the amount of the undeveloped portion of water under Permit S-43858 that can be appropriated. The proposed conditions in this extension of time are based on the following findings:

- a. The Target Flows needed to maintain the persistence of fish must be determined or measured by the water user at a location on Kilches River, below the City's points of diversion, and above the confluence of Myrtle Creek, or its equivalent.
- b. When Target Flows are not met, use of the undeveloped portion of the permit that impacts Kilchis River must be reduced in proportion to the degree to which the recommended Target Flows are being missed. ODFW's formula for determining the percent shortfall, or missed target flow is defined as:

$$1 - [(Q - E) / Q_T],$$

where Q is the flow at the point of interest, E is the undeveloped portion of the permit as of this extension, and Q_T is the Target Flow (from Table 1).

- c. ODFW's advice recognizes that the use of the undeveloped portion of the permit represents about one third the median natural stream flow during a typical August and all stream flow during a dry August. During the winter months, the undeveloped portion is equivalent of 2-4% the median natural stream flow.
- d. ODFW's advice recognizes that municipalities may return a certain amount of flow to a river or stream through their effluent discharge. If the withdrawal points and effluent discharges are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, then ODFW recommends that any reduction to use of the amount of the undeveloped portion of Permit S-43858 should be adjusted by the monthly estimated percentage of the difference between the total water withdrawals and their return flows. Therefore, consistent with ODFW's advice, when appropriate, the Department proposes to adjust any reduction by a "Consumptive Use Percentage," as generally determined by $(1 - [\text{total municipal wide returned flows} / \text{total municipal wide appropriated flows}])$.

1. **Conditions to Maintain the Persistence of Listed Fish**

The first 1.92 cfs of water under Permit S-43858 or any subsequent water right(s) originating from Permit S-43858 is not and will not be conditioned for maintaining fish persistence.

The portion of Permit S-43858 subject to these fish persistence conditions is established as 18.08 cfs in accordance with ORS 537.230(1). The use of 18.08 cfs as authorized under this permit must be hereafter conditioned with these fish persistence conditions. Therefore, all subsequent water right(s) originating from this portion of Permit S-43858 implemented will include these Conditions to Maintain the Persistence of Listed Fish. If more than one resulting water right is subject to these Conditions to Maintain the Persistence of Listed Fish, then legal use of the 18.08 cfs conditioned to maintain the persistence of listed fish species shall be determined among all the permit/water right holders of record; all the permit/water right holders of record subject to these Conditions to Maintain the Persistence of Listed Fish must ensure that these fish persistence conditions are met.

A. Fish Persistence Target Flows

- a. Fish persistence Target Flows in the Kilchis River as recommended by ODFW are in Table 2, below; flows are to be measured at a location on Kilches River, below the City's points of diversion, and above the confluence of Myrtle Creek, or its equivalent).

Table 2

ODFW'S RECOMMENDED FISH PERSISTENCE TARGET FLOWS IN THE KILCHIS RIVER, ABOVE MYRTLE CREEK MEASURED AT A LOCATION ON KILCHES RIVER, BELOW THE CITY'S POINTS OF DIVERSION, AND ABOVE THE CONFLUENCE OF MYRTLE CREEK	
Month	Cubic Feet per Second
October	201
November	300
December	300
January	300
February	300
March	300
April	300
May	180
June	120
July	72.4
August	48.4
September	69.4

- b. Alternate Streamflow Measurement Point(s)
The location of a steam flow measurement point as established in these Conditions to Maintain the Persistence of Listed Fish may be revised if the Permit Holder provides evidence in writing that ODFW has determined that persistence flows may be measured at an alternate streamflow measurement point and the Permit Holder provides an adequate description of the location of the alternate streamflow measurement point, and the Water Resources Director concurs in writing.

B. Determining Water Use Reductions - Generally

The maximum amount of the 18.08 cfs of water conditioned for fish persistence that can be diverted is determined in proportion to the amount by which the Target Flows (Q_T) shown in Table 2 are missed based on a seven-day rolling

average of mean daily flows as determined or measured by the water user at a location on Kilches River, below the City's points of diversion, and above the confluence of Myrtle Creek, or its equivalent. The percent of missed target flows is defined as:

$$(1 - [(Q - E) / Q_T]) \times 100\%,$$

where Q is the seven-day rolling average of mean daily flows below the POD; E is the amount of water conditioned for fish persistence, being 18.08 cfs; and Q_T is the Target Flow (from Table 2).

The percent by which the target flow is missed applied the amount of water conditioned for fish persistence provides the maximum amount of water that can be diverted as a result of this fish persistence condition, and is defined as:

$$E - (E \times \% \text{ missed target flows}),$$

where E is the amount of water conditioned for fish persistence, being 18.08 cfs.

The maximum amount water conditioned for fish persistence may be adjusted by a Consumptive Use Percentage, when applicable, as per Item 1.C., below.

When $Q_A - E \geq Q_T$, the amount of water conditioned for fish persistence that can be diverted would not need to be reduced.

C. Consumptive Use Percentages

a. Initial Consumptive Use Percentages

The City of Bay City has not identified any Consumptive Use Percentages based on the return of flows to the Kilchis River through effluent discharge. Thus, at this time the City may not utilize Consumptive Use Percentages for the purpose of calculating the maximum amount of the portion of Permit S-43858 that can be appropriated as a result of this fish persistence condition.

b. First Time Utilization of Consumptive Use Percentages

Utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition may begin after the issuance of the Final Order for this extension of time.

First time utilization of Consumptive Use Percentages is contingent upon the City (1) providing evidence in writing that ODFW has determined that withdrawal points and effluent discharges are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting monthly Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages. Utilization of Consumptive Use Percentages is subject to an approval period described in 1.C.f., below.

Consumptive Use Percentages submitted to the Department for review must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The proposed Consumptive Use Percentages should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for this extension of time.

c. Consumptive Use Percentages Updates

Continuing the utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition beyond an approval period (as described in 1.C.f., below) is contingent upon the City submitting updated Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the Consumptive Use Percentages Updates. Utilization of Consumptive Use Percentages Updates is subject to an approval period described in 1.C.f., below.

The updates to the Consumptive Use Percentages must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The updates should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for this extension of time.

d. Changes to Wastewater Technology and/or Wastewater Treatment Plant Practices

If there are changes to either wastewater technology or the practices at the City's waste water treatment facility resulting in 25% or more reductions in average monthly return flows to the Kilchis River, then the Consumptive Use Percentages in effect at that time may no longer be utilized for the purposes of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition. The 25% reduction is based on a 10-year rolling average of monthly wastewater return flows to the Kilchis River as compared to the average monthly wastewater return flows from the 10 year period just prior to date of the first approval period described in 1.C.f., below.

If such changes to either wastewater technology or the practices at the City's waste water treatment facility occur resulting in 25% reductions, further utilization of Consumptive Use Percentages is contingent upon the City submitting Consumptive Use Percentages Updates as per 1.C.c., above, and receiving the Water Resources Director's concurrence with the updated Consumptive Use Percentages.

e. Relocation of the Point(s) of Diversion(s) and/or Return Flows

If the point(s) of diversion(s) and/or return flows are relocated, Consumptive Use Percentages in effect at that time may no longer be utilized for the

purposes of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition.

After relocation of the point(s) of diversion(s) and/or return flows, further utilization of Consumptive Use Percentages is contingent upon the City (1) providing evidence in writing that ODFW has determined that any relocated withdrawal points and effluent discharge points are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting Consumptive Use Percentages Updates as per 1.C.c., above, and receiving the Water Resources Director's concurrence with the updated Consumptive Use Percentages.

f. Approval Periods for Utilization of Consumptive Use Percentages

The utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition may continue for a 10 year approval period that begins 10 years from the Water Resources Director's most recent date of concurrence with Consumptive Use Percentages Updates as evidenced by the record, unless sections 1.C.d., or 1.C.e. (above) are applicable.

Consumptive Use Percentages (first time utilization or updates) which are submitted and receive the Director's concurrence will begin a new 10 year approval period. The approval period begins on the date of the Water Resources Director's concurrence with Consumptive Use Percentages Updates, as evidenced by the record. The City at its discretion may submit updates prior to the end of an approval period.

D. Examples

Example 1: Target Flow met.

On June 15, the last seven mean daily flows below the point of diversion were 123, 119, 120, 125, 119, 120, and 118, cfs. The seven day rolling average (Q_A) is 139.0 cfs. Given that the amount of water conditioned for fish persistence of this permit (E) is 18.08 cfs, then the 7 day average of mean daily flows minus the amount of water conditioned for fish persistence is greater than the 120 cfs Target Flow (Q_T) for June 15. In this example, $Q_A - E \geq Q_T$.

$$139.0 - 18.08 \geq 120$$

The amount of water conditioned for fish persistence of the permit that can be appropriated would not be reduced because the Target Flow is considered met.

Example 2: Target Flow missed.

Step 1: Given that the amount of water conditioned for fish persistence of this permit (E) is 18.08 cfs, if on June 15, the average of the last seven mean

daily flows (Q_A) was 62.0 cfs, and the Target Flow (Q_T) is 120, then the Target Flow would be missed by 63.4%.

$$(1 - [(62.0 - 18.08) / 120]) \times 100\% = 63.4\%$$

Step 2: Assuming the Consumptive Use Percentage is 78.7%⁶ during the month of June and the utilization of this percentage is authorized, and the Target Flow is missed by 63.4% (from Step 1), then the amount of water conditioned for fish persistence of the permit that could be diverted would be reduced by 49.9%.

$$(78.7\% \times 63.4\%) / 100 = 49.9\%$$

(If adjustments are not to be made by a Consumptive Use Percentage, then the amount of water conditioned for fish persistence of the permit would only be reduced by the % by which the target flow is missed, being 63.4% in this example).

Step 3: The amount of water conditioned for fish persistence of this permit (E) is 18.08 cfs. Therefore, in this example, the maximum amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition is 9.06 cfs. (This maximum may further be limited as illustrated in Step 4 below.)

$$18.08 - ((18.08 \times 49.9\%) / 100) = 9.06$$

Step 4: The calculated maximum amount of water that could be diverted due to the fish persistence condition may not exceed the amount of water to which the permit or water right holder is legally entitled to divert under this extended permit or subsequent water right(s). Under the extended permit or subsequent water right(s) the maximum amount that could be legally diverted is 20.0 cfs.

In this example, if the amount of water legally authorized for diversion under the permit or subsequent water right is 10.0 cfs (for this example, authorization provided through a WMCP or partial perfection), then 10.0 cfs would be the maximum amount of diversion allowed under this water right including amounts of water not conditioned for maintaining fish persistence as authorized under this or any subsequent water right(s) originating from Permit S-43858, being up to a total of 1.92 cfs.

$$1.92 + 9.06 \geq 10.0$$

⁶ Currently, the City of Bay City may not utilize Consumptive Use Percentages for the purpose of calculating the amount of water conditioned for fish persistence of Permit S-43858 that can be appropriated as a result of this fish persistence condition. The utilization of the Consumptive Use Percentage 78.7% is only for illustrative purposes in this example.

(Conversely, if the amount of water legally authorized for diversion under the permit or subsequent water right is 20.0 cfs, then 10.98 cfs (9.06 cfs as limited by conditions to maintain the persistence of listed fish species from Step 3 + the 1.92 cfs not conditioned for fish persistence) would be the maximum amount of diversion allowed under the water right.)



CONSULTING ENGINEERS & GEOLOGISTS, INC.

275 Market Ave. • Coos Bay, OR 97420-2228 • 541-266-9890 • FAX: 541-266-9496 • shninfo@shn-engr.com

Reference: 611012

January 8, 2018

Mr. Jeffrey Pierceall
Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301

Subject: Application S-51053 Extension



Dear Mr. Pierceall:

I am writing on behalf of the City of Bay City as the City Engineer. The City of Bay City is in receipt of the Water Resources Department (WRD) Extension Application Update Form (see attached) requesting that the permittee apply for an extension update for the City's water rights. We understand that the extension may be subject to the Oregon Department of Fish and Wildlife's fish persistence regulations.

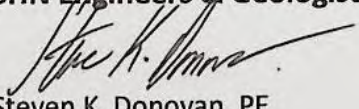
Before completing the application, the City of Bay City requests additional consideration of its point of diversion (POD) and its influence on the Kilchis River. The POD for the City incorporates ground water wells (see attached well logs) under the influence of surface water. The City believes the effects of withdrawal of groundwater flow on the surface water flow in the Kilchis River will be minimal and significantly less than the undeveloped portion of the City's water right. The City's method of diversion should, therefore, be considered further before considering the effects of fish persistence rules on the POD.

Over the next 18 months, the City will be locating a new well in the Kilchis River well field. This work may include evaluating diversion rates on ground water levels. This information may be helpful to the Department as it evaluates the City's undeveloped water rights and its PODs relating to fish persistence river flows. If this or similar data will be useful, the City would appreciate the opportunity to discuss their plans and the Bay City Water Rights further.

Please contact Steve Donovan at 541-266-9890 or Brian Bettis at 503-377-41421 to set up a time to discuss this matter further.

Respectfully submitted,

SHN Engineers & Geologists


Steven K. Donovan, PE
Principal Engineer

SKD/WEW:asc

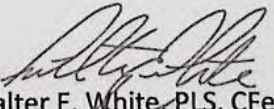
Enclosures: Well Logs, Extension Application Update Form

c. w/enclosures: Brian Bettis, City of Bay City

RECEIVED

FEB 12 2018

OWRD


Walter E. White, PLS, CFedS, CWRE
Senior Surveyor

Extension Application Update Form
For Municipal and Quasi-Municipal Permits issued prior to
November 2, 1998



Please review the information on this form, make any necessary updates, and provide any additional information you would like the Department to consider in reviewing your Extension Application.

Return this form to the Department by January 12, 2018, or your Extension Application will be processed based on the information currently on record.

MAIL COMPLETED FORM

Water Resources Department
Attn: Water Right Permit Extensions
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266

Application S-51053
CITY OF BAY CITY
Brian Bettis
8000 Elliot ST
Bay City, OR 97107

1. Report the maximum rate of water that was diverted and applied to beneficial use under this permit as of the later of:
- June 29, 2005;
 - the time specified in the permit; or
 - the time specified in the last- approved extension of time.

The evidence in the record shows the maximum instantaneous rate is 2.68 cfs

The evidence in the record shows the undeveloped portion under this permit is 17.32 cfs

If this is incorrect please provide documentary evidence substantiating the maximum instantaneous rate, or duty if applicable, of water appropriated may include, but is not limited to: water meter records; dedicated electrical meter records; business records; and/or a sworn affidavit.

Report in the same units of measurement as specified in the permit.

Report only water use made under THIS permit only:

Maximum instantaneous rate as of June 29, 2005 = 2.68 cfs, or _____ gpm,
or _____ AF

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FEB 12 2018

OWRD

2. Your extension application proposes to extend the completion deadline date from **October 1, 2000**, to **October 1, 2090**.

☐ Please update our request from **October 1, 2090**, to October 1, _____.

I am the permittee, or have written authorization from the permittee, to apply for an extension of time under this permit. I certify that the information I have provided in this application is true and correct to the best of my knowledge.

See attached correspondence
Signature _____ Date _____

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OWRD

3. Requires that a water management and conservation plan be developed and approved as a condition of an extension of time on a municipal permit, and that none of the undeveloped portion, as defined above, can be diverted until the water management and conservation plan is approved; and
4. Prohibits issuance of water right certificate for municipal use if extension of time is required but an order approving extension has not become final.

Extension Status and Next Steps

The City's extension request is currently under review. The permit authorizes the use of 20 cfs. In its extension request, the City indicated that the maximum rate of water diverted was 2.68 cfs as of the last authorized date of October 1, 2000, resulting in an undeveloped portion of 17.32 cfs. Your extension application proposes to extend the completion deadline date from October 1, 2000, to October 1, 2090. The Department will be moving forward with processing your extension request, with the information on record, unless updated information is received. It is important that the Department have accurate information on the record to process your extension. Incorrect or inconsistent information may delay processing of your request, or result in a challenge to your application.

Action Required

In order to assist us with processing your extension, the Department is requesting that you complete the attached form. It is important to:

- (1) Verify the maximum rate of water that was diverted and applied to beneficial use under this permit as of June 29, 2005;
- (2) Verify that the date requested to complete construction and complete application of water is correct.
- (3) Identify any additional updates to application as needed.

Please fill out and return the attached form and provide any documentation necessary.

Please respond by January 12, 2018, or the Department will use the information on record to issue a Proposed Final Order with fish persistence conditions.

RECEIVED

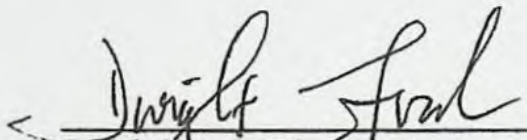
FEB 12 2018

OWRD

If you have questions or want to discuss your water rights, please contact Jeffery Pierceall at 503-986-0802.

email: Jeffrey.D.Pierceall@oregon.gov

Sincerely,



Dwight French, Administrator,
Water Right Services Division

Enclosures: Muni update form
CC: File Application S-51053

RECEIVED

FEB 12 2018

OWRD

NOTICE TO WATER WELL CONTRACTOR

The original and first copy
of this report are to be
filed with the

STATE ENGINEER, SALEM, OREGON
within 30 days from the date
of well completion.

WATER WELL REPORT TILL

STATE OF OREGON

(Please type or print)

(Do not write above this line)

State Well No. 1W/9W-33

State Permit No. _____

RECEIVED

OCT 13 1975

(1) OWNER:

WATER RESOURCES DEPT.

Name City of Bay City SALEM, OREGONAddress Bay City, Oregon

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary ☐ Driven ☐
Cable ☒ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

CASING INSTALLED:

Threaded ☐ Welded ☒
12" Diam. from plus 2 ft. to 0 ft. Gage 375
12" Diam. from 0 ft. to 26 ft. Gage _____
10" Diam. from 40 ft. to 46 1/2 ft. Gage 250

PERFORATIONS:

Perforated? ☐ Yes ☒ No.

Type of perforator used _____

Size of perforations in. by in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

(7) SCREENS:

Well screen installed? ☒ Yes ☐ NoManufacturer's Name JohnsonType low carbon steel Model No. _____Diam. 10 Slot size 100 Set from 20 ft. to 40 ft.

Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.

(8) WELL TESTS:

Drawdown is amount water level is
lowered below static levelWas a pump test made? ☒ Yes ☐ No If yes, by whom? drillerYield: 1200 gal./min. with 3 ft. drawdown after 24 hrs.

" " " "

Baller test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used cement groutWell sealed from land surface to 25 ft.Diameter of well bore to bottom of seal 16 in.Diameter of well bore below seal 12 in.Number of sacks of cement used in well seal 6 sack mix sacksNumber of sacks of bentonite used in well seal 0 sacks

Brand name of bentonite _____

Number of pounds of bentonite per 100 gallons
of water _____ lbs./100 gals.Was a drive shoe used? ☒ Yes ☐ No Plugs _____ Size: location _____ ft.Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? _____ depth of strata _____

Method of sealing strata off _____

Was well gravel packed? ☐ Yes ☒ No Size of gravel: _____

Gravel placed from _____ ft. to _____ ft.

(10) LOCATION OF WELL:

County Tillamook Driller's well number _____SW 1/4 SW 1/4 Section 33 T. 1N R. 9W W.M.

Bearing and distance from section or subdivision corner _____

(11) WATER LEVEL: Completed well.

Depth at which water was first found 17 ft.Static level 17 ft. below land surface. Date 9/23/75

Artesian pressure _____ lbs. per square inch. Date _____

(12) WELL LOG:

Diameter of well below casing _____

Depth drilled 60 ft. Depth of completed well 46 1/2 ft.

Formation: Describe color, texture, grain size and structure of materials;
and show thickness and nature of each stratum and aquifer penetrated,
with at least one entry for each change of formation. Report each change in
position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
clay gravel soil brown	0	3	12
sandy gravel gray brown	3	19	12
sand gravel water gray	19	38 1/2	17
clay brown	35 1/2	38 1/2	17
rocky clay brown	38 1/2	42	42
brown weathered rock	42	60	42
hard rock	60	60 1/2	

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Work started 9/15/75 19 Completed 9/29/75 19Date well drilling machine moved off of well 9/27/75 19

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision.
Materials used and information reported above are true to my
best knowledge and belief.

[Signed] Martin J. Junt Date 9-30, 1975

(Drilling Machine Operator)

Drilling Machine Operator's License No. 213

Water Well Contractor's Certification:

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

Name Zent Drilling, Inc.

(Person, firm or corporation)

(Type or print)

Address 7310 St. Johns Vancouver, Wash. 98665[Signed] Donald J. Junt

(Water Well Contractor)

Contractor's License No. 228 Date 9/30/75, 1975

(USE ADDITIONAL SHEETS IF NECESSARY)

SP-45456-119

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report
are to be filed with the

RECEIVED

WATER WELL REPORT

WATER RESOURCES DEPARTMENT. SEP 08 1980 STATE OF OREGON
SALEM, OREGON 97310
within 30 days from the date of well completion.
WATER RESOURCES DEPT.
SALEM, OREGON

TILL
535

State Well No. 15/9w-3300

State Permit No.

(1) OWNER:

Name City of Bay City
Address Bay City, Oregon

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary ☐ Driven ☐
Jettied ☐
Bored ☐

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED:

Threaded ☐ Welded ☒
12" Diam. from 2 ft. to 21 ft. Gage 250
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(6) PERFORATIONS:

Perforated? ☐ Yes ☒ No.

Type of perforator used

Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☒ Yes ☐ No

Manufacturer's Name Johnson
Type stainless Model No. 40
Diam. 10"PS Slot size 100 Set from 20 ft. to 40 ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Is a pump test made? ☒ Yes ☐ No If yes, by whom? driller

Yield: 1000 gal./min. with 3.5 ft. drawdown after 24 hrs.

" " " "

" " " "

Flow test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used cement

Well sealed from land surface to 20 ft.

Diameter of well bore to bottom of seal 16 in.

Diameter of well bore below seal 10 in.

Number of sacks of cement used in well seal 6 sack mix sacks

How was cement grout placed? by tremie pipe

Was a drive shoe used? ☐ Yes ☒ No Plugs Size: location ft.

Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☒ No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County Tillamook Driller's well number
SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 33 T. 1S R. 9 W.M.
Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.

Depth at which water was first found 15 ft.
Static level 15 ft. below land surface. Date 5/13/80
Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 10
Depth drilled 50 ft. Depth of completed well 50 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
clay sand brown	0	7	0
clay gravel cobbles gray	7	18	15
sand gravel water gray	18	29	15
clay gravel cobbles brown	29	36	15
sand gravel water brown	36	41	15
clay brown	41	43	15
clay gravel brown	43	50	15

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WATER RESOURCES DEPT
SALEM, OREGON

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Work started 4/23/80 10 Completed 5/9/80 19

Date well drilling machine moved off of well 5/12/80 19

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Charles R. Pelt Date 5/12/80 1980
(Drilling Machine Operator)

Drilling Machine Operator's License No. 574

Water Well Contractor's Certification:

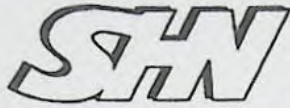
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name Zent Drilling, Inc. (Type or print)
(Person, firm or corporation)

Address 7310 St. Johns Vancouver, Wa. 98665

[Signed] Marlin Zent (Water Well Contractor)

Contractor's License No. 223 Date 5/13/80 1980



CONSULTING ENGINEERS & GEOLOGISTS, INC.

275 Market Ave. • Coos Bay, OR 97420-2228 • 541-266-9890 • FAX: 541-266-9496 • shninfo@shn-engr.com

Reference: 611012

January 8, 2018

Mr. Jeffrey Pierceall
Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 97301

Subject: Application S-51053 Extension

Dear Mr. Pierceall:

The City of Bay City is in receipt of the Water Resources Department (WRD) Extension Application Update Form (see attached) requesting that the permittee apply for an extension update for the City's water rights. We understand that the extension may be subject to the Oregon Department of Fish and Wildlife's fish persistence regulations.

Before completing the application, the City of Bay City requests additional consideration of its point of diversion (POD) and its influence on the Kilchis River. The POD for the City incorporates ground water wells (see attached well logs) under the influence of surface water. The City believes the effects of withdrawal of groundwater flow on the surface water flow in the Kilchis River will be minimal and significantly less than the undeveloped portion of the City's water right. The City's method of diversion should, therefore, be considered further before considering the effects of fish persistence rules on the POD.

Over the next 18 months, the City will be locating a new well in the Kilchis River well field. This work may include evaluating diversion rates on ground water levels. This information may be helpful to the Department as it evaluates the City's undeveloped water rights and its PODs relating to fish persistence river flows. If this or similar data will be useful, the City would appreciate the opportunity to discuss their plans and the Bay City Water Rights further.

Please contact Steve Donovan at 541-266-9890 or Brian Bettis at 503-377-41421 to set up a time to discuss this matter further.

Respectfully submitted,

SHN Engineers & Geologists

Steven K. Donovan, PE
Principal Engineer

SKD/WEW:asc

c. Brian Bettis, City of Bay City

Enclosures: Well Logs, Extension Application Update Form

Walter E. White, PLS, CFedS, CWRE
Senior Surveyor

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OWRD

Extension Application Update Form
For Municipal and Quasi-Municipal Permits issued prior to
November 2, 1998



Please review the information on this form, make any necessary updates, and provide any additional information you would like the Department to consider in reviewing your Extension Application.

Return this form to the Department by January 12, 2018, or your Extension Application will be processed based on the information currently on record.

MAIL COMPLETED FORM

Water Resources Department
Attn: Water Right Permit Extensions
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266

Application S-51053
CITY OF BAY CITY
Brian Bettis
8000 Elliot ST
Bay City, OR 97107

1. Report the maximum rate of water that was diverted and applied to beneficial use under this permit as of the later of:
 - June 29, 2005;
 - the time specified in the permit; or
 - the time specified in the last- approved extension of time.

The evidence in the record shows the maximum instantaneous rate is 2.68 cfs

The evidence in the record shows the undeveloped portion under this permit is 17.32 cfs

If this is incorrect please provide documentary evidence substantiating the maximum instantaneous rate, or duty if applicable, of water appropriated may include, but is not limited to: water meter records; dedicated electrical meter records; business records; and/or a sworn affidavit.

Report in the same units of measurement as specified in the permit.

Report only water use made under THIS permit only:

Maximum instantaneous rate as of June 29, 2005 = 2.68 cfs, or _____ gpm,
or _____ AF

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OWRD

2. Your extension application proposes to extend the completion deadline date from **October 1, 2000**, to **October 1, 2090**.

☐ Please update our request from **October 1, 2090**, to October 1, _____.

I am the permittee, or have written authorization from the permittee, to apply for an extension of time under this permit. I certify that the information I have provided in this application is true and correct to the best of my knowledge.

See attached correspondence

Signature

Date

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OWRD

3. Requires that a water management and conservation plan be developed and approved as a condition of an extension of time on a municipal permit, and that none of the undeveloped portion, as defined above, can be diverted until the water management and conservation plan is approved; and
4. Prohibits issuance of water right certificate for municipal use if extension of time is required but an order approving extension has not become final.

Extension Status and Next Steps

The City's extension request is currently under review. The permit authorizes the use of 20 cfs. In its extension request, the City indicated that the maximum rate of water diverted was 2.68 cfs as of the last authorized date of **October 1, 2000**, resulting in an undeveloped portion of 17.32 cfs. Your extension application proposes to extend the completion deadline date from **October 1, 2000**, to **October 1, 2090**. The Department will be moving forward with processing your extension request, with the information on record, unless updated information is received. It is important that the Department have accurate information on the record to process your extension. Incorrect or inconsistent information may delay processing of your request, or result in a challenge to your application.

Action Required

In order to assist us with processing your extension, the Department is requesting that you complete the attached form. It is important to:

- (1) **Verify the maximum rate of water that was diverted and applied to beneficial use under this permit as of June 29, 2005;**
- (2) **Verify that the date requested to complete construction and complete application of water is correct.**
- (3) **Identify any additional updates to application as needed.**

Please fill out and return the attached form and provide any documentation necessary.

Please respond by January 12, 2018, or the Department will use the information on record to issue a Proposed Final Order with fish persistence conditions.

RECEIVED

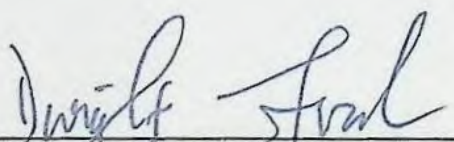
FEB 01 2018

OWRD

If you have questions or want to discuss your water rights, please contact Jeffery Pierceall at 503-986-0802.

email: Jeffrey.D.Pierceall@oregon.gov

Sincerely,


Dwight French, Administrator,
Water Right Services Division

Enclosures: Muni update form
CC: File Application S-51053

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OWRD

NOTICE TO WATER WELL CONTRACTOR

The original and first copy
of this report are to be
filed with the

STATE ENGINEER, SALEM, OREGON
within 30 days from the date
of well completion.

WATER WELL REPORT TILL

STATE OF OREGON

(Please type or print)

(Do not write above this line)

State Well No. 1N/9W-33

State Permit No.

OCT 13 1975

(1) OWNER: WATER RESOURCES DEPT.

Name City of Bay City SALEM, OREGON

Address Bay City, Oregon

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL: (4) PROPOSED USE (check):

Rotary ☐ Driven ☐ Domestic ☐ Industrial ☐ Municipal ☒
Cable ☒ Jetted ☐ Irrigation ☐ Test Well ☐ Other ☐
Dug ☐ Bored ☐

CASING INSTALLED:

Threaded ☐ Welded ☒

12" Diam. from plus 2 ft. to 0 ft. Gage 375
12" Diam. from 0 ft. to 26 ft. Gage
10" Diam. from 40 ft. to 46 1/2 ft. Gage 250

PERFORATIONS:

Perforated? ☐ Yes ☒ No.

Type of perforator used

Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☒ Yes ☐ No

Manufacturer's Name Johnson

Type low carbon steel Model No.

Diam. 10 Slot size 100 Set from 20 ft. to 40 ft.

Diam. Slot size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☒ Yes ☐ No If yes, by whom? driller

Yield: 1200 gal./min. with 3 ft. drawdown after 24 hrs.

" " " "
" " " "

Bailer test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used cement grout

Well sealed from land surface to 25 ft.

Diameter of well bore to bottom of seal 16 in.

Diameter of well bore below seal 12 in.

Number of sacks of cement used in well seal 6 sack mix sacks

Number of sacks of bentonite used in well seal 0 sacks

Brand name of bentonite

Number of pounds of bentonite per 100 gallons of water lbs./100 gals.

Was a drive shoe used? ☒ Yes ☐ No Plugs Size: location ft.Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☒ No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County Tillamook Driller's well number

SW 1/4 SW 1/4 Section 33 T. 1N R. 9W W.M.

Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.

Depth at which water was first found 17 ft.

Static level 17 ft. below land surface. Date 9/23/75

Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing

Depth drilled 60 ft. Depth of completed well 46 1/2 ft.

Formation: Describe color, texture, grain size and structure of materials;
and show thickness and nature of each stratum and aquifer penetrated,
with at least one entry for each change of formation. Report each change in
position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
clay gravel soil brown	0	3	12
sandy gravel gray brown	3	19	12
sand gravel water gray	19	35 1/2	17
clay brown	35 1/2	38 1/2	17
rocky clay brown	38 1/2	42	42
brown weathered rock	42	60	42
hard rock	60	60 1/2	

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FEB 01 2018

OWRD

Work started 9/15/75 19 Completed 9/29/75 19

Date well drilling machine moved off of well 9/27/75 19

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision.
Materials used and information reported above are true to my
best knowledge and belief.

[Signed] *Martin J. Jorgensen* Date 9-30, 1975

(Drilling Machine Operator)

Drilling Machine Operator's License No. 213

Water Well Contractor's Certification:

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

Name Zent Drilling, Inc.

(Person, firm or corporation)

(Type or print)

Address 7310 St. Johns Vancouver, Wash. 98665

[Signed] *Donald J. Zent*

(Water Well Contractor)

Contractor's License No. 228 Date 9/30/75 19

NOTICE TO WATER WELL CONTRACTOR:
The original and first copy of this report
are to be filed with the

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date
of well completion.

RECEIVED

WATER WELL REPORT

SEP 08 1980 STATE OF OREGON

WATER RESOURCES DEPT.

SALEM, OREGON

(Please type or print)

(Do not write above this line)

TILL
535

WELL 2

State Well No.

15/9w-3300

State Permit No.

(1) OWNER:

Name City of Bay City

Address Bay City, Oregon

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary ☐ Driven ☐
Jetted ☐
Bored ☐

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED:

12" Diam. from 2 ft. to 21 ft. Gage 250
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(6) PERFORATIONS:

Perforated? ☐ Yes ☒ No.

Type of perforator used

Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☒ Yes ☐ No

Manufacturer's Name Johnson
Type stainless Model No.
Diam. 10"PS Slot size 100 Set from 20 ft. to 40 ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Is a pump test made? ☒ Yes ☐ No If yes, by whom? driller
Yield: 1000 gal./min. with 3.5 ft. drawdown after 24 hrs.
" " " " " "
" " " " " "
Pump test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used cement
Well sealed from land surface to 20 ft.
Diameter of well bore to bottom of seal 16 in.
Diameter of well bore below seal 10 in.
Number of sacks of cement used in well seal 6 sack mix sacks
How was cement grout placed? up tremie pipe

Was a drive shoe used? ☐ Yes ☒ No Plugs Size: location ft.
Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☒ No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County Tillamook Driller's well number
SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 33 T. 18 R. 9 W.M.

Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.

Depth at which water was first found 15 ft.
Static level 15 ft. below land surface. Date 5/12/80
Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 10
Depth drilled 50 ft. Depth of completed well 50 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
clay sand brown	0	7	0
clay gravel cobbles gray	7	18	15
sand gravel water gray	18	29	15
clay gravel cobbles brown	29	36	15
sand gravel water brown	36	41	15
clay brown	41	43	15
clay gravel brown	43	50	15

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AUG 05 1980

WATER RESOURCES DEPT
SALEM, OREGON

RECEIVED

FEB 01 2018

OWRD

Work started 4/28/80 19 Completed 5/9/80 19
Date well drilling machine moved off of well 5/12/80 19

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Charles R. Peltz Date 5/12/1980
(Drilling Machine Operator)

Drilling Machine Operator's License No. 574

Water Well Contractor's Certification:

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

Name Zont Drilling, Inc.
(Person, firm or corporation) (Type or print)

Address 7310 St. Johns Vancouver, Wa, 98665

[Signed] Madeline Zont
(Water Well Contractor)

Contractor's License No. 226 Date 5/13/80, 19

Permit Extension Groundwater Review

Date: February 5, 2018

To: Justin Iverson, Groundwater Section Manager

From: Jeffrey D. Pierceall, Permit Extension Review

Subject: Ground Water Review for File S- 51053 / Permit S- 43858

(Date permit issued: March 2, 1979)

Reviewed By:

D. ORLOWSKI

Date Reviewed:

3/20/2018

The above referenced permit is currently being reviewed for an Extension of Time. According to the permit holder, the point of diversions under this permit are shallow well that are "under the influence of surface water". Before I can determine whether or not an Extension of Time should be granted, a Groundwater review for this file is necessary. See included letter from SHN Consulting Engineers and Geologists.

This review is to determine the influence of pumping the undeveloped portion of the permit, being 17.32 cfs, on the Kilchis River, or any other surface water sources. Presently, the City is using two wells as their points of diversion under the permit. Information in the file, including a Source Water Assessment Report (SWAR) prepared by OWWA, ODHS and ODEQ, indicate that the wells being used are TILL 222 (Well 1) and TILL 535 (Well 2). Based on the SWAR, the location of the wells is as follows:

Well 1: 45° 31' 24.875"N 23° 48' 30.339" W

Well 2: 45° 31' 23.999"N 23° 48' 29.442" W

Please review the above wells for surface water impacts that would result from the undeveloped portion of the permit.

Groundwater Application Review Summary Form

Application # G-5-51053 / PERMIT 5-43858

GW Reviewer DENNIS ORLOWSKI

Date Review Completed: 3/20/2018

Summary of GW Availability and Injury Review:

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

Summary of Potential for Substantial Interference Review:

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

Summary of Well Construction Assessment:

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

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

PIERCEALL Jeffrey D * WRD

From: Tim S Hardin <Tim.S.Hardin@state.or.us>
Sent: Thursday, January 18, 2018 10:08 AM
To: PIERCEALL Jeffrey D * WRD
Subject: RE: undeveloped Bay City

Thanks- that is what I will use then

From: PIERCEALL Jeffrey D * WRD [<mailto:Jeffrey.D.Pierceall@oregon.gov>]
Sent: Thursday, January 18, 2018 9:59 AM
To: HARDIN Tim S <Tim.S.Hardin@state.or.us>
Subject: RE: undeveloped Bay City

Tim,

The info in the file would indicate that the maximum diversion occurred on August 16, 2000, when the city operated both of its pumps to full capacity, being 431.25 gpm per pump, totaling 862.5 gpm (1.92 cfs) leaving 18.08 cfs undeveloped.

Jeffrey D. Pierceall
Extension and Adjudication Specialist
Oregon Water Resources Department
503-986-0802
Jeffrey.D.Pierceall@oregon.gov

From: Tim S Hardin [<mailto:Tim.S.Hardin@state.or.us>]
Sent: Thursday, January 18, 2018 9:41 AM
To: PIERCEALL Jeffrey D * WRD
Subject: undeveloped Bay City

I have at least two Undeveloped numbers for Bay City S-51053 on the Kilchis. Do you have 19.04 or 18.08 Undeveloped?

Tim Hardin
Instream Flow Specialist
Oregon Department of Fish and Wildlife
4034 Fairview Industrial Drive SE
Salem, OR 97302
ph. 503-947-6093
fax 503-947-6070
email: Tim.S.Hardin@state.or.us



Oregon
Kate Brown, Governor

Water Resources Department
725 Summer St NE, Suite A
Salem, OR 97301
(503) 986-0900
Fax (503) 986-0904

December 1, 2017

CITY OF BAY CITY
Brian Bettis
8000 Elliot ST
Bay City, OR 97107

Reference: Pending Application for Extension of Time
Application S-51053 (Permit S-43858)

Dear **Brian**:

You are receiving this letter because you are listed as the contact person for a pending extension on water right permit S-43858 for **CITY OF BAY CITY** that is on file with the Oregon Water Resources Department. The development deadline for this permit was **October 1, 2000**, and an extension of time request was filed with us on **August 4, 2003**. The purpose of this letter is to inform you of some of the recent legislation related to extensions on municipal permits issued prior to November 2, 1998, and the status of your extension. In addition, this letter also requests updated information from you.

Legislation Update

As you may recall, in 2013 a Court of Appeals decision changed the way the Department processed municipal extensions. Since the Court's decision, several workgroups were convened by legislators over multiple legislative sessions to try to reach a resolution. House Bill 2099 (Chapter 704, 2017 Oregon Laws) is the result of those efforts this session. The bill, effective August 15, 2017, makes the following changes to the laws related to municipal water right extensions:

1. Modifies the definition of the undeveloped portion of a municipal water right permit for the purpose of determining the amount of water that may be subject to fish persistence conditioning for the first extension of time after June 29, 2005 for municipal permits issued prior to November 2, 1998.
2. Specifies that the undeveloped portion of a municipal permit is the amount of water that has not been diverted as of the later of June 29, 2005, or the date specified in the permit or last approved extension.

3. Requires that a water management and conservation plan be developed and approved as a condition of an extension of time on a municipal permit, and that none of the undeveloped portion, as defined above, can be diverted until the water management and conservation plan is approved; and
4. Prohibits issuance of water right certificate for municipal use if extension of time is required but an order approving extension has not become final.

Extension Status and Next Steps

The City's extension request is currently under review. The permit authorizes the use of **20 cfs**. In its extension request, the City indicated that the maximum rate of water diverted was **2.68 cfs** as of the last authorized date of **October 1, 2000**, resulting in an undeveloped portion of **17.32 cfs**. Your extension application proposes to extend the completion deadline date from **October 1, 2000**, to **October 1, 2090**. **The Department will be moving forward with processing your extension request, with the information on record, unless updated information is received. It is important that the Department have accurate information on the record to process your extension. Incorrect or inconsistent information may delay processing of your request, or result in a challenge to your application.**

Action Required

In order to assist us with processing your extension, the Department is requesting that you complete the attached form. It is important to:

- (1) Verify the maximum rate of water that was diverted and applied to beneficial use under this permit as of June 29, 2005;**
- (2) Verify that the date requested to complete construction and complete application of water is correct.**
- (3) Identify any additional updates to application as needed.**

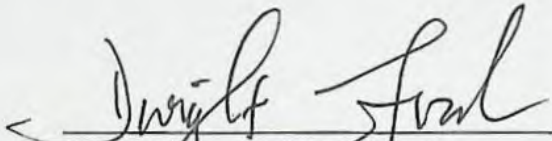
Please fill out and return the attached form and provide any documentation necessary.

Please respond by January 12, 2018, or the Department will use the information on record to issue a Proposed Final Order with fish persistence conditions.

If you have questions or want to discuss your water rights, please contact Jeffery Pierceall at 503-986-0802.

email: Jeffrey.D.Pierceall@oregon.gov

Sincerely,


Dwight French, Administrator,
Water Right Services Division

Enclosures: Muni update form

CC: File Application S-51053

**Extension Application Update Form
For Municipal and Quasi-Municipal Permits issued prior to
November 2, 1998**



Please review the information on this form, make any necessary updates, and provide any additional information you would like the Department to consider in reviewing your Extension Application.

Return this form to the Department by January 12, 2018, or your Extension Application will be processed based on the information currently on record.

MAIL COMPLETED FORM

**Water Resources Department
Attn: Water Right Permit Extensions
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266**

Application S-51053
CITY OF BAY CITY
Brian Bettis
8000 Elliot ST
Bay City, OR 97107

1. Report the maximum rate of water that was diverted and applied to beneficial use under this permit as of the later of:
 - June 29, 2005;
 - the time specified in the permit; or
 - the time specified in the last- approved extension of time.

The evidence in the record shows the maximum instantaneous rate is 2.68 cfs

The evidence in the record shows the undeveloped portion under this permit is 17.32 cfs

If this is incorrect please provide documentary evidence substantiating the maximum instantaneous rate, or duty if applicable, of water appropriated may include, but is not limited to: water meter records; dedicated electrical meter records; business records; and/or a sworn affidavit.

Report in the same units of measurement as specified in the permit.

Report only water use made under THIS permit only:

Maximum instantaneous rate as of June 29, 2005 = _____ cfs, or _____ gpm,
or _____ AF

2. Your extension application proposes to extend the completion deadline date from **October 1, 2000**, to **October 1, 2090**.

☐ Please update our request from **October 1, 2090**, to October 1, _____.

I am the permittee, or have written authorization from the permittee, to apply for an extension of time under this permit. I certify that the information I have provided in this application is true and correct to the best of my knowledge.

Signature

Date

REECE Ann L

From: REECE Ann L
Sent: Monday, December 08, 2014 2:33 PM
To: Tim S Hardin
Subject: Bay City - updated developed portion for Appl S-51053 / Permit S-43858

SentFromSession: REESE.reeceal.12/8/2014 8:16:02 AM

Tim,

I have just received information updating the Bay City's developed portion.

Prior to the last C-date (Oct 1, 2000), the city used ~~431.25~~ ^{862.5} gpm, or ~~0.96~~ ^{1.92} cfs. The undeveloped portion is ~~19.04~~ ^{18.08} cfs. Please prepare the fish persistence advice using these updated developed/undeveloped portions.

Best Regards,

Ann Reece

----- Water Right Services Division Hydroelectric Analyst / Municipal Extension Specialist Oregon Water Resources Department
725 Summer St. NE Suite A
Salem, OR 97301
503-986-0834
reeceal@ wrd.state.or.us

-----Original Message-----

From: Brooke Saltarello [<mailto:brooke.saltarello@gmail.com>]
Sent: Monday, December 08, 2014 12:29 PM
To: REECE Ann L
Subject: Bay City

Ann

The City of Bay City instantaneous flow is 431.25 gpm per pump for a total max flow in August 2000 (Aug 16th) of 862.5 gpm. On average on non-high use days the city pumps an average of 10-15 gpm from each pump.

Sent from my iPad

REECE Ann L

From: REECE Ann L <ann.l.reece@state.or.us>
Sent: Monday, October 12, 2015 2:31 PM
To: HARDIN Tim S
Cc: ann.l.reece@state.or.us
Subject: FW: Bay City - updated developed portion for Appl S-51053 / Permit S-43858

Tim,

In Dec of last year I sent you some updates on the Bay City's undeveloped portion. When I sent you the update, I failed to account for the fact that their reported use as of the C-date was from two pumps. Please note the corrections in red font below.

Ann

-----Original Message-----

From: REECE Ann L
Sent: Monday, December 08, 2014 2:33 PM
To: Tim S Hardin
Subject: Bay City - updated developed portion for Appl S-51053 / Permit S-43858

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I have just received information updating the Bay City's developed portion.

Prior to the last C-date (Oct 1, 2000), the city used ~~431.25~~ **862.5** gpm, or ~~0.96~~ **1.92** cfs. The undeveloped portion is ~~19.04~~ **18.08** cfs. Please prepare the fish persistence advice using these updated developed/undeveloped portions.

Best Regards,

Ann Reece

----- Water Right Services Division Hydroelectric Analyst / Municipal Extension Specialist
Oregon Water Resources Department
725 Summer St. NE Suite A
Salem, OR 97301
503-986-0834
reeceal@wrds.state.or.us

-----Original Message-----

From: Brooke Saltarello [mailto:brooke.saltarello@gmail.com]
Sent: Monday, December 08, 2014 12:29 PM
To: REECE Ann L
Subject: Bay City

Ann

Figure 1. Tillamook County and Sub-Areas—Historical and Forecast Populations, and Average Annual Growth Rates (AAGR)

	Historical			Forecast				
	2000	2010	AAGR (2000-2010)	2017	2035	2067	AAGR (2017-2035)	AAGR (2035-2067)
<i>Tillamook County</i>	24,262	25,250	0.4%	26,071	28,879	32,747	0.6%	0.4%
Bay City UGB	1,209	1,358	1.2%	1,417	1,727	2,174	1.1%	0.7%
Garibaldi UGB	915	783	-1.5%	795	863	967	0.5%	0.4%
Manzanita UGB	712	827	1.5%	884	1,156	1,567	1.5%	1.0%
Nehalem UGB	873	1,120	2.5%	1,240	1,566	2,010	1.3%	0.8%
Rockaway Beach UGB	1,475	1,510	0.2%	1,565	1,814	2,208	0.8%	0.6%
Tillamook UGB	5,226	5,605	0.7%	5,569	6,311	7,110	0.7%	0.4%
Wheeler UGB	391	420	0.7%	408	474	539	0.8%	0.4%
Outside UGBs	13,461	13,627	0.1%	14,192	14,968	16,171	0.3%	0.2%

Sources: U.S. Census Bureau, 2000 and 2010 Censuses; Forecast by Population Research Center (PRC).

Executive Summary

Historical

Different parts of the county experience differing growth patterns. Local trends within the UGBs and the area outside them collectively influence population growth rates for the county as a whole.

Tillamook County's total population has grown slowly since 2000, with an average annual growth rate of less than one-half percent between 2000 and 2010 (Figure 1). However, some of its sub-areas experienced more rapid population growth during the 2000s. Nehalem, Manzanita, and Bay City posted average annual growth rates greater than one percent at 2.5, 1.5, and 1.2 percent, respectively, during the 2000 to 2010 period.

Tillamook County's positive population growth in the 2000s was the direct result of net in-migration counteracting the County's natural decrease. An aging population led to an increase in deaths, but also in a smaller proportion of women in their childbearing years. This, along with more women choosing to have fewer children and having them at older ages led to fewer births in recent years. The larger number of deaths relative to births caused natural decrease (more deaths than births) in all years, from 2000 to 2015, except 2007. While net in-migration outweighed natural decrease during the early and middle years of the last decade, the gap between these two numbers shrank during the later years—bringing population growth nearly to a halt by 2010. In more recent years (2010 to 2015) net in-migration has increased, bringing population growth with it (Figure 12).

Forecast

Total population in Tillamook County and its sub-areas will likely grow at a slightly faster pace in the near-term (2017 to 2035) compared to the long-term (Figure 1). The tapering of growth rates is largely driven by an aging population—a demographic trend which is expected to contribute to natural decrease (more deaths than births). As natural decrease occurs, population growth will become increasingly reliant on net in-migration.

Even so, Tillamook County's total population is forecast to increase by more than 2,800 over the next 18 years (2017-2035) and by more than 6,600 over the entire 50 year forecast period (2017-2067). Sub-areas that showed strong population growth in the 2000s are expected to continue experiencing strong rates of population growth during the forecast period.

Ann Reece

From: Ann Reece
Sent: Wednesday, October 26, 2011 9:21 AM
To: 'brooke@4bengineering.com'; 'epbpe@4bengineering.com'
Cc: 'baycity@ci.bay-city.or.us'
Subject: Bay City Extension Application for Permit S-51053
4B Engineering
Salem, OR

Brooke,

I have received the application for an extension of time for Permit S-51053 for Bay City.

Was any work accomplished during the last extension period, being 10-1-1995 to 10-1-2000? In the original application filed on 8/4/2003 the application states that 172 new water services were installed since 1996 (Item 10). Did some of those additions occur prior between 10-1-1995 to 10-1-2000?

The extension request is for 80 years. Extensions longer than 50 years have the following additional requirement:

If you are requesting an extension of greater than 50 years, it is very important to provide all available documentation (including estimates, projections, other related information, and all associated data) supporting the position that the demand projection is consistent with the amount and type of lands and uses to be served by the permit holder. Show that permit holder's potential for future growth and expansion is feasible and consistent with the amounts and types of lands and uses proposed to be served. Information that may be addressed includes, but is not limited to: land use plan(s); current service area(s) in relation to the urban growth boundary; amounts of lands currently unserved and available for future development; and/or low-density vs. high-density areas.

According to the response on 10E, without further details we would have to assume that the Tillamook Creamery Demand (1.2 cfs -- 1/2 current demand) will be static into the year 2090, and must assume it is the only industrial/commercial future user, as no other use of industrial or commercial potential was mentioned. This would leave all remaining increases in water use (from 1.2 cfs to 22.4 cfs in 80 years) due to residential growth. Additionally, the number of quantified additional homes (4495) the City has the potential for would not accommodate a population increase of 20,747. The response states that there is more potential for homes in water districts served by Bay City, but it has not been quantified and correlated with available lands for that purpose within those districts.

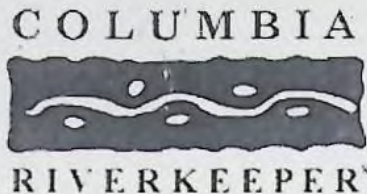
And finally, without further explanation of the nature of future water use beyond residential development and the creamery, the projected water use of 22.4 cfs (less the estimated 1.2 cfs used by the creamery) is excessive for a population of 22,842.

Feel free to call me to discuss further if that would be helpful.

Best Regards,
Ann Reece

10/26/2011

Water Rights Services Division
Oregon Water Resources Department
725 Summer St. NE Suite A
Salem, OR 97301
503-986-0827
reeceal@wrds.state.or.us



Clean Water • Healthy Rivers • Our Future

Columbia Riverkeeper
111 Third Street
Hood River, OR 97031
www.columbiariverkeeper.org

January 10, 2013

Dwight French, Administrator
Water Right Services Division
Oregon Water Resources Department
725 Summer St. NE, Ste. A
Salem, OR 97301

**RE: Request for Notification of Proposed Fisheries Resource Protection
Conditions for Municipal Permit Extensions (December 18, 2012 Public
Notice).**

Dear Mr. French:

Columbia Riverkeeper (Riverkeeper) requests notification of any proposed fisheries resource protection conditions for the fourteen municipal permit extension applications listed on the attached pages from the OWRD Public Notice issued on December 18, 2012. Riverkeeper makes this request pursuant to Or. Admin. R. 690-315-0080(2)(f) ("Upon receiving ODFW's written advice, the Department shall notify the applicant *and any persons that requested notification* of any fishery resource protection conditions that may be proposed in the proposed final order under OAR 690-315-0050) (emphasis added).

If you have any questions regarding this request, please contact Riverkeeper's Clean Water Attorney, Miles Johnson, at (541)272-0027 or miles@columbiariverkeeper.org. Thank you for your attention to this matter.

Sincerely,

Miles Johnson
Clean Water Attorney
Columbia Riverkeeper

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JAN 11 2013
WATER RESOURCES DEPT
SALEM, OREGON

Pending Municipal Permit Extension Applications Sent to Oregon Department of Fish and Wildlife for Review

Consistent with OAR 690-315-0080 the Department must notify Oregon Department of Fish and Wildlife of certain pending municipal water use extension applications. If applicable under OAR 690-315-0080 any undeveloped portion of a municipal permit must be conditioned to maintain the persistence of listed fish species in the portions of waterways affected by water use under the permit. The following applications were referred to the Oregon Department of Fish and Wildlife on December 14, 2012.

Application File Number: S-73332
Permit Number: S-53492
Applicant: Arch Cape Water Service District
Water Source: Asbury Creek, a Tributary of Pacific Ocean
Authorized Use of Water Under Permit: Municipal

Application File Number: S-6320
Permit Number: S-3945
Applicant: Astoria Water Commission
Water Source: Big Creek, tributary to Columbia River
Authorized Use of Water Under Permit: Domestic

Application File Number: S-10226
Permit Number: S-7257
Applicant: City Astoria
Water Source: Youngs River, tributary to the Columbia River
Authorized Use of Water Under Permit: Municipal

Application File Number: S-25856
Permit Number: S-27092
Applicant: City of Astoria
Water Source: Youngs River and Youngs River Reservoir, tributary of the Columbia River
Authorized Use of Water Under Permit: Municipal

Application File Number: S-51053
Permit Number: S-43858
Applicant: City of Bay City
Water Source: Kilchis River, tributary to the Tillamook Bay
Authorized Use of Water Under Permit: Municipal

Application File Number: R-25855
Permit Number: R-2568
Applicant: City of Astoria
Water Source: The Youngs River Reservoir, Youngs River, a tributary to the Columbia River
Authorized Use of Water Under Permit: Municipal

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Application File Number: R-32825

Permit Number: R-2653

Applicant: City of McMinnville

Water Source: McMinnville 4B, Walker Creek, tributary of Nestucca River and Pacific Ocean

Authorized Use of Water Under Permit: Municipal

Application File Number: S-32770

Permit Number: S-27520

Applicant: City of McMinnville

Water Source: Nestucca River and McMinnville Reservoir 4C, Walker Creek and McMinnville Reservoir 4B, tributary to the Pacific Ocean

Authorized Use of Water Under Permit: Municipal

Application File Number: S-59448

Permit Number: S-45008

Applicant: City of Nehalem

Water Source: West branch of Coal Creek, an unnamed tributary of Coal Creek, Coal Creek, all tributary to North Fork Nehalem River

Authorized Use of Water Under Permit: Municipal

Application File Number: G-7902

Permit Number: G-5070

Applicant: City of Warrenton

Water Source: The Lewis and Clark River, a tributary to the Columbia River

Authorized Use of Water Under Permit: Municipal

Application File Number: G-13479

Permit Number: G-12196

Applicant: City of Wheeler

Water Source: Wells #4, #6, #13, and #10 within the Nehalem River Basin

Authorized Use of Water Under Permit: Municipal

Application File Number: S-45629

Permit Number: S-34032

Applicant: Neahkahnie Water District

Water Source: Pirate Springs

Authorized Use of Water Under Permit: Municipal

Application File Number: S-72306

Permit Number: S-51578

Applicant: Neahkahnie Water District

Water Source: Three Springs, tributaries of Nehalem Bay

Authorized Use of Water Under Permit: Municipal

Application File Number: G-10574

Permit Number: G-9829

Applicant: City of Tillamook

Water Source: A Well

Authorized Use of Water Under Permit: Municipal

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WATER RESOURCES DEPT
SALEM, OREGON



Oregon

John A. Kitzhaber, MD, Governor

Water Resources Department
North Mall Office Building
725 Summer St. NE, Suite A
Salem, OR 97301
Phone 503-986-0900
FAX 503-986-0904
www.wrd.state.or.us

City of Bay City
Attention: David Pace
PO Box 3309
Bay City, OR 97107

REFERENCE: Pending Application for Extension of Time
Water Right Application S-51053 (Permit S-43858)

Dear Municipal Water Right Holder:

The purpose of this letter is to provide you with notification as per OAR 690-315-0080(2)(b) that the above referenced municipal permit extension application was delivered to ODFW on December 14, 2012 for the fish persistence review required under OAR 690-315-0080.

In addition, I have included a summary of the most current information we have on file for your water right extension for this permit. It is on the document labeled "Extension PFO Checklist for Water Use Permit." Please look this over and make sure the information we have on record is current and correct. Please notify me of any corrections or updates in writing by email or regular mail.

If you should have any questions concerning your extension request you may contact me at (503) 986-0898.

Sincerely,

Joan Smith
Water Rights Services Division
Oregon Water Resources Department
725 Summer St. NE Suite A
Salem, OR 97301
503-986-0898
joan.m.smith@wrd.state.or.us

cc: App. S-51053 (Permit S-43858)
Greg Beaman, Watermaster District # 1





Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

Revised 11/5/2012

Application for Extension of Time for Municipal and Quasi-Municipal Water Use Permits

Make use of this form; Application for Extension of Time for Municipal and Quasi-Municipal Water Use Permits, only if the permit uses the word "Municipal" or "Quasi-municipal" in the description of the purpose or use to which water is to be applied.

TO THE DIRECTOR OF THE OREGON WATER RESOURCES DEPARTMENT

A separate extension application must be submitted for each permit as per OAR 690-315-0070(2). This page, with an original signature by the permit holder of record, must accompany the extension of time application.

This application and a summary of review criteria and procedures that are generally applicable to this application are available at <http://www.wrd.state.or.us/OWRD/PUBS/forms.shtml>

I, City of Bay City

NAME OF PERMIT HOLDER [OAR 690-315-0070(1) and (3)(a)]

David Pace

NAME OF CONTACT

PO Box 3309

ADDRESS

Bay City

CITY

OR

STATE

97107

ZIP

503-377-4121

PHONE

baycity@ci.bay-city.or.us

E-MAIL ADDRESS

RECEIVED

the permit holder of:

Application Number S-51053

Permit Number S-43858

[OAR 690-315-0070(3)(b)]

JAN 17 2012

WATER RESOURCES DEPT
SALEM, OREGON

do hereby request that the time in which to:

- ☒ complete construction (of diversion/appropriation works and/or purchase and installation of the equipment necessary to the use of water), which time now expires on October 1, 2000, be extended to October 1, 2090,

and/or the time in which to:

- ☒ apply water to full beneficial use under the terms and conditions of the permit, which time now expires on October 1, 2000, be extended to October 1, 2090.

I am the permittee, or have written authorization from the permittee, to apply for an extension of time under this permit. I certify that the information I have provided in this application is true and correct to the best of my knowledge.

David Pace
Signature

October 19, 2011

Date

REECE Ann L

From: Brooke Saltarello <brooke.saltarello@gmail.com>
Sent: Monday, December 08, 2014 12:29 PM
To: REECE Ann L
Subject: Bay City

Ann

The City of Bay City instantaneous flow is 431.25 gpm per pump for a total max flow in August 2000 (Aug 16th) of 862.5 gpm. On average on non-high use days the city pumps an average of 10-15 gpm from each pump.

Sent from my iPad

12-8-2014
ANNE R.
email

Extension of Time Application Questions

- 1) Extension fee: **Already submitted with prior extension.**
- 2) For Quasi-Municipal water use holders, provide evidence of the actions taken to begin actual construction on the project if required under applicable statute: **A portion of the water right has been in use since 1980 when construction of supply lines, wells, and reservoirs took place.**
- 3) For Municipal water use permits issued on or after June 29, 2005, evidence of actions taken to begin actual construction on the project: **N/A- Permit issued March 2, 1979**
- 4) Provide evidence of actions taken to develop the water right permit within the permitted time period and/or the time period of the previous extension.

Dates	All Work and actions accomplished before permit was issued	Cost
	NONE	
Dates	All Work and actions accomplished during permitted time period	Cost
1980	Phase I construction: Install 48,000' of supply line, 2 wells, pumps, controls, 1-500,000 gallon reservoir, 1-200,000 gallon reservoir	\$1,100,000.00
1984	Phase II construction: Install 44,000' of distribution piping, booster pumps, controls, 1-100,000 gallon reservoir	\$750,000.00
1985	Installation of water meters in Bay City	\$5,000.00
Dates	All Work and actions accomplished after permitted time period	Cost
1998	Installation of water meters in Bay City	\$5,000.00
2009	500,000 gallon reservoir	\$650,000.00
Total Cost to Date		\$2,510,000.00

5) Provide evidence of compliance with conditions contained in the original permit, and any previous extension(s), or the reason the condition was not satisfied. **No conditions were included in permit or prior extensions.**

6) Maximum instantaneous rate used to date = 2.68 cfs.

43.125 gpm
or 0.96 cfs on
Aug 16, 2000
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WATER RESOURCES DEPT
SALEM, OREGON

7) The population for the City of Bay City was 1,295 in 2010 (PSU website). The City of Bay City also provides water to approximately 800 additional people, in four additional water districts (Latimer, Juno, Northwood, and Cole Creek).

The City of Bay City also provides water to four large commercial customers; Pacific Seafood, Tillamook Smoker, Tillamook County Creamery Association, and McRae and Sons. Tillamook County Creamery Association uses an average of 11,000,000 gallons per month or 452 gallons per minute. This results in an

overall usage of 38%-45% of the total Bay City system water. The other three major commercial customers use an average of around 60 gallons per minute.

8) The peak water demand for the current population: **For the Year 2011 the peak water demand was 1,362,106 MGD (945.91 GPM) (2.11 CFS).**

9) The main event that caused the City of Bay City to not be able to perfect the right was the size and scope of the permit. The amount of funds required is such a large amount it will take time to perfect the right.

10-A) Inventory of Water Rights

Ground Water

<i>Application/ Permit Number</i>	<i>Certificate Number</i>	<i>Source</i>	<i>Use</i>	<i>Priority Date</i>	<i>Authorized Amount of Water</i>	<i>Max Amount of Beneficial Water Use</i>	<i>Use Limitations</i>
NONE							

Surface Water

<i>Application/ Permit Number</i>	<i>Certificate Number</i>	<i>Source</i>	<i>Use</i>	<i>Priority Date</i>	<i>Authorized Amount of Water</i>	<i>Max Amount of Beneficial Water Use</i>	<i>Use Limitations</i>
Application: S-26691 Permit: S-20895	21585	Patterson Creek	M	12/6/1951	1 CFS (449 GPM)	Not in use at this time	None

Pending Applications

<i>Application/ Permit Number</i>	<i>Certificate Number</i>	<i>Source</i>	<i>Use</i>	<i>Priority Date</i>	<i>Authorized Amount of Water</i>	<i>Max Amount of Beneficial Water Use</i>	<i>Use Limitations</i>
NONE							

10- B) The City of Bay City has an agreements to supply water to the City of Tillamook and Wilson River Water District in the event of emergencies.

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WATER RESOURCES DEPT
SALEM, OREGON

10-C) The City of Bay City Projected Population in (estimated population includes all water districts supplied water from Bay City) (2% per year):

Year	Estimated Population
2010	2,095 + Commercial demand
2015	2,313 + Commercial demand
2020	2,554 + Commercial demand
2025	2,820 + Commercial demand
2030	3,113 + Commercial demand
2035	3,437 + Commercial demand
2040	3,795 + Commercial demand
2045	4,198 + Commercial demand
2050	4,626 + Commercial demand
2055	5,107 + Commercial demand
2060	5,639 + Commercial demand
2065	6,226 + Commercial demand
2070	6,874 + Commercial demand
2075	7,589 + Commercial demand
2080	8,379 + Commercial demand
2085	9,251 + Commercial demand
2090	9,510 + Commercial demand

10-D) Future Peak Water Demands for the City of Bay City

Year	Estimated Peak Demand
2015	1,013 GPM (2.26 CFS)
2020	1,166 GPM (2.60 CFS)
2025	1,341 GPM (2.98 CFS)
2030	1,617 GPM (3.61 CFS)
2035	1,862 GPM (4.16 CFS)
2040	2,142 GPM (4.78 CFS)
2045	2,838 GPM (6.33 CFS)
2050	3,266 GPM (7.29 CFS)
2055	3,758 GPM (8.39 CFS)
2060	4,326 GPM (9.66 CFS)
2065	4,978 GPM (11.11 CFS)
2070	5,729 GPM (12.79 CFS)
2075	6,593 GPM (14.72 CFS)
2080	7,588 GPM (16.94 CFS)
2085	8,733 GPM (19.49 CFS)
2090	10,050 GPM (22.43 CFS)

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JAN 17 2012

WATER RESOURCES DEPT
SALEM, OREGON

10-E) Presently Bay City and adjoining water districts have the open property to add an additional 2,084 homes, with an estimated population increase of approximately 7,295 people. Presently there are numerous areas of open property for development:

Property Acreage	Projected Amount of Houses	Projected Population Increase	Location
61.27 acres	530 houses	1,855	Doughty Road
12.8 acres	112 houses	392	Juno Hill
22.07 acres	193 houses	676	Latimer
6.23 acres	54 houses	189	Hubert Road
137.22 acres	1,195 houses	4,183	Alderbrook Road

Another population increase is in the area of the Willowbrook Reservoir. Residential the wells in the area have continued to diminish in capacity and water quality and home owners are joining the city water system. Presently there are an additional 40 homes in the area with an approximate population of 120 people that is estimated to be eventually connecting to city water.

A large piece of property on Coast Highway (US 101) is available for commercial development. This property sits adjacent from the Tillamook Creamery Association. The available land for development is 74.29 acres. According to Tillamook County Land Use Department, a property must be to be at least 6,000 square feet. Using a 6,000 square foot per property estimate would accommodate up to 540 commercial demands on this property. This number is a too high for planning as most commercial developments will require a footprint larger than 6,000 square feet. For this reason, Bay City estimates when the property is fully developed it will add another 200 commercial demands.

The current commercial usage the Bay City system services, use about 60 gallons per minute. Bay City estimates the new commercial development will not require an extremely high water usage, but until the land is developed the type of business and water usage is unable to be determined. For extension purposes Bay City estimates water usage when the commercial development is completed to be around 30 gallons per minute per connection or a total 6,000 gallons per minute. Full development of the commercial area is to be determined but Tillamook city limits does not presently have many large, developable commercial lots so this area is expected to be fully developed within 20 years.

10-F) The City of Bay City is expected to make full beneficial use of the permit by the Year 2090.

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11) The estimate for work to be completed is:

Approximate Date Range	Work and Actions to be Accomplished	Estimated Cost
2014-2020	New reservoir at south end of system	\$400,000.00
2020-2030	Additional well and pump at Kilchis Well Site	\$250,000.00
2014-2050	Additional waterlines and booster pumps	\$1,000,000.00
2050-2090	Upsizing of lines for higher demand	\$350,000.00
	Total Cost to Date	\$2,000,000.00

12) Justify the time required to complete the project and/or apply the water to full beneficial use. **The time and money required to complete and perfect the right will take time with the present economy. Property is not being developed to provide SDC funds.**

13) Any other information: **None**

14) For Municipal water use permits issued before November 2, 1998, for the first extension issued after June 29, 2005, provide a copy of any agreements regarding the use of the undeveloped portion of the permit between the permit holder and a federal/state agency that includes conditions or required actions that maintain the persistence of listed fish species.

N/A-No other extensions exist for this permit

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JAN 7

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WATER RESOURCES DEPT
SALEM, OREGON



Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

Application for Extension of Time for Municipal and Quasi-Municipal Water Use Permits

Superseded
1-17-2012

Make use of this form, Application for Extension of Time for Municipal and Quasi-Municipal Water Use Permits, only if the permit uses the word "Municipal" or "Quasi-municipal" in the description of the purpose or use to which water is to be applied.

TO THE DIRECTOR OF THE OREGON WATER RESOURCES DEPARTMENT

A separate extension application must be submitted for each permit as per OAR 690-315-0070(2). This page, with an original signature by the permit holder of record, must accompany the extension of time application.

This application and a summary of review criteria and procedures that are generally applicable to this application are available at <http://www.wrd.state.or.us/OWRD/PUBS/forms.shtml>

I, City of Bay City

NAME OF PERMIT HOLDER [OAR 690-315-0070(1) and (3)(a)]

David Pace

NAME OF CONTACT

PO Box 3309
ADDRESS

Bay City
CITY

OR
STATE

97107
ZIP

503-377-4121
PHONE

baycity@ci.bay-city.or.us
E-MAIL ADDRESS

the permit holder of: Application Number S-51053

Permit Number S-43858
[OAR 690-315-0070(3)(b)]

do hereby request that the time in which to:

- ☒ complete construction (of diversion/appropriation works and/or purchase and installation of the equipment necessary to the use of water), which time now expires on October 1, 2000, be extended to October 1, 2090,

and/or the time in which to:

- ☒ apply water to full beneficial use under the terms and conditions of the permit, which time now expires on October 1, 2000, be extended to October 1, 2090.

I am the permittee, or have written authorization from the permittee, to apply for an extension of time under this permit. I certify that the information I have provided in this application is true and correct to the best of my knowledge.

David Pace
Signature

October 19, 2011
Date

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OCT 21 2011

WATER RESOURCES DEPT
SALEM, OREGON

1-21-2011
Ext Ap.
Update

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OCT 21 2011

WATER RESOURCES DEPT
SALEM, OREGON

Extension of Time Application Questions

1) Extension fee: **Already submitted with prior extension.**

2) For Quasi-Municipal water use holders, provide evidence of the actions taken to begin actual construction on the project if required under applicable statute: **A portion of the water right has been in use since 1980 when construction of supply lines, wells, and reservoirs took place.**

3) For Municipal water use permits issued on or after June 29, 2005, actions taken to begin actual construction on the project: **N/A- Per March 2, 1979**

4) Provide evidence of actions taken to develop the water right permit permitted time period and/or the time period of the previous extension

172 new services
installed between
1996-2003
(see Aug 4, 2003
updates)

Dates	All Work and actions accomplished before permit was issued	Cost
	NONE	
Dates	All Work and actions accomplished during permitted time period	Cost
1980	Phase I construction: Install 48,000' of supply line, 2 wells, pumps, controls, 1-500,000 gallon reservoir, 1-200,000 gallon reservoir	\$1,100,000.00
1984	Phase II construction: Install 44,000' of distribution piping, booster pumps, controls, 1-100,000 gallon reservoir	\$750,000.00
1985	Installation of water meters in Bay City	\$5,000.00
Dates	All Work and actions accomplished after permitted time period	Cost
2009	500,000 gallon reservoir	\$650,000.00
Total Cost to Date		\$2,505,000.00

5) Provide evidence of compliance with conditions contained in the original permit, and any previous extension(s), or the reason the condition was not satisfied. **No conditions were included in permit or prior extensions.**

6) Maximum instantaneous rate used to date = **2.68 cfs.**

7) The population for the City of Bay City was 1,295 in 2010 (PSU website). The City of Bay City also provides water to approximately 800 additional people, in four additional water districts (Latimer, Juno, Northwood, and Cole Creek). The City of Bay City also provides water to the Tillamook County Creamery Association, which uses 50%-52% of the Bay City system water.

8) The peak water demand for the current population: **For the Year 2011 the peak water demand was 1,330,000 MGD (923.61 GPM) (2.058 CFS).**

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SALEM, OREGON

Extension of Time Application Questions

- 1) Extension fee: **Already submitted with prior extension.**
- 2) For Quasi-Municipal water use holders, provide evidence of the actions taken to begin actual construction on the project if required under applicable statute: **A portion of the water right has been in use since 1980 when construction of supply lines, wells, and reservoirs took place.**
- 3) For Municipal water use permits issued on or after June 29, 2005, evidence of actions taken to begin actual construction on the project: **N/A- Permit issued March 2, 1979**
- 4) Provide evidence of actions taken to develop the water right permit within the permitted time period and/or the time period of the previous extension.

Dates	All Work and actions accomplished before permit was issued	Cost
	NONE	
Dates	All Work and actions accomplished during permitted time period	Cost
1980	Phase I construction: Install 48,000' of supply line, 2 wells, pumps, controls, 1-500,000 gallon reservoir, 1-200,000 gallon reservoir	\$1,100,000.00
1984	Phase II construction: Install 44,000' of distribution piping, booster pumps, controls, 1-100,000 gallon reservoir	\$750,000.00
1985	Installation of water meters in Bay City	\$5,000.00
Dates	All Work and actions accomplished after permitted time period	Cost
2009	500,000 gallon reservoir	\$650,000.00
Total Cost to Date		\$2,505,000.00

5) Provide evidence of compliance with conditions contained in the original permit, and any previous extension(s), or the reason the condition was not satisfied. **No conditions were included in permit or prior extensions.**

6) Maximum instantaneous rate used to date = **2.68 cfs.**

7) The population for the City of Bay City was 1,295 in 2010 (PSU website). The City of Bay City also provides water to approximately 800 additional people, in four additional water districts (Latimer, Juno, Northwood, and Cole Creek). The City of Bay City also provides water to the Tillamook County Creamery Association, which uses 50%-52% of the Bay City system water.

8) The peak water demand for the current population: **For the Year 2011 the peak water demand was 1,330,000 MGD (923.61 GPM) (2.058 CFS).**

9) The main event that caused the City of Bay City to not be able to perfect the right was the size and scope of the permit. The amount of funds required is such a large amount it will take time to perfect the right.

10-A) Inventory of Water Rights

Ground Water

<i>Application/ Permit Number</i>	<i>Certificate Number</i>	<i>Source</i>	<i>Use</i>	<i>Priority Date</i>	<i>Authorized Amount of Water</i>	<i>Max Amount of Beneficial Water Use</i>	<i>Use Limitations</i>
NONE							

Surface Water

<i>Application/ Permit Number</i>	<i>Certificate Number</i>	<i>Source</i>	<i>Use</i>	<i>Priority Date</i>	<i>Authorized Amount of Water</i>	<i>Max Amount of Beneficial Water Use</i>	<i>Use Limitations</i>
<i>Application: S-26691 Permit: S-20895</i>	21585	Patterson Creek	M	12/6/1951	1 CFS (449 GPM)	Not in use at this time	None

Pending Applications

<i>Application/ Permit Number</i>	<i>Certificate Number</i>	<i>Source</i>	<i>Use</i>	<i>Priority Date</i>	<i>Authorized Amount of Water</i>	<i>Max Amount of Beneficial Water Use</i>	<i>Use Limitations</i>
NONE							

10- B) The City of Bay City has an agreements to supply water to the City of Tillamook and Wilson River Water District in the event of emergencies.

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10-C) The City of Bay City Projected Population in (estimated population includes all water districts supplied water from Bay City) (2.85% per year as projected in the October, 2009 Master Plan):

Year	Estimated Population
2010	2,095 + Tillamook Creamery Demand
2015	2,411 + Tillamook Creamery Demand
2020	2,775 + Tillamook Creamery Demand
2025	3,194 + Tillamook Creamery Demand
2030	3,676 + Tillamook Creamery Demand
2035	4,231 + Tillamook Creamery Demand
2040	4,869 + Tillamook Creamery Demand
2045	6,449 + Tillamook Creamery Demand
2050	7,422 + Tillamook Creamery Demand
2055	8,542 + Tillamook Creamery Demand
2060	9,831 + Tillamook Creamery Demand
2065	11,314 + Tillamook Creamery Demand
2070	13,021 + Tillamook Creamery Demand
2075	14,985 + Tillamook Creamery Demand
2080	17,246 + Tillamook Creamery Demand
2085	19,848 + Tillamook Creamery Demand
2090	22,842 + Tillamook Creamery Demand

10-D) Future Peak Water Demands for the City of Bay City

Year	Estimated Peak Demand
2015	1,061 GPM (2.36 CFS)
2020	1,221 GPM (2.72 CFS)
2025	1,405 GPM (3.14 CFS)
2030	1,617 GPM (3.61 CFS)
2035	1,862 GPM (4.16 CFS)
2040	2,142 GPM (4.78 CFS)
2045	2,838 GPM (6.33 CFS)
2050	3,266 GPM (7.29 CFS)
2055	3,758 GPM (8.39 CFS)
2060	4,326 GPM (9.66 CFS)
2065	4,978 GPM (11.11 CFS)
2070	5,729 GPM (12.79 CFS)
2075	6,593 GPM (14.72 CFS)
2080	7,588 GPM (16.94 CFS)
2085	8,733 GPM (19.49 CFS)
2090	10,050 GPM (22.43 CFS)

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SALEM, OREGON

10-E) Presently Bay City has the property to add an additional 4,495 homes to the water system with more potential of homes in the water districts Bay City serves. There is potential for growth throughout Bay City and the adjoining water districts. When build-out is complete the city should be able to perfect the right.

10-F) The City of Bay City is expected to make full beneficial use of the permit by the Year 2090.

11) The estimate for work to be completed is:

Approximate Date Range	Work and Actions to be Accomplished	Estimated Cost
2014-2020	New reservoir at south end of system	\$400,000.00
2020-2030	Additional well and pump at Kilchis Well Site	\$250,000.00
2014-2050	Additional waterlines and booster pumps	\$1,000,000.00
2050-2090	Upsizing of lines for higher demand	\$350,000.00
Total Cost to Date		\$2,000,000.00

12) Justify the time required to complete the project and/or apply the water to full beneficial use. **The time and money required to complete and perfect the right will take time with the present economy. Property is not being developed to provide SDC funds.**

13) Any other information: **None**

14) For Municipal water use permits issued before November 2, 1998, for the first extension issued after June 29, 2005, provide a copy of any agreements regarding the use of the undeveloped portion of the permit between the permit holder and a federal/state agency that includes conditions or required actions that maintain the persistence of listed fish species.

N/A-No other extensions exist for this permit

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OCT 21 2009

**WATER RESOURCES DEPT
SALEM, OREGON**



Oregon

John A. Kitzhaber, MD, Governor

Water Resources Department

North Mall Office Building
725 Summer St. NE, Suite A
Salem, OR 97301
Phone 503-986-0900
FAX 503-986-0904

June 17, 2011

Bay City
Attn: Shaena Peterson, Mayor
PO Box 3309
Bay City, OR 97107

RE: Pending Application for Extension of Time *for*
Permit S-43858 (Application S-51053)

Dear Permit Holder:

The above referenced Application for Extension of Time has been pending since 2003. Due to missing or inadequate information in the extension application, the Department is unable to move forward with the processing of this extension application. In January 2005, the City was given a list of insufficient details in its extension application by certified mail. To date the Department has not received a response.

To keep the pending permit extension active, the Department is requiring an updated Application for Extension of Time by **September 16, 2011** be submitted on the most current form titled "APPLICATION FOR WATER RIGHT EXTENSION OF TIME FOR QUASI-MUNICIPAL & MUNICIPAL WATER USE PERMIT" available on the Department's website at <http://www.wrd.state.or.us/OWRD/PUBS/forms.shtml#other>.

Copies of the January 2005 certified letter sent to the City, the pending application received by the Department on August 3, 2003, and the water right permit are enclosed for reference.

Failure to submit an updated extension application on the current form by September 16, 2011 will result in the Department returning the incomplete extension application and refunding the \$100 extension application fee paid in 2003. The City will then have the option of submitting a Claim of Beneficial use with a completion date of October 1, 2000, or applying for an extension of time under the new fee schedule. Further failure to respond to either of these two options will result in the Department turning this permit over to the compliance program where cancellation proceedings may begin.

Please call me at 503-986-0827 if you have any questions you would like to discuss.

Sincerely,

Ann Reece
Water Rights Services Division

Cc: Application File S-51053
Greg Beaman, Watermaster District 1



**Municipal Permit Extensions -
Remaining Undeveloped Portion of Water**

Date: January 24, 2006
To: Application # S-51053 (Permit # S-43858)
From: Lisa Jaramillo, Permit Extension of Time Review ~~AS of 8-16-2000~~
Subject: Current remaining undeveloped portion of water under municipal use permit

Today, I spoke with the City of Bay City to determine whether or not the quantity of water beneficially used under their municipal use permit has increased from the quantity identified in their pending extension of time application (received on 8-4-2003.)

The permit holder indicated that the quantity of water used for beneficial purposes under this municipal use permit:

☒ **HAS INCREASED** from the quantity identified in their pending extension of time application; ** See attached e-mail*
(For permits where beneficial water use has increased, the Department has requested the City to submit a written update identifying the "current" quantity of beneficial water use under this permit in order to maintain official documentation from the City in the file record.)

- OR -

☐ **HAS NOT INCREASED** from the quantity identified in their pending extension of time application.

NOTE: The following information is provided to document "quantity" information obtained during my telephone conversation with the permit holder.

Application # S-51053 / Permit # S-43858

Permitted quantity of water: 20.0 cfs

Maximum quantity of water developed: ~~2.674 cfs~~ 0.96 AS of 8-16-2000

Date information obtained by ^{e-mail} ~~telephone~~ from the City: 1-24-2006 email 12-6-2014

Remaining undeveloped portion: ~~17.326 cfs~~ 19.04 cfs

AK

X-Modus-BlackList: bgriffin@ci.bay-city.or.us=OK
From: "Beverly Griffin" <bgriffin@ci.bay-city.or.us>
To: JARAMILLO Lisa J <Lisa.J.Jaramillo@state.or.us>
Subject: Permit # S43858
Date: Tue, 24 Jan 2006 09:28:47 -0800
X-Security: MIME headers sanitized on kettle.wrd.state.or.us
See <http://www.impsec.org/email-tools/sanitizer-intro.html>
for details. \$Revision: 1.139 \$Date: 2003-09-07 10:14:23-07
X-Mailer: Microsoft Outlook Express 6.00.2800.1506
X-Spam-Checker-Version: SpamAssassin 2.63 (2004-01-11) on
kettle.wrd.state.or.us
X-Spam-Status: No, hits=1.3 required=5.0 tests=FORGED_OUTLOOK_TAGS,HTML_50_60,
HTML_MESSAGE autolearn=no version=2.63
X-Spam-Level: *

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JAN 24 2006
WATER RESOURCES DEPT
SALEM, OREGON

Dear Lisa,
Here is the information we spoke about on the phone.

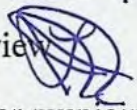
During the reporting period of October 1, 2004 to September 30, 2005 under permit# S43858 the peak instantaneous amount of water pulled was 2.674 cfs.

Let me know if I can be of any other assistance.

Beverly Griffin
Water/wastewater technician
City of Bay City
503-377-4174
P.O. Box 3307
Bay City, Oregon 97107
bgriffin@ci.bay-city.or.us

Jan 24, 06
email
Lisa J.

**Municipal Permit Extensions -
Remaining Undeveloped Portion of Water**

Date: January 13, 2006
To: Application # S-51053 (Permit # S-43858)
From: Lisa Jaramillo, Permit Extension of Time Review 
Subject: Remaining undeveloped portion of water under municipal use permit

For purposes of determining impacts related to streamflow as a result of use of the undeveloped portion of the permit [OAR 690-315-0080(2)], the following information identifies the remaining undeveloped portion of water under the municipal water use permit described below:

Name of City: City of Bay City
Application # S-51053 / Permit # S-43858

Permitted quantity of water: 20.0 cfs

Maximum quantity of water developed: Unknown - Certified letter sent 1-24-2005. No response yet!
• Date this information provided by City: 8-4-2003 (Ext.)

Remaining undeveloped portion: Unknown



Oregon

Theodore R. Kulongoski, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1271
503-986-0900
FAX 503-986-0904

CERTIFIED MAIL
Return Receipt Requested

January 24, 2005

City of Bay City
Attn: John Law
PO Box 3309
Bay City, OR 97107

REFERENCE: Pending Application for Extension of Time
Water Right Application #S-51053 (Permit #S-43858)

Dear Municipal Water Right Permit Holder:

The Department is currently evaluating your request for an extension of time on the above referenced municipal water use permit. We have determined that your extension application does not provide sufficient detail necessary to fully evaluate your request. The information and materials that need clarification are listed below and must be submitted before evaluation can continue.

NOTE: *If you make reference to other documents, reports and/or plans, you must provide copies with your responses and make specific references to the pages, tables and/or charts.*

Copies of your pending application received August 4, 2003, and your original permit are enclosed for reference.

Question #3 - OAR 690-315-0070(3)(d): Describe and supply documentation of actions taken to develop the water right permit:

- Your response to Question #3 of the Application for Extension of Time indicates that in the year 1992 the City of Bay City completed a Water Master Plan. This response does not accurately address actions taken within the most recent dates of extension under this permit, being from October 1, 1995, to October 1, 2000.
Please provide evidence that includes dates of work accomplished and actions taken that occurred toward completion of construction and/or beneficial use of water during the time period of the most recent dates of extension under this permit, from October 1, 1995, to October 1, 2000.

Information provided under this section should include both physical work and other types of water right development activities such as: water management planning; conservation planning; development of a water master plan for the Oregon Health Division; planning of a diversion system; demand forecasting; flow or water quality monitoring; source evaluation; entry into intergovernmental agreements for water delivery; property acquisition; engagement in governmental permitting or project financing; procurement of planning, design or construction services; surveying; and any physical work performed toward completion of the system and development of the right (e.g., pumps; pipes; well construction; treatment plant/facilities; transmission systems; distribution systems; and/or intake structures).

Question #5 - OAR 690-315-0070(3)(f): Document evidence of the maximum instantaneous rate of water diverted to the date of this application, if any, for beneficial Quasi-Municipal or Municipal purposes.

- Your response to Question #5 of the Application for Extension of Time refers to the monthly totals of water used under this permit. **Please identify the maximum instantaneous rate of water put to beneficial municipal use out of the 20.0 cubic feet per second (cfs) allowed under Permit #S-43858.**

Identify the maximum *instantaneous* rate of water diverted by the date of this application for the beneficial use authorized under the permit and state the maximum rate of water use allowed under your permit. The maximum instantaneous rate should be indicated by using the unit specified in the water use permit, such as cubic feet per second, gallons per minute, or acre-feet. **Do not provide daily, monthly or annual water use totals.**

Documentary evidence substantiating the maximum instantaneous rate of water diversion may include, but is not limited to: meter records; business records; and/or a sworn affidavit. **The maximum instantaneous rate should be based upon at least a continuous 4-hour period of beneficial water use.**

NOTE: Attachment "A" may assist you in compiling the maximum instantaneous rates beneficially used under Permit #S-43858 and any other permits or certificates held by the City of Bay City.

Question #7 - OAR 690-315-0070(3)(h): Provide a description of the financial expenditures made toward completion of the water development under this permit.

- Your response to Question #7 of the Application for Extension of Time refers to Bay City's financial cost document submitted as an enclosure to your application. It is unclear which items are associated with Permit #S-43858. Additionally, there is no record of expenditures after the year 1980.

Please provide a list that describes all major development components accomplished from the date this permit was issued up to the time you prepared this extension application. Include dates the work was accomplished, the cost of each development component listed, and the total cost of all work described. Actions under this section consist of both physical work and other water right development activities such as: water management planning; conservation planning; development of a water master plan for the Oregon Health Division; planning of a diversion system; demand forecasting; flow or water quality monitoring; source evaluation; entry into intergovernmental agreements for water delivery; property acquisition; engagement in governmental permitting or project financing; procurement of planning, design or construction services; surveying; and any physical work performed toward completion of the system and development of the right (e.g., pumps; pipes; well construction; treatment plant/facilities; transmission systems; distribution systems; and/or intake structures).

Question #8 - OAR 690-315-0070(3)(i): Provide an estimate of the cost necessary to complete the water development.

- Your response to Question #8 of the Application for Extension of Time indicates that the estimated cost to fully complete the water development will be \$2,000,000. It is unclear which future components or actions are needed to complete the water development project. Additionally, please provide the approximate time schedule of these improvements.

Provide your best estimate of the total remaining financial investment necessary to complete construction of the system and/or apply water to full beneficial use. **Provide a list that briefly describes the major future components or actions needed, the approximate time frames, and estimated costs anticipated to complete the water development within the parameters of this permit.** Actions under this section consist of both physical work and other water right development activities such as: water management planning; conservation planning; development of a water master plan for the Oregon Health Division; planning of a diversion system; demand forecasting; flow or water quality monitoring; source evaluation; entry into intergovernmental agreements for

water delivery; property acquisition; engagement in governmental permitting or project financing; procurement of planning, design or construction services; surveying; and any physical work performed toward completion of the system and development of the right (e.g., pumps; pipes; well construction; treatment plant/facilities; transmission systems; distribution systems; and/or intake structures).

NOTE: *You may wish to formulate your response to Question #8 in conjunction with your response to Question #11.*

Question #10 - OAR 690-315-0070(3)(k):

A. *Provide an estimated demand projection and a description of the methodology(ies) used for the subject water right permit, considering the other water rights and contracts held by the municipal or quasi-municipal water use permit holder, and a date by which the water development is anticipated to be completed and water put to full beneficial use.*

Prepare a qualitative analysis indicating the date by which you anticipate to fully develop the water right permit being extended (i.e., the date requested in your extension application). In developing your estimated demand projections for the permit being extended, you should describe the following:

- 1) Current Peak Water Demands
Describe the current demands for water. Indicate annual average, peak season, and peak day water demand figures.
- 2) Projected Population
Identify the projected population growth rate and the associated future demands for water. Describe the methodology used to create the population and water demand projections, such as historical growth rates or any factors affecting growth trends.
- 3) Potential Growth
Describe the potential for growth of the service area (such as the annexation of lands or new industrial and/or commercial ventures locating within the service area) and describe how those projects are expected to affect future water demands.
- 4) Inventory of Water Rights Held
List all water rights held. The Department's website (www.wrd.state.or.us) may be a helpful source for compiling this information.

This information is not clearly stated in your extension application. See enclosed Attachment "A" to assist you in providing a list of all water rights held by the City of Bay City.

Indicate which water rights are used to meet current water demands. Additionally, describe the manner in which the subject permit, other water rights and/or any water supply contracts you may hold are utilized to meet these present water needs. Identify any water rights not currently utilized, or used only in a limited capacity, and explain the reason(s) why. Describe any factors affecting use of the water rights, such as: system redundancy; emergency back-up water supply; climate patterns resulting in seasonal unavailability or high turbidity issues; reliability or quality of existing water supplies; and/or agreements to supply water to other entities.

Describe how the subject permit, other water rights and/or any water supply contracts you may hold are planned or expected to be used to meet anticipated future water needs.

4) Other Justification

Provide any other information that justifies your current and future need for the water under the subject permit.

Question #11 - OAR 690-315-0070(3)(l): Please provide a summary of the plan and schedule to complete construction and/or perfect the water right.

- Your response to Question #11 of the Application for Extension of Time does not contain a list of the planning, work and/or actions that must occur to fully develop and perfect Permit #S-43858. Please include an approximate time schedule within which you anticipate these future projects will be accomplished.

Considering your demand projections in Item #10-A, describe major future projects, if any, that must be completed in order to fully develop and perfect the subject permit. Provide a list of the planning, work and/or actions that must occur and identify the projected time schedule within which you anticipate they will be accomplished. You may wish to review Capital Improvement Plans (CIP) or other system infrastructure improvement plans to help formulate your response.

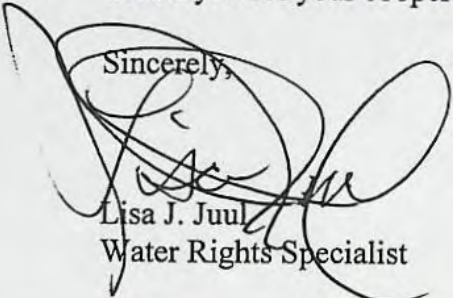
NOTE: You may wish to formulate your response to Question #11 in conjunction with your response to Question #8.

Please submit this information to the Department by **April 25, 2005**. If you cannot provide the requested information by this deadline, you must notify the Department in writing, explaining the reason(s) why, and indicate a date certain by which you anticipate the requested information can be supplied.

If the Department has not received the requested information by **April 25, 2005**, and has not received written notification explaining why the deadline for submittal cannot be met, the Department **will** return your "Application for Extension of Time for Quasi-Municipal and Municipal Water Use Permits" as incomplete and refund all fees paid toward the extension of time request.

If you have any questions concerning your extension request or completion of the required materials, please contact Jonathan Unger at (503) 986-0802, or Lisa Juul at (503) 986-0808. Thank you for your cooperation and attention to this matter.

Sincerely,



Lisa J. Juul
Water Rights Specialist

Enclosures: Copy of pending Application for Extension of Time, received August 4, 2003
 Copy of Permit #S-43858
 Sample copy of "Attachment A"

cc: Appl #S-51053 (Permit #S-43858)
 Greg Beaman, Watermaster District #01

Application # S-51053 / Permit # S-43858

Permit Holder: City of Bay City

Use interactive mapping to check: Stream Basin

Greg Beaman #01

Add this information to the Checklist for PFO

**Division 315 - Municipal/Quasi-Municipal
Extension of Time - Completeness Checklist
OAR 690-315-0070(3)**

Place a (✓)
in the box
if the item
is satisfied

*NOTE: According to correspondence dated August 29, 1978, it has been determined that an appropriation of water from the Kilchis River may be made by developing shallow wells within the immediate gravel areas adjacent to the Kilchis River, therefore, the type of development being proposed would be considered a surface water appropriation.

X 1. [OAR 690-315-0070(3)]
The appropriate extension of time fee (as specified in ORS 536.050).
\$100 - applications received by September 30, 2003
\$250 - applications received on or after October 1, 2003
DUPLICATE FEES? _____

X * [OAR 690-315-0070(3)(a)] The name and mailing address of the water right permit holder(s);

X * [OAR 690-315-0070(3)(b)] The application number and the permit number for which an extension is requested;

X 2. [OAR 690-315-0070(3)(c)] For quasi-municipal water use permit holders, evidence of the actions taken to begin actual construction on the project, as defined in 690-315-0020(3)(d), if required under the applicable statute;

NOTE: ORS 537.230(1) [1997 edition] only **exempts surface water** municipal use permits from the "A" Date requirement. If you are reviewing a **ground water** municipal use permit, they must provide evidence that the "A" Date has been met.

- "Actual construction" means physical work performed towards completion of the water system, which demonstrates both the present good faith of the water right permit holder and the water right permit holder's intention to complete the project with reasonable diligence;
- "Actual construction" does not include planning a diversion system, formulating a business plan, securing financing, letting contracts, purchasing but not installing equipment, or surveying.

Note:  Began work on _____, Began work within 5 years, see Application for Extension of Time received on October 31, 1980

NEED 3. [OAR 690-315-0070(3)(d)] - This is extension request #5
Evidence of actions taken to develop the right within the original permitted time period
OR, during the most recent extension period from 10/1/95 to 10/1/2000
Master plan completed in 1992. Not within last extension period.

X 4. [OAR 690-315-0070(3)(e)] Evidence of compliance with conditions contained in the permit and any previous extension(s) or the reason the condition was not satisfied;
No time sensitive conditions.

NEED 5. [OAR 690-315-0070(3)(f)] Evidence of the maximum INSTANTANEOUS rate of diversion, if any, made to date;
Do not provide instantaneous rates.

X 6. [OAR 690-315-0070(3)(g)] An estimate of the population served and a description of the methodology(ies) used to make the estimate; - Total of 2186 including four other water districts

NEED 7. [OAR 690-315-0070(3)(h)] A description of financial expenditures made toward completion of the water development; you have provided an itemized list it is unclear which items are associated provide total - post 1980

Place a (✓)
in the box
if the item
is satisfied

**Division 315 - Municipal/Quasi-Municipal
Extension of Time - Completeness Checklist
OAR 690-315-0070(3)**

*NOTE: According to correspondence dated August 29, 1978, it has been determined that an appropriation of water from the Kilchis River may be made by developing shallow wells within the immediate gravel areas adjacent to the Kilchis River, therefore, the type of development being proposed would be considered a surface water appropriation.

NEED

8. [OAR 690-315-0070(3)(i)] An estimate of the cost to complete the water development;
= \$2,000,000 - no description of components

X

9. [OAR 690-315-0070(3)(j)] A summary of any events that delayed completion of the water development or application of water to full beneficial use, including other governmental requirements, if any, relating to the project that have significantly delayed completion of construction or perfection of the right;

10. [OAR 690-315-0070(3)(k)] An estimated demand projection and a description of the methodology(ies) used for the subject water right permit, considering the other water rights held by the municipal or quasi-municipal water use permit holder, and a date by which the water development is anticipated to be completed and water put to full beneficial use. Extension requests for greater than 50 years must include documentation that the demand projection is consistent with the amount and types of lands and uses proposed to be served by the permit holder.
Current Peak Water Demands - NO
Projected Population - they have room for 4,495 new homes - 172 new services installed since last application.
Total of 4,323 new connections associated population??
Potential Growth - OK - where is info?
Inventory of Water Rights Held - NO

NEED

11. [OAR 690-315-0070(3)(l)] A summary of the applicant's plan and schedule to complete construction and/or perfect the water right; they say 2 million. Need to provide list of future improvements.

X

12. [OAR 690-315-0070(3)(m)] Justification for the time requested to complete the project and/or apply the water to full beneficial use;

X

13. [OAR 690-315-0070(3)(n)] Any other information the applicant determines is relevant to evaluate the application in accordance with applicable statutes and rules;

X

* [OAR 690-315-0070(3)(o)] Any other information required by the Department that is necessary to evaluate the application in accordance with applicable statutory requirements.

X

* Signature(s) of the water right permit holder(s).

S:\groups\wr\extensions\Municipal\muni_ext_completeness checklist\51053 City of Bay City.wpd

Name of Reviewer: Jonathan Unger Date: 12/28/04

work done 95-2000

Inst. rate

\$ spent

\$ needed to finish

need new app.



Oregon

Theodore R. Kulongoski, Governor

CERTIFIED MAIL
Return Receipt Requested

Water Resources Department

Commerce Building
158 12th Street NE
Salem, OR 97301-4172
503-378-3739
FAX 503-378-8130

August 28, 2003

City of Bay City
Attn: John Law
PO Box 3309
Bay City, OR 97107

REFERENCE: Application #S-51053 (Permit #S-43858)

Dear Mr. Law:

The Department is currently in the process of evaluating your request for an extension on the above referenced permit. However, based upon continued review, the Department has determined that additional information is necessary in order to evaluate your extension request. The following information must be received:

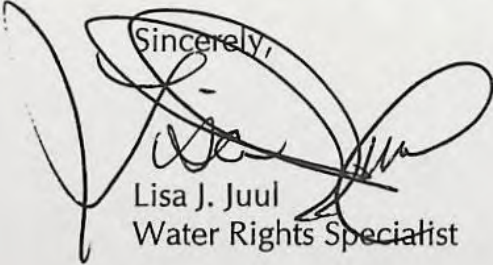
- ▶ **Please complete and return the enclosed Water Supply Summary and Water Demand Summary Tables.** This additional information is necessary for the Department to properly evaluate your extension request.

Please submit this information by **Monday, September 29, 2003**. Failure to submit the requested information by this deadline **may** result in the proposed rejection of your extension request.

If you need to request additional time to submit the information requested above, a written request must be received in the Salem office of the Department by the deadline above. The Department will evaluate timely requests and determine whether or not the request may be granted.

If you should have any questions concerning your extension request or the required materials listed above, you may contact me at (503) 378-8455, extension 272.

Sincerely,


Lisa J. Juul
Water Rights Specialist

Enclosure: Water Supply/Demand Summary Tables

cc: Appl #S-51053 (Permit #S-43858)
Greg Beaman, Watermaster District #01

*Note: Spoke w/
John Law & he
needs through
Oct. 31, 2003 to
submit requested
info. OK'd.
D. Juul
9-26-03.*

MEMORANDUM

Date: August 15, 2003
To: Appl #S-51053 (Permit #S-43858)
From: Lisa Juul, Permit Extension Review 
Subject: Amended dates requested for extension

Today, I spoke with Mr. John Law with the City of Bay City. The extension of time application submitted for Permit #S-43858 indicated that a 50-year extension of time was being requested.... from October 1, 2003 to October 1, 2053.

The last authorized "C" Date for Permit #S-43858, however, was October 1, 2000. Mr. Law verified that the intent was to request a 50-year extension.

Per Mr. Law, therefore, the extension application should be requesting:

to extend the dates for complete construction of the water system and for complete application of water to full beneficial use under Permit #S-43858 from October 1, 2000, to October 1, 2050.

March 18, 2004

Dwight French
Water Rights Section
Oregon Water Resources Department
725 Summer Street NE Suit "A"
Salem, OR 97301

5-51053

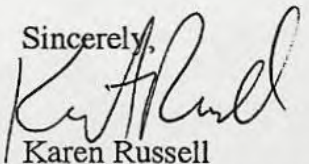
Re: Extension Requests for
A 41825, P 31365, Harbor Rural Water District, Chetco River
A 58045, P 43837, Harbor Rural Water District, Chetco River
A 5942, P 3778, South Fork Water Board, Clackamas River
A 11007, P 9982, South Fork Water Board, Clackamas River
A 28676, P 22581 South Fork Water Board, Clackamas River
A 47144, P 35297, Oak Lodge Water District, Clackamas River
A 43365, P 32410, Lake Oswego, Clackamas River
A 50819, P 37839, Lake Oswego, Clackamas River
A 55550, P 43246, Lake Oswego, Clackamas River
A 51053, P 43858, Bay City, Kilches River.
A 65051, P 48451, City of Sandy, Salmon River.
A 48146, P 35819, City of Adair Village, Willamette River

Dear Mr. French,

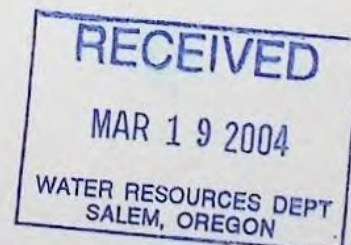
WaterWatch is very concerned about the pending extension requests for the above referenced permits. We enclose a check for \$120 for a copy of any proposed final order and final order issued relating extensions of each one of these permits.

Please don't hesitate to call if you have any questions about this request.

Sincerely,



Karen Russell
Senior Staff Attorney



STATE OF OREGON
WATER RESOURCES DEPARTMENT

RECEIPT # 66097

725 Summer St. N.E. Ste. A
SALEM, OR 97301-4172
(503) 986-0900 / (503) 986-0904 (fax)

INVOICE # _____

RECEIVED FROM: Karen A. Russell
BY: _____

APPLICATION	<u>See below</u>
PERMIT	
TRANSFER	

CASH: ☐ CHECK: # 4920 OTHER: (IDENTIFY) ☐

TOTAL REC'D \$ 120.00

1083 TREASURY 4170 WRD MISC CASH ACCT

0407 COPIES		<u>5</u>	<u>5</u>
OTHER: (IDENTIFY)	<u>41825</u>	<u>43365</u>	
	<u>58045</u>	<u>50819</u>	
0243 I/S Lease	<u>5942</u>	<u>55550</u>	
0244 Muni Water Mgr	<u>11007</u>	<u>51053</u>	
	<u>28678</u>	<u>65051</u>	
	<u>47144</u>	<u>48146</u>	

4270 WR

MISCELLANEOUS

0407 COPY & TAPE FEES \$ _____

0410 RESEARCH FEES \$ _____

0408 MISC REVENUE: (IDENTIFY) PFO \$ 120.00

TC162 DEPOSIT LIAB. (IDENTIFY) \$ _____

0240 EXTENSION OF TIME \$ _____

WATER RIGHTS:

0201 SURFACE WATER	EXAM FEE	0202	RECORD FEE
0203 GROUND WATER	\$ _____	0204	\$ _____
0205 TRANSFER	\$ _____		

WELL CONSTRUCTION

0218 WELL DRILL CONSTRUCTOR	EXAM FEE	0219	LICENSE FEE
LANDOWNER'S PERMIT	\$ _____	0220	\$ _____

OTHER (IDENTIFY) _____

0536 TREASURY 0437 WELL CONST. START FEE

0211 WELL CONST START FEE	\$ _____	CARD # _____
0210 MONITORING WELLS	\$ _____	CARD # _____

OTHER (IDENTIFY) _____

0607 TREASURY 0467 HYDRO ACTIVITY LIC NUMBER

0233 POWER LICENSE FEE (FW/WRD)	\$ _____
0231 HYDRO LICENSE FEE (FW/WRD)	\$ _____
HYDRO APPLICATION	\$ _____

TREASURY OTHER / RDX

FUND _____ TITLE _____

OBJ. CODE _____ VENDOR # _____

DESCRIPTION _____ \$ _____

RECEIPT: 66097

DATED: 3/19/04 BY: Linda Doeffer

Distribution - White Copy - Customer, Yellow Copy - Fiscal, Blue Copy - File, Buff Copy - Fiscal

Application # S-51053 / Permit # S-43858

Route Slip ... Extension of Time

per Division 315 Rules... (Extensions received on July 1, 2001 or after)

♦ WRIG...

Money Received: \$100.00 on 8-4-03

♦ Lisa Juul...

Extension Completeness:

Cert letter sent 8-28-03
☒ If NOT complete, send certified letter requesting add'l information.)

If Extension Appl complete and \$100 fee submitted, route to...

♦ Jonnine Fuss...

Initial 30-day Public Notice: 8/19/03

Update Extension Database: _____

Files back to filing cabinets: _____

At the close of the Initial 30-day Comment Period...

♦ Lisa Juul...

Pull files for Ext PFO review: _____

Extension PFO completed: _____

Once Extension PFO signed by Dwight French...

♦ Jonnine Fuss...

Prepare Ext PFO for mailing to applicant: _____

Mail to those who commented and paid copy fee: _____

Include Ext PFO on weekly Public Notice: _____

Within 60 days after the close of the 45-day PFO Protest Period...

(PFO Protest Period ends 45 days from PFO sign date)...

♦ Lisa Juul...

Issue an Extension FO: _____

Municipal or Quasi-Municipal EXTENSION REVIEW CHECKLIST for PFO... per Div. 315 Rules

Application #: S-51053 / Permit #: S-43858

Permittee's Name: City of Bay City ; Attn: John Law

Permittee's Mailing Address: PO Box 3309, Bay City, OR 97107

POD Location: Township 1-N Range 9-W Section 32 $\frac{1}{4}$ $\frac{1}{4}$ SW

Stream Basin: _____ County: Tillamook

✓ 1. Has the applicant completely filled out the updated Extension Application form? Yes / No \$100-Yes
***If "No" has certified request for the new extension form been sent? Yes / No

2. Shortcomings of Extension Request..... based upon review of updated extension form Yes / No Cert letter Sent 8-28-03
*****(NOTE:** Any missing Extension information that is needed before an Extension PFO can be completed???)

• Address other rights.

✓ 3. Date Permit was issued: 3-2-79

✓ 4. Source: Kilchis River,

✓ 5. Use: Municipal

✓ 6. "Q": 20.0 cfs

✓ 7. Original "B" Date: 10-1-80 Original

✓ 8. Conditions of Permit: Original "A" Date:

• A, B & C Dates

• Address other rights

Certs # 21584

21585

✓ 9. Extension request received: 8-4-03 Request Number (...1st 2nd, 3rd): 5th

✓ 10. Last Authorized "B" Date: 10-1-2000 Last Authorized "C" Date: 10-1-2000

✓ 11. Proposed "B" Date: 10-1-2050 Proposed C Date: 10-1-2050

Municipal or Quasi-Municipal EXTENSION REVIEW CHECKLIST for PFO... per Div. 315 Rules

Application #: S-51053 / Permit #: S-43858

Permittee's Name: City of Bay City ; Attn: John Law

Permittee's Mailing Address: PO Box 3309, Bay City, OR 97107

POD Location: Township 1-N Range 9-W Section 32 $\frac{1}{4}$ $\frac{1}{4}$ SW

Stream Basin: _____ County: Tillamook

✓ 1. Has the applicant completely filled out the *updated* Extension Application form? Yes / No \$100-Yes
***If "No" has certified request for the new extension form been sent? Yes / No

2. Shortcomings of Extension Request..... based upon review of updated extension form Yes / No Cert letter Sent 8-28-03
*****(NOTE:** Any missing Extension information that is needed before an Extension PFO can be completed???)

• Address
other rights.

✓ 3. Date Permit was issued: 3-2-79 (priority = 8-10-73)

✓ 4. Source: Kilchis River, trib of Tillamook Bay

✓ 5. Use: Municipal

✓ 6. "Q": 20.0 cfs

✓ 7. Original "B" Date: 10-1-80 Original "C" Date: 10-1-81

✓ 8. Conditions of Permit: Original "A" Date: 3-2-80

• A, B & C Dates

✓ 9. Extension request received: 8-4-03 Request Number (...1st 2nd, 3rd): 5th

✓ 10. Last Authorized "B" Date: 10-1-2000 Last Authorized "C" Date: 10-1-2000

✓ 11. Proposed "B" Date: 10-1-2050 Proposed C Date: 10-1-2050

___12. Amount Invested to date: _____ Estimated Total Cost: _____

(***Estimated Remaining Cost: _____)

___13. The water project development made to date has been accomplished in accordance with the terms and conditions contained in the permit. Yes / No ***If "No"..... What permit terms and/or conditions have not been met?

___14. Work on the water development project completed to date includes: _____

___15. The work remaining to be completed consists of: _____

___16. Progress in perfecting the permit is being held up by: _____

___17. Has the applicant pursued perfection of the right in good faith and with reasonable diligence? Yes / No

___18. Determination of the market and the present demand for water or power to be supplied: _____

___19. Based on the written record, can the Department make a finding of "Good Cause" to approve the extension request?

Yes... "Good Cause" can be found. → Approval of Extension Request

No ... "Good Cause" cannot be found. → Denial of Extension Request

___20. Conditions to be included on Extension PFO: _____

Extension "PFO" Dates

Checklist Last Revised: 1 / 31 / 2003

Mailing / Issuance Date: _____

CC: WATER WATCH
213 SW ASH ST, SUITE 208
PORTLAND OR 97204
(Paid Fee on 3/18/2004)

Reviewer's Name: _____

Protest Deadline Date: _____

Date: _____

File 51053

APPLICATION FOR EXTENSION OF TIME

for Quasi-Municipal and Municipal Water Use Permits

TO THE WATER RESOURCES DIRECTOR OF OREGON

I, City of Bay City John Law
NAME OF ENTITY NAME OF CONTACT

P.O. Box 3309 Bay City OR 97107 503-377-4121
ADDRESS CITY STATE ZIP PHONE

owner of record, or duly authorized agent, of Application No. 51053, Permit No. 43858
do hereby request that the time in which to:

- ☐ complete the construction of diversion/appropriation works and/or purchase and installation of the equipment necessary to the use of water, which time now expires on October 1, 2003, be extended to October 1, 2053
2050

and/or the time in which to:

- ☐ accomplish beneficial use of water to the full extent under the terms of the permit, which time now expires on October 1, 2003, be extended to October 1, 2053
2000 2050

NOTE:

Permit extensions for Quasi-Municipal and Municipal permits are evaluated under OAR Chapter 690, Division 315. Except under limited circumstances, upon issuance of an order approving an extension, you will be required to submit within 3 years a Water Management and Conservation Plan (WMCP) under OAR Chapter 690, Division 86. Diversion of water beyond the maximum rate currently diverted under the permit shall only be authorized upon approval of your WMCP. The rules may be viewed at: "www.wrd.state.or.us/law/oar1999.shtml"

Attached are instructions to assist you in completing the information on the permit extension application form. Oregon Water Law and Administrative Rules require this information to be considered by the Water Resources Department when reviewing a Quasi-Municipal or Municipal water use permit extension application. For each permit, a separate extension application must be submitted. All items must be addressed or the application may be returned. Please feel free to provide the Department with any additional information or evidence that will aid us in making our decision. Please use additional sheets of paper as needed to fully respond to the questions.

After reviewing the application form and the instruction sheet, if you have any questions, you may contact the Department at (503) 378-3739, and request assistance from the Water Rights Division, permit extensions personnel.

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AUG 04 2003

WATER RESOURCES DEPT.
SALEM, OREGON

In order for the Department to evaluate your extension of time request for a Quasi-Municipal or Municipal water use permit, please provide the following:

1. The appropriate fee, as specified under ORS 536.050.
2. For Quasi-Municipal water use permits, evidence of the actions taken to begin actual construction on the project, if required under the applicable statute.
3. Evidence of actions taken to develop the right within the permitted time period and/or time period of the previous extension.
4. Evidence of compliance with conditions contained in the permit and any previous extension(s). If any of the conditions have not been satisfied, please explain the reason(s) why.
5. Evidence of the maximum rate of water diverted to date, if any, for Quasi-Municipal or Municipal purposes.
6. An estimate of the population served under this permit and a description of the methodology(ies) used to make this estimate.
7. A description of the financial expenditures made toward completion of the water development.
8. An estimate of the cost necessary to complete the water development.
9. A summary of any events that delayed completion of the water development or application of water to full beneficial use, including other governmental requirements, if any, relating to the project that have significantly delayed completion of construction or perfection of the right.
10. An estimated demand projection and a description of the methodology(ies) used for the subject water right permit, considering the other water rights and contracts held by the municipal or quasi-municipal water use permit holder, and a date by which the water development is anticipated to be completed and water put to full beneficial use.

Extension requests for greater than 50 years must include documentation that the demand projection is consistent with the amount and types of lands and uses proposed to be served by the permit holder.

11. A summary of the plan and schedule to complete construction and/or perfect the water right.
12. Justification for the time requested to complete the project and/or apply the water to full beneficial use.
13. Any other information you wish the Department to consider while evaluating the extension of time application.

I am the permittee, or have authorization from the permittee, to apply for an extension of time under this permit. I certify that the information I have provided in this application is true and correct to the best of my knowledge.

John Law
Signature

July 30, 2003
Date

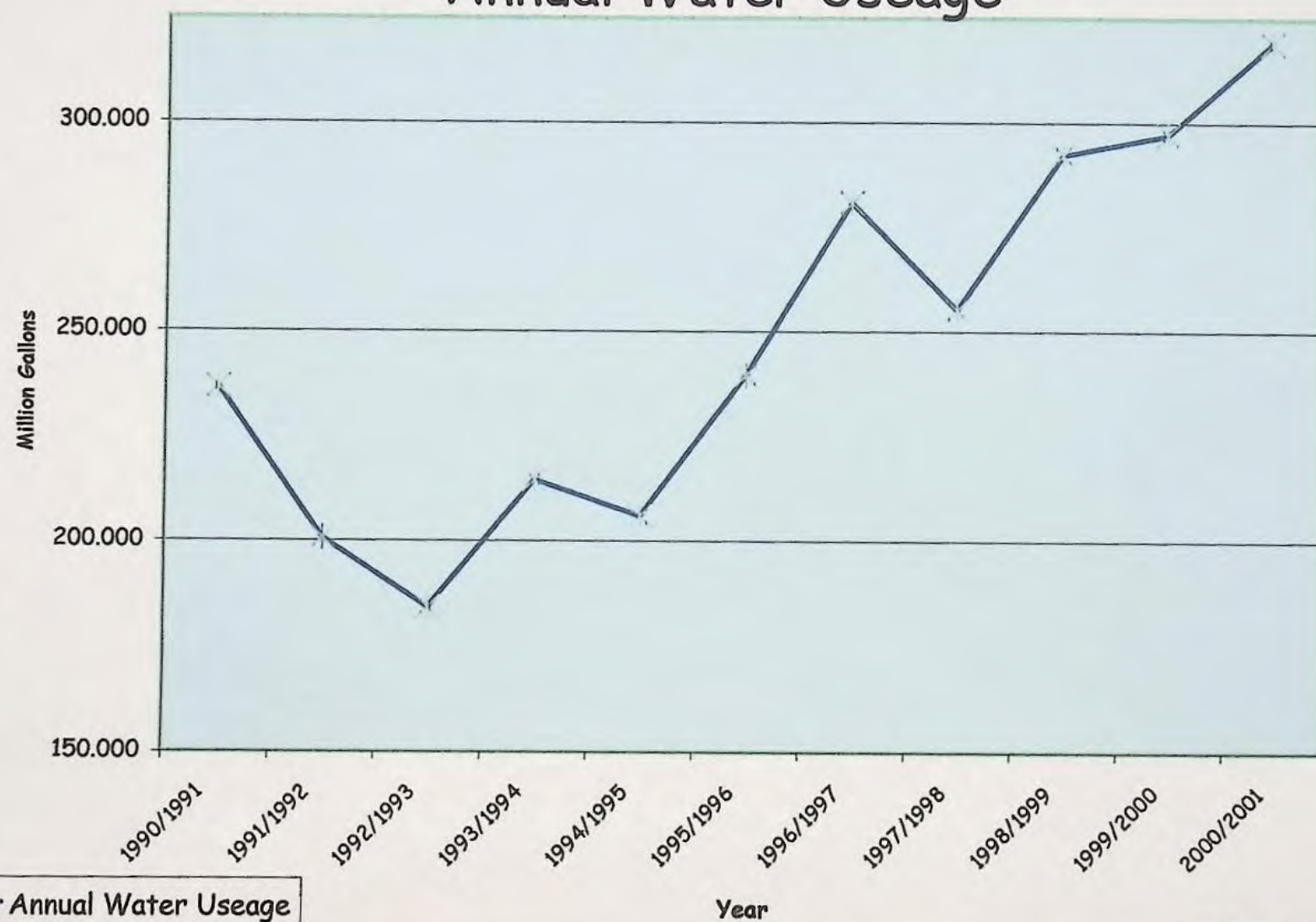
MAIL COMPLETED APPLICATION and STATUTORY FEE (under ORS 536.050) TO:

WATER RIGHT PERMIT EXTENSIONS
WATER RESOURCES DEPARTMENT
158 - 12th STREET NE
SALEM, OREGON 97301-4172

revised: December 12, 2002

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SALEM, OREGON

Annual Water Useage



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AUG 04 2003

WATER RESOURCES DEPT.
SALEM, OREGON



1996

Oregon Water Resources Department
October 1996 through September 1997
Annual Water Use - Monthly Quantities Form

USER-ID 1050

1997



Facility	Kilchis R.W.D.				
POD-ID	11178				
October - 1996	19.45 MG				
November - 1996	16.35 MG				
December - 1996	21.80 MG				
January - 1997	19.34 MG				
February - 1997	19.34 MG				
March - 1997	22.48 MG				
April - 1997	21.79 MG				
May - 1997	23.94 MG				
June - 1997	23.41 MG				
July - 1997	26.22 MG				
August - 1997	27.47 MG				
September - 1997	21.10 MG				
TOTAL *	262.69 MG				

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AUG 04 2003

WATER RESOURCES DEPT.
SALEM, OREGON

* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: metered-wellhead. If use is irrigation, total number acres irrigated NA

I certify this information is true and accurate to the best of my knowledge.

John Law
Signature

Public Works Director
Title

Kilchis Regional Water Dist.
Reporting Entity

1/7/98
Date

Please complete and mail to: Water Resources Department; Water Use Reporting Program; 158 12th Street NE; Salem, OR 97310-0210



1997

Oregon Water Resources Department
October 1997 through September 1998
Annual Water Use - Monthly Quantities Form

USER-ID 1050

1998



Facility  POD-ID 	<i>Kilchis R.W.D.</i> <i>11178</i>				
October - 1997	<i>20.250 MG</i>				
November - 1997	<i>18.844 MG</i>				
December - 1997	<i>20.044 MG</i>				
January - 1998	<i>19.698 MG</i>				
February - 1998	<i>17.983 MG</i>				
March - 1998	<i>20.296 MG</i>				
April - 1998	<i>19.902 MG</i>				
May - 1998	<i>20.572 MG</i>				
June - 1998	<i>20.410 MG</i>				
July - 1998	<i>24.335 MG</i>				
August - 1998	<i>27.735 MG</i>				
September - 1998	<i>25.012 MG</i>				
TOTAL *	<i>255.081 MG</i>				

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WATER RESOURCES DEPT.
SALEM, OREGON

* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: *metered well-head*. If use is irrigation, total number acres irrigated _____

I certify this information is true and accurate to the best of my knowledge.

Signature

Public Works Director Kilchis R.W.D.

Title

Reporting Entity

12/29/98

Date

John D. Law

Name - Please Print

Please complete and mail to: Water Resources Department; Water Use Reporting Program;
158 12th Street NE; Salem, OR 97310-0210



1998

Oregon Water Resources Department
October 1998 through September 1999
Annual Water Use - Monthly Quantities Form

USER-ID 1050

1999



Facility 	Kilchis Regional Water District			
POD-ID 	11178			
October - 1998	23.045 MGD			
November - 1998	21.155 MGD			
December - 1998	25.138 MGD			
January - 1999	26.355 MGD			
February - 1999	22.598 MGD			
March - 1999	24.790 MGD			
April - 1999	23.844 MGD			
May - 1999	24.566 MGD			
June - 1999	23.240 MGD			
July - 1999	25.275 MGD			RECEIVED AUG 04 2003 WATER RESOURCES DEPT. SALEM, OREGON
August - 1999	25.275 MGD			
September - 1999	26.039 MGD			
TOTAL *	291.320 MGD			

* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: Flow Meters. If use is irrigation, total number acres irrigated _____

I certify this information is true and accurate to the best of my knowledge.

Signature

Public Works Director - Kilchis Regional Water Dist. 12/99

Title

Reporting Entity

Date

John Law

Name - Please Print

Please complete and mail to: Water Resources Department; Water Use Reporting Program;
158 12th Street NE; Salem, OR 97310-0210



1999

Oregon Water Resources Department
October 1999 through September 2000
Annual Water Use - Monthly Quantities Form

USER-ID 1050

2000



Facility POD-ID	Kilchis Regional Water District 11178				
October - 1999	24.994				
November - 1999	24.924				
December - 1999	23.386				
January - 2000	23.923				
February - 2000	22.284				
March - 2000	24.034				
April - 2000	22.689				
May - 2000	23.222				
June - 2000	23.865				
July - 2000	28.445				RECEIVED
August - 2000	29.305				AUG 04 2003
September - 2000	26.075				WATER RESOURCES DEPT. SALEM, OREGON
TOTAL *	297.146	MG			

* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: Sensus Flow Meters. If use is irrigation, total number acres irrigated NA

I certify this information is true and accurate to the best of my knowledge.

John Law
Signature

Public Works Director
Title

Kilchis Regional Water Dist.
Reporting Entity

11/1/00
Date

John Law
Name - Please Print

Please complete and mail to: Water Resources Department; Water Use Reporting Program;
158 12th Street NE; Salem, OR 97310-0210



2000

USER-ID 1050
Oregon Water Resources Department
October 1999 through September 2000
Annual Water Use - Monthly Quantities Form

2001



Facility POD-ID	Dill Bar 11178				
October - 2000	24.779				
November - 2000	27.712				
December - 2000	28.365				
January - 2001	29.246				
February - 2001	21.527				
March - 2001	25.834				
April - 2001	26.723				
May - 2001	30.059				
June - 2001	23.851				
July - 2001	24.333				
August - 2001	31.254				
September - 2001	25.594				
TOTAL *	319.277	MG			

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* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: Sensus Flow Meters. If use is irrigation, total number acres irrigated NA

I certify this information is true and accurate to the best of my knowledge.

Signature

Public Works Director
Title

Kilchis Regional Water Dist.
Reporting Entity

11/29/01
Date

John Law
Name - Please Print

Please complete and mail to: Water Resources Department; Water Use Reporting Program;
158 12th Street NE; Salem, OR 97310-0210

2001

Oregon Water Resources Department
October 2001 through September 2002
Annual Water Use - Monthly Quantities Form

USER-ID 1050

2002



Facility	Dill Bar				
POD-ID	11178				
October - 2001	23.090				
November - 2001	23.358				
December - 2001	23.576				
January - 2002	24.089				
February - 2002	22.590				
March - 2002	23.871				
April - 2002	21.330				
May - 2002	21.644				
June - 2002	20.883				
July - 2002	24.454				
August - 2002	25.789				
September - 2002	19.805				
TOTAL *	274.479	MG			

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* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: Sensus Flow Meters. If use is irrigation, total number acres irrigated NA

I certify this information is true and accurate to the best of my knowledge.

John Law
Signature

Public Works Director
Title

Kilchis Regional Water Dist.
Reporting Entity

10/15/02
Date

John Law
Name - Please Print

Please complete and mail to: Water Resources Department; Water Use Reporting Program;
158 12th Street NE; Salem, OR 97310-0210



City of Bay City

PO Box 3309
Bay City, OR 97107
Phone (503) 377-2288
Fax (503) 377-4044

State of Oregon
Water Resources Department
158 12th ST NE
Salem, Oregon 97301

July 30, 2003

ATTN: Lisa Juul

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RE: Municipal Extension of Time, Water Use Permit.

Listed below is the information requested for the City of Bay City's extension of time for our Municipal Water Use Permit.

1. Check is enclosed.
2. NA - Municipal Water Use Permit.
3. City of Bay City Water Master Plan completed in 1992. The City is currently developing a Well Head Protection Plan for the Kilchis Well site. The City of Bay City and City of Tillamook are in the engineering stage of an intergovernmental agreement to supply each other with potable water in emergency situations. Copies of the Bay City Water Master Plan and Source Water Assessment are included.
4. The City of Bay City has not been assigned any conditions for permit extensions.
5. Enclosed are copies of the last five years of Water Use Report Forms sent to the Oregon Water Resources Department.
6. The current population of Bay City is 1160 according to the 2000 U.S. Census figures and the other four water districts that we provide water for have approximately 1026 for a total of 2186 persons. The Tillamook County Creamery Association, a large industrial complex and water district that we supply with water uses 56% of our systems total water supply.
7. Copies of Bay City's financial cost for the water system are enclosed.
8. The Bay City Water System has been supplying water since 1982. As growth continues in our water system area new supply lines, wells, pumps and reservoirs will be constructed to meet demand. The City of Bay City charges a water SDC on all new building permits and these funds are put into a water reserve account for the future expansion of the Bay City Water System.

An estimated cost to fully complete our water development would be \$2,000,000.00.

9. The application of water to full beneficial use will take several years to accomplish based on the size and scope of our permit. The City of Bay City and surrounding area served by our water system is the only large area of land left in Tillamook County that can be developed for residential use. Bay City has an agreement with five other water districts to supply them with water and this collective group is called the Kilchis Regional Water District. The City of Bay City also has a mutual aid agreement with the Wilson River Water District to supply water in case of emergencies.

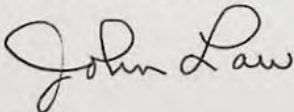
10. As stated in the 1996 extension application the City of Bay City had room for 4,495 new homes. The City has had 172 new water services installed since that time. There has also been continued growth in the surrounding area served by Bay City. We also provide water for two fire protection districts. The City does not feel it would be prudent to finalize the permit at this time and leave itself and our five contracted water districts without an adequate supply of water for the future. The City of Bay City is requesting an extension of fifty years to fully construct the water system and utilize our permit to full beneficial use.

11. A schedule to complete construction depends entirely on the rate of population growth in Bay City and the surrounding service area. Bay City is currently in the engineering stage of construction for a new 500,000 gallon reservoir at the North end of the system. As our reserve funding increases we also have plans for another reservoir at the South end of the system and another well and pump at the Kilchis Well site. The Bay City Water Master Plan is due to be updated in three years, much of our future planning to complete construction will be based on the findings of this document.

12. As you can see by the enclosed water usage chart, water use in our system has been slow but steadily increasing. This is the reason we have requested a fifty year extension. The City must do everything in its power to insure an adequate amount of water be available for its citizens in the upcoming future. Having the last large parcels of land left in Tillamook County that can be developed for residential use the City must insure that an adequate water supply will be available.

13. The City of Bay City and member water districts are fully metered and bill their customers by water usage. The City has an aggressive program for replacement of old water lines and appurtenances for leak control. The City also budgets funds for new technology and equipment to make our system more efficient and cost effective.

If you have any questions or need more information please contact me, thank you.



John Law
Public Works Superintendent

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Water Supply Summary Table

A. Application Number ¹	B. Permit or Certificate Number ²	C. Priority Date ³	D. Maximum Allowable Rate ⁴ (cfs or ac-ft)	E. Reliable Peak Rate ⁵ (cfs)	F. Cumulative Total (cfs) ⁶	G. Notes: Explain any differences between Columns D and E. ⁷
S-51053	S-43858	08/10/73	20cfs	2.68cfs	2.68cfs	Have not fully developed our water right.

Add rows as needed to include all permitted and certificated rights.

¹ A. The application number is typically includes an alpha designator of "S" for a surface water right, "G" for a ground water right, "R" for a reservoir or storage right, or "D" for a decreed or adjudicated right (e.g., S-5667). A right that has been transferred continues to retain the original application number.

² B. If the right has been certificated, the certificate number should be provided. If the right has not been certificated, then the permit number should be used. The permit number retains the alpha designator used for application numbers. If the right has been transferred, the transfer number (e.g., T-4531) should be used in lieu of the permit number.

³ C. The priority date of the right is shown on the permit or certificate. Water rights should be listed in priority date order with the right with the earliest priority date listed first.

⁴ D. The Maximum Allowable Rate is listed on most permits and certificates, other than those for storage. For storage rights, the total quantity of water that can be stored is typically listed in acre-feet.

⁵ E. The Reliable Peak Rate is that at which the community can reasonably expect to divert water during periods of high demand. The Reliable Peak Rate may not be greater than the Maximum Allowable Rate under the right, but may be less if the right is not met because reliability (e.g., summer streamflows are insufficient, a well produces less than the right allows), production must be curtailed because of water quality problems, the right serves as backup supply, or there are other limitations on the full exercise of the right. For reservoir rights, the rate at which water could reasonably be taken from storage should be shown.

⁶ F. The total of the Reliable Peak Rate for this right added to the total of the Reliable Peak Rates for all of the other listed rights with earlier priority dates.

⁷ G. A brief explanation of the reasons for any differences in the Maximum Allowable Rate and the Reliable Peak Rate shown. See Footnote reasons for such a difference.

10-1-03
 Water Sup
 Sum
 Table

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OCT 31 2003

Water Supply Summary Table

A. Application Number ¹	B. Permit or Certificate Number ²	C. Priority Date ³	D. Maximum Allowable Rate ⁴ (cfs or ac-ft)	E. Reliable Peak Rate ⁵ (cfs)	F. Cumulative Total (cfs) ⁶	G. Notes: Explain any differences between Columns D and E. ⁷
S-51053	S-43858	08/10/73	20cfs	2.68cfs	2.68cfs	Have not fully developed our water right.

Add rows as needed to include all permitted and certificated rights.

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⁶ F. The total of the Reliable Peak Rate for this right added to the total of the Reliable Peak Rates for all of the other listed rights with earlier priority dates.

⁷ G. A brief explanation of the reasons for any differences in the Maximum Allowable Rate and the Reliable Peak Rate shown. See Footnote 5 for examples of reasons for such a difference.

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Water Demand Summary Table

Year	H. Estimated Population ⁸	I. Peak Day Demand ⁹ (cfs)	J. Notes: Explain departures from historic population growth rates and increases in Peak Day Demand that are larger than 0.3 cfs per 1,000 addition persons to be served.
1950			The Kilchis Regional Water District is made up of a co-op of six water districts. The KRWD supplies water to four of the largest industrial users in Tillamook County. The figures that are shown for H.&I. are City of Bay City only. There is no data at this time to determine the projected demands of the other five users of our water system In 2005 we will be updateing our Water System and Distribution Plan to include the district as a whole.
1960			
1970			
1980	986		
1990	1,027	.59	
2000	1,149	.61	
present	1,160	.89	
2010	1,300	.92	
2020	1,440	.94	
2030	1,580	.97	
2040	1,720	.99	
2050	1,860	1.10	

Add rows as needed identify the year in which full development of the permit to be extended will be needed to meet projected demands (i.e., the year in which the demand shown in Column I exceeds the cumulative supply in Column F for the permit to be extended.

⁸ H. Provide estimates of the population served for each year from 1950 to present. Provide estimates of the future populations to be served in future years considering available population projections, changes in service area based on land use plans, potential regional agreements to supply water to other communities, and other expected changes.

⁹ I. For years up to the present year, provide estimates of the Peak Day Demand as available. For future years, calculate the Peak Day Demand as 0.3 cfs per each increase in population of 1,000 persons served, or provide an explanation of the use other projections of Peak Day Demand. The use of other projections may be appropriate because of expected water conservation, planned industrial development, or other factors. To convert Million Gallons per Day to Cubic Feet Per Second, multiply by 1.55.

BERT GUSTAFSON

ATTORNEY AND COUNSELOR AT LAW

POST OFFICE BOX 289
2110 FOURTH STREET
TILLAMOOK, OREGON 97141
503 • 842-6685

October 2, 1980

- Mayor and City Council
City of Bay City
P.O. Box 307
Bay City, OR 97107

Re: Engineer Proposal of Agreement, Phase I and Phase II

This letter supplements my prior letters of July 3, 1979 and September 4, 1980, regarding agreement for engineering services.

ENGINEER'S ESTIMATE OF ENGINEERING FEE: The engineer provided on April 25, 1979 the detailed estimate of construction and fees. Attached to this letter is a photocopy of portions of that estimate showing the engineering and inspection to be ten percent of the estimated cost of construction for Phase I. For Phase II, the engineering was lumped together with contingencies at twenty percent of construction cost. The April estimate did not break down the engineering fee into the component parts of basic fee, inspection, and additional services.

JULY ENGINEERING AGREEMENT: In July, 1979, the City was presented an agreement for engineering services with the oral statement by the engineers that the agreement needed to be signed immediately; otherwise, the EDA Grant would be lost. The City Council was polled by the Mayor and the agreement signed. Subsequently, the City Council ratified the agreement in an open meeting. See my letter of July 3, 1979 letter for comments. The July agreement basically called for an expenditure and broke down the fees as follows:

1. Operating manual	\$5,000
2. Preliminary engineering study and administration	\$29,915
3. Basic engineering fee	\$103,324
4. Project inspection	\$46,804
<u>TOTAL</u>	<u>\$185,043</u>

This represents approximately nineteen percent of the estimated construction cost of \$971,700 for Phase I.

JULY 1 ENGINEER COST ESTIMATE: In July of 1980, the engineer provided the City a Phase I Cost Analysis which is attached to this letter. This analysis was used in the Supplemental Bond Transcript submitted to Bond Counsel in Portland. The engineering total was \$180,043 plus \$25,000 for right of way and survey, for a total of \$205,043. This equals twenty-one percent of the estimated construction cost of \$971,700, and 24.5% of the actual cost of construction of Phase I of \$837,426.

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City of Bay City
Mayor and City Council
October 2, 1980

page 2

AUGUST 1980 INVOICES: Boatwright Engineering invoiced the City for the following sums:

1. Engineering administration and preliminary engineering study.....\$27,103.48
2. Basic engineering fee.....\$82,659.00
3. Additional engineering services.....\$19,247.00
4. Construction inspection \$1,207.50

The invoices covered work from January of 1976 through May of 1979 for the preliminary work, and through July of 1980 for the additional engineering services. My comments on these invoices are contained in my letter of September 4, 1980.

NEW ENGINEER AGREEMENT: On September 30, 1980, the engineers orally presented a proposed engineer agreement that would provide the following:

1. Operation manual.....\$5,000
 2. Basic engineering, Phase I and II.....\$140,000
 3. Construction inspection, Phase I and II.....\$57,000
 4. Additional services, Phase I, II..... \$62,103
- TOTAL ENGINEERING SERVICES.....\$264,103

The proposed engineering fee would be nineteen percent of the estimated construction cost of Phase I and Phase II of \$1,391,410.

CONSULTING ENGINEERING GUIDELINES FOR EMPLOYMENT: Enclosed are several pages from the document prepared by the American Society of Civil Engineers. This document basically outlines the consulting engineer practice and charges for consulting engineering services. This should provide the Council members a background for understanding the engagement of a professional engineer.

Kind regards.

Cordially yours,



Bert Gustafson
City Attorney

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PHASE I COST ANALYSIS

1. Construction:

General Contractor	\$689,123.00
Reservoir Contractor	\$148,303.00

Total Phase I Construction \$837,426.00

2. Legal Fees \$ 15,000.00

3. Right-of-way & Survey \$ 25,000.00

4. Engineering:

Engineering Administration	\$ 4,110.00
Preliminary Engineering Study	\$ 25,000.00
Engineering-well development	\$ 805.00

\$ 29,915.00

Previously Paid \$ 2,805.00

Remaining \$ 27,110.00

Basic Engineering Fee
(EDA Criteria using FmHA Fee Schedule). \$103,324.00

Project Inspection \$ 46,804.00

Engineering Total \$177,241.00

5. Contingencies \$137,590.00

Phase I Total \$1,192,257.00

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BAY CITY'S KILCHIS RIVER WATER PROJECT

April 25, 1979

Phase I Construction (See Drawing No. 1)

Estimated Construction Cost 1979

Source Development

a. 2 wells, pumps, housing & valves	=	\$50,000
b. controls	=	\$25,000
c. chlorination facilities & housing	=	\$20,000
d. fencing, road, miscellaneous	=	\$11,000
e. standby power	=	\$11,000
		\$117,000

Transmission Lines

a. 18" ϕ D.I. from well site to Riverdale School = 12,500 L.F. @ 26.50	=	\$331,250
b. 10" ϕ P.V.C. from Riverdale School to Juno Hill Reservoir & Creamery 10,700 L.F. @ \$12.50	=	\$133,750
c. 10" ϕ P.V.C. from Riverdale School to Bay City's Reservoir = 13,400 L.F. @ \$12.50	=	\$167,500
		\$632,500

Reservoir

a. 500,000 gallon @ Juno Hill	=	\$150,000
b. 200,000 gallon @ Bay City	=	\$ 72,200
		\$222,200

Estimated Construction Cost	=	\$971,700.00
Legal	=	\$ 15,000.00
Engineering & Inspection 10%	=	\$ 97,170.00
Contingencies 10 %	=	\$108,387.00
TOTAL ESTIMATED COST	=	\$1,192,257.00

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BAY CITY'S KILCHIS RIVER WATER PROJECT

April 25, 1979

Phase II Construction (See Drawing No. 1)

Estimated Construction Cost 1980

Bay City:

1. Distribution System Modification

A. 1300' of 6" DI @ \$12.00 = \$15,600.00

B. 6250' of 10" DI @ \$18.00 = \$112,500.00

SUBTOTAL = \$128,100.00

2. Inline Storage

A. 50,000 Gallon Reservoir = \$ 25,000.00

B. Site Preparation, Foundation
& Piping = \$ 13,000.00

C. Fencing = \$ 4,000.00

\$ 42,000.00

3. Booster Pumps = \$ 12,000.00

4. Hydro-Pneumatic System & Housing
Complete = \$ 15,000.00

5. Miscellaneous Fittings = \$ 12,000.00

6. Metering Appliances Complete

a. 325 services @ \$180.00
per service = \$ 58,500.00

7. Change Over of Services

a. 50 only @ \$150.00
per service = \$ 7,500.00

8. Fire Hydrants

a. 3 only @ \$1200 ea. = \$ 3,600.00

TOTAL ESTIMATED PROJECT COST = \$278,700.00

Engineering & Contingencies(20%)=\$55,740.00

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Bay City (Estimated Construction Cost 1980-Continued)

Total Estimated Project Cost Plus
Engineering & Contingencies of 20% = \$334,440.00

Add 4.6% for inflation = \$ 15,560.00

\$350,000.00

Latimer Road:

1. 8000' of 6" PVC \$5.00/foot = \$40,000.00

2. Change over service
a. 30 services @ \$150 per service = \$ 4,500.00

3. Metering Appliances Complete
a. 30 services @ \$180 per service = \$ 5,400.00

4. Fire Hydrants
a. 5 only \$1200 each = \$ 6,000.00

\$55,900.00

(20%) Engineering & Contingencies = \$11,180.00

\$67,080.00

add 4.6% + inflation = \$ 2,920.00

\$70,000.00 ✓

Northwood:

1. 10,000' of 6" P.V.C. @ \$5.00 per foot = \$50,000.00

Engineering & Contingencies (20%) = \$10,000.00

\$60,000.00

add 5% + inflation = \$ 3,000.00

\$63,000.00 ✓

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Coal Creek:

1. 6000' of 4" P.V.C. @ \$4.00 per foot	=	\$24,000.00
2. Metering Appliances		
a. 7 services @ \$180 per service	=	\$ 1,260.00
		\$25,260.00
3. One blowoff	=	\$ 740.00
		\$26,000.00
Engineering & Contingencies (20%)	=	\$ 5,200.00
Add Inflation	=	\$ 1,800.00
		\$33,000.00

Juno:

1. Metering Appliances Complete = 34 @ \$180.00	=	\$ 6,120.00
2. Change Over Services = 20 @ \$150.00	=	\$ 3,000.00
		\$ 9,120.00
Engineering & Contingencies (20%)	=	\$ 1,225.00
Add Inflation of 6.6%	=	\$. 655.00
		\$11,000.00

TOTAL ESTIMATED IMPROVEMENT COST = \$527,000.00 ✓

Capital Cost Breakdown:

Total Estimated Cost	=	\$527,000.00
FmHA 50% Grant	=	\$263,500.00 ✓
Local Share	=	\$263,500.00

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SOURCE WATER ASSESSMENT REPORT

Kilchis Regional Water District
Bay City, Oregon
Tillamook County
PWS #4100079

April, 2003

Prepared

by

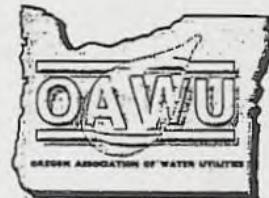
Oregon Association of Water Utilities
Groundwater Specialist

in conjunction with

Oregon Department of Human Services
Health Services
Drinking Water Program

and the

Oregon Department of Environmental Quality
Water Quality Division
Drinking Water Protection Program



Available in Alternate Formats by contacting the DHS DWP at (541) 726-2587

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Kilchis Regional Water District: Source Water Assessment Report

Summary

The Source Water Assessment Program, mandated by the 1996 Amendments to the Safe Drinking Water Act, requires that states provide the information needed by public water systems to develop drinking water protection plans if they choose. The information that is provided includes the identification of the area most critical to maintaining safe drinking water, i.e., the Drinking Water Protection Area, an inventory of potential sources of contamination within the Drinking Water Protection Area, and an assessment of the relative threat that these potential sources pose to the water system.

This report is intended to provide Kilchis Regional Water District with our conclusions regarding the source water assessment analysis. It is our hope that the information provided will be used as a basis for reducing the risk of contamination to your water source through the development of a voluntary Drinking Water Protection Plan (DWPP). Should you decide to proceed with the development of a DWPP, a comprehensive assessment analysis can be made available to you by contacting either the OAWU Groundwater Specialist or the DHS Drinking Water Program Groundwater Coordinator. The comprehensive analysis includes a more in-depth description of the local hydrogeology and the parameters and assumptions used in the model.

The Drinking Water Protection Area for Kilchis Regional Water District is identified as the area at the surface overlying the critical portion of the aquifer that supplies groundwater to the well(s) or spring(s). The primary aquifer supplying drinking water to the Kilchis Regional Water Districts Wellfield has been identified as the Kilchis River Alluvium. According to a detailed site investigation, the primary geologic unit present at the site are alluvial deposits made up of unconsolidated clay, silt, sand and gravel deposited along the Kilchis River. (Wells, Snively, Macleod, 1994). The wells draw water primarily from the sands and gravels.

The shallow unconfined nature of the aquifer is considered highly sensitive due to a high aquifer Traverse Potential and Infiltration Potential scores at the Wellfield site. The nitrate concentrations, age of well#1, presence of moderately permeable soils within the DWPA, and close proximity of surface water to the Kilchis Regional Water District's Wellfield contributes to the overall sensitivity of the drinking water supply. Approximately 5 other wells are present in the same section containing the Kilchis Regional Water District Wellfield and are not believed to pose a significant risk to local water quality.

An inventory of potential contamination sources was performed within the alluvial aquifer boundary of the Kilchis Regional Water District's drinking water protection area. The primary intent of this inventory was to identify and locate significant potential contaminate sources of

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concern. The inventory was conducted by reviewing applicable state and federal regulatory databases and land use maps, interviewing persons knowledgeable of the area, and conducting a windshield survey by driving through the drinking water protection area to field locate and verify as many of the potential contaminant source activities as possible. It is important to remember the sites and areas identified are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

Two potential contaminant source was identified within the delineated alluvial aquifer boundary. Of the potential contaminant sources identified pose a relatively moderate risk to the drinking water supply. The Kilchis Regional Water District's wells are "in hydraulic connection" with the Kilchis River. This inventory addresses only the groundwater portion of the delineation. The water system and community should "enhance" this inventory by identifying potential contaminant sources and evaluating risk within the Kilchis River watershed upstream of the wells.

Well #1, and the aquifer contribute to overall water system susceptibility. **Under a "worst-case" scenario, our susceptibility analysis suggests that although any Drinking Water Protection Plan should address all moderate and high risk contaminate sources inside the DWPA, activities within one mile upstream of the Kilchis Regional Water District's Wellfield appear to present the greatest risk to drinking water quality.**

The entire DWPA for Kilchis Regional Water District is shown in Figure 5 (Appendix B). A delineation of the alluvial aquifer contributing water to the Wellfield is shown in Figure 1 (Appendix B). A 2-year time-of-travel zone is usually shown on the delineation map to indicate a conservative area in which viral contaminate sources could impact drinking water quality. However, 2-year TOT area was not identified by the contractor due to the fact that the entire DWPA falls within the one year time of travel. **Based on assessment results, the aquifer is considered to be sensitive to microbial contamination. Given that viral contaminate sources have been identified within one year time of travel, we also consider the drinking water supply to be susceptible to viral contamination.** Therefore, to reduce the potential for future contamination, it is important for the water system to comply with all Oregon Department of Human Services setback standards related to public drinking water sources.

The costs associated with contaminated drinking water are high. Developing an approach to protect that resource will reduce the risks of a contamination event occurring. In this report, we have summarized the local geology and well construction issues as they pertain to the quality of your drinking water source. We have identified the area we believe to be most critical to preserving your water quality (the Drinking Water Protection Area) and have identified potential sources of contamination within that area. In addition, we provide you with recommendations, i.e., Best Management Practices, regarding the proper use and practices associated with some common potential contamination sources. We believe public awareness is a powerful tool for

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protecting drinking water. The information in this report will help you increase public awareness about the relationship between land use activities and drinking water quality.

If you have any questions regarding the information contained in this report or are interested in developing a Drinking Water Protection Plan please contact one of the following people:

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Groundwater Specialist
12312 Silverton Rd
Silverton, OR 97381

Phone (503) 873-8353

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Drinking Water Program Groundwater Coordinator
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Springfield, OR 97477

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1. Introduction

1.1 Source Water Assessment Project

Traditionally, water systems have relied on proper water system management, water quality monitoring and, if necessary, water treatment to ensure that the water they serve meets drinking water standards. In spite of the best of these efforts, drinking water contamination still occurs. The costs, both tangible and intangible, to a water system contending with a contaminated water supply are significant. At a minimum, there is the cost of increased monitoring that will be required to make certain that the water does not pose a significant health risk. At contaminant concentrations exceeding a drinking water standard, the system may be dealing with the cost of installing and maintaining treatment, the loss of the drinking water source, i.e., a well, and most assuredly, a concerned and often frightened public.

Beginning with the 1986 Amendments to the Safe Drinking Water Act, an additional "barrier to contamination" was recognized at the federal level. A shift from the "reactive" approach of water treatment to a "proactive" approach of prevention began to occur. Although water treatment may be necessary in some cases, it is much more cost effective to prevent the contamination from happening in the first place. The Oregon Department of Environmental Quality (DEQ) and the Department of Human Services (DHS) Drinking Water Program recently compared the estimated cost of prevention (less than \$15 per resident) to the actual cost of investigation and treatment (more than \$1500 per resident) in a small Oregon community (population 330) impacted by a volatile organic contaminant that exceeded the drinking water standard.

Oregon has a Drinking Water Protection Program in place for groundwater systems, i.e., wells and springs. In order to protect a drinking water resource, a water system must know where the drinking water comes from, what potential sources of pollution exist and what level of threat each presents to the system's drinking water. Until recently, the costs associated with acquiring this information were the responsibility of the water system, a financial burden that even the most proactive water systems found difficult to meet. The 1996 Amendments to the Safe Drinking Water Act lifted that burden from water systems by requiring that the states conduct Source Water Assessments for federally recognized public water systems that fall under state regulative authority. The purpose of the Assessment is to provide the water systems with the information that they need to develop a strategy to protect their source of drinking water if they choose.

As mandated by the 1996 Amendments, a Source Water Assessment consists of the following:

1. The identification of the area that directly overlies that part of the aquifer supplying drinking water to the well or spring,
2. An inventory of potential sources of contamination within that area, and

3. The evaluation of water system susceptibility to contamination from those sources.

Funding for assessments was provided to the states through the Act as part of the state's Drinking Water Revolving Loan Fund.

The DEQ and DHS worked with a citizen's advisory committee and with the DHS Drinking Water Advisory Committee to design a program that would meet the needs of Oregon's public water systems. The Environmental Protection Agency (EPA) has certified that Oregon's plan meets the requirements of the Safe Drinking Water Act. Within the program, DHS has the responsibility of working with groundwater systems and the DEQ works with surface water systems and conducts all potential contaminant inventories.

Within this report, you will find general descriptions of the various elements of the Source Water Assessment Program, as well as specific information identifying the Drinking Water Protection Area for your water system and an inventory of the potential threats to your drinking water quality. Although developing a Drinking Water Protection Plan is voluntary in Oregon, we hope that the information provided in the Source Water Assessment Report will be used as a basis for reducing the risk of contamination to your water supply. Risk reduction can be accomplished by correcting intake construction and/or set back deficiencies that contribute to water system susceptibility and by implementing Best Management Practices for identified potential contaminate sources. The bulk of our risk reduction recommendations center on developing a "state certified" Drinking Water Protection Plan, and providing information to those residences, agricultural operations, businesses, etc., that live or operate within the identified protection area.

A more comprehensive description of the assessment analysis can be made available to you should you decide to proceed with the development of a drinking water protection plan. This comprehensive description will include a more in-depth discussion of the local hydrogeology and the parameters and assumptions used in the model. Resources are not available for the DHS Drinking Water Program to gather new information, however the incorporation of new data discovered by the system or its contractors will be considered as time permits.

1.2 Groundwater Basics

In order to protect a groundwater source of drinking water, it is important to understand how the groundwater system works, e.g., where groundwater comes from, how it occurs in the subsurface, how it moves and how it can become contaminated. Included in Appendix G of this report is a Fact Sheet about groundwater that you can use to help increase the awareness of others regarding groundwater and its susceptibility to contamination.

When a well is drilled, the drilling equipment first passes through the vadose zone until it encounters the water-table. Within the vadose zone, the open pore spaces between soil and

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sediment particles and/or the open fractures within the bedrock material are only partially filled with water. Most of the open pore/fracture space is filled with air, therefore, little if any water can be obtained from the vadose zone. The water-table marks the top of the saturated zone, where the open pore/fracture spaces are, for the most part, completely saturated (full) with groundwater. It should be understood that within the saturated zone, groundwater does not occur as underground rivers, lakes, or veins. An aquifer is any geologic material located below the water-table (and is therefore water saturated) that can yield an adequate water supply to a well. Geologic materials that tend to yield large quantities of water to wells include sand and gravel deposits, porous lava flows, and fractured bedrock.

Groundwater is part of the hydrologic cycle which controls the distribution of water throughout the earth. Groundwater is therefore linked to other water sources, notably surface water such as streams, rivers and lakes. Virtually without exception, groundwater originates as precipitation at the earth's surface which sinks through the soil and percolates down to the water-table. The fact that groundwater originates at the surface is what makes it vulnerable to contamination. As recharging groundwater moves downward through the soil and vadose zone, it comes in contact not only with the geologic materials present, but also with any contaminants contained within the soil and/or vadose zone. Therefore, recharging groundwater can carry contaminants downward to the aquifer. Likewise liquid chemicals, if present in large enough quantities, can enter the aquifer by following the same path as recharging groundwater.

The direction and speed with which groundwater moves is controlled by the slope of the water-table and aquifer permeability. The slope of the water-table often mimics, in a subdued sense, the earth's surface with groundwater moving from high areas to low areas. Aquifer permeability is a measure of how easy it is for groundwater to move through the geologic material that makes up the aquifer. Geologic materials with greater permeability allow groundwater to move with less restriction. In general, groundwater movement is measured in terms of a few inches to a few feet per day. The speed and direction of groundwater movement can be significantly influenced by a pumping well, drawing the water-table down in its' vicinity, thus creating a water-table depression. As the well continues to pump, the depression in the water-table continues to expand out into the aquifer which leads to the formation of a "capture zone" within the water-table depression. Groundwater inside the capture zone is eventually pumped to the earth's surface by the well.

When wells are used as a water source, we identify the drinking water protection area for the water system by delineating those portions of the capture zone around the well(s) where, on average, it will take 15 or 10 years (depending on the delineation technique used) for water moving through the aquifer to arrive at the well. We have also identified the 5-, 2-, and 1-year capture zones around the well(s) to enhance the overall usefulness of the drinking water protection area. Conversely, when springs are used as a water source, we have attempted to identify the recharge area uphill from the springs based on hydrogeologic mapping. In these cases we have attempted to identify the short-, intermediate-, and long-term groundwater flow regimes that provide water to the springs. Typically, we have labeled these areas as Zone 1

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(short-term), Zone 2 (intermediate-term), and Zone 3 (long-term). When appropriate, we will also identify a Zone 4 which represents the watershed above the estimated recharge area which could quickly transport spilled contaminants into the DWPA via surface water runoff.

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2. Kilchis Regional Water District Water System Information

2.1 Location of the Drinking Water Source

We have located your source(s) using a Trimble GeoExplorer II Global Positioning System (GPS) unit. The data has been differentially corrected to remove some of the common positioning errors. The location of the source(s), with the corresponding Drinking Water Protection Area, has been placed in a Geographic Information System (GIS) layer and overlain onto a USGS 7.5 minute topographic map that is included within this report.

The well was located using Trimble GeoExplorer II GPS unit. Data collection specifics include:

- ▶ 150 individual measurements,
- ▶ linked to a minimum of four satellites,
- ▶ a PDOP of less than 6 (pertains to precision of measurement),
- ▶ a signal to noise ratio of greater than 5

The raw data was subjected to differential correction using the PATHFINDER software. The location data for your well using the WGS84 datum is as follows:

Source	Latitude	Longitude
<i>Well #1</i>	<i>45 ° 31' 24.875" N</i>	<i>123 ° 48' 30.339" W</i>
<i>Well #2</i>	<i>45 ° 31' 23.999" N</i>	<i>123 ° 48' 29.442" W</i>

2.2 Source Construction

Well #1 was drilled in the 1975 by Zent Drilling Inc. and is fitted with a 12-inch casing from ground level to 26 feet and a 10-inch casing from 40 feet to 46.5 feet. Well #1 is screened on the interval of 26 to 40 feet. The annulus outside the well casing of well #1 is sealed with cement to a depth of 25 feet and prevents surface water and shallow groundwater from entering the bore hole. Well #2 was constructed in 1980 by Zent Drilling Inc. and is fitted with a 12-inch casing that extends from the surface to 21 feet. Water enters well #2 through the well screen that runs from 20 feet to 40 feet. The annulus outside the well casing of well #2 is sealed with cement to a depth of 20 feet and prevents surface water and shallow groundwater from gaining access to the well bore. A sanitary hazards inspection conducted by DHS Drinking Water Program staff on

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03/17/1988 did not reveal any deficiencies pertaining to source water protection. A copy of the well report for Well #1 and #2 is included in Appendix D.

2.3 Nature and Characteristics of the Aquifer

According to the well logs the aquifer supplying drinking water to the Kilchis Regional Water District's Wellfield consists of a relatively thin alluvial aquifer composed of sandy gravel to gravelly cobbles. The alluvial deposits that make up the Kilchis Regional Water Dist. wellfield are made up of unconsolidated clay, silt, sand and gravel alluvium deposited along the Kilchis River. (Wells, Snively, Macleod, 1994) The well logs for the Kilchis Regional Water Dist. Wellfield indicate that water is drawn primary from the sand and gravel layers. The well driller reported first encountering water at a depth of 15 feet at the Well #1 and 17 feet at well #2. The well driller also reported that the static water level (water level in the well when it is at rest, i.e. not being pumped) rests at a depth of 15 for well #1 and 17 feet for well #2.

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3. Delineation of the Drinking Water Protection Area

3.1 Methodology

The delineation of the Drinking Water Protection Area (DWPA) is a fundamental aspect of the source water assessment for a public water system. When information regarding the DWPA location is provided to the community, it enables the community to develop management strategies that will have the most impact with regard to preserving long-term drinking water quality. For groundwater systems, the DWPA identifies the area on the surface which directly overlies the portion of aquifer that supplies enough groundwater to the well, wellfield, or spring to meet long-term water demand (i.e., 10 to 15 years). Once delineated, the DWPA outline is placed on a map and provides the community with the knowledge of the geographic area providing water to the well. This is the area where contamination poses the greatest threat to the drinking water supply.

The delineation exercise requires the use of site-specific information so that the identified DWPA adequately reflects the hydraulic characteristics of the aquifer and the operation of the water system. The level of hydrogeologic assessment performed during the delineation depends on the population served, the presence of potentially interfering wells, and the complexity of the local hydrogeology. The delineation methods are described in the text and table below. The method used for your delineation is indicated in Appendix E (Parameters Used in the Delineation Model).

Calculated Fixed Radius (CFR): The CFR method determines the volume of the aquifer that would be needed to supply the system for next 15 years assuming a flat water-table. The delineation is circular in shape, centered on the well.

Enhanced CFR: If the water system has more than one well or a groundwater boundary is present near the well(s) and there is a potential for interference between the wells and/or the groundwater boundary, a more sophisticated analytical method is used. In such cases we specifically use an analytical model that allows interference to be accommodated. However, like the CFR, this delineation method does not account for groundwater flow direction (i.e., it assumes a flat water-table). As with the CFR, the next 15 years of groundwater supply is identified.

Analytical: Neither the CFR or Enhanced CFR method takes into account the direction and rate of groundwater flow. Analytical models incorporate the groundwater gradient and aquifer permeability into the calculations. Because of the more site-specific nature of this model, only the next 10 years of groundwater supply is identified. For systems serving 501 to 50,000 from aquifer sources lacking complex hydrogeologic boundaries, the groundwater gradient is either estimated from water-levels indicated on well logs or taken from published reports. For water

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systems that fall in this category and serve more than 3,300, the gradient may be determined directly by field measurement.

Analytic or Numerical: These more sophisticated models allow for the incorporation of complex boundaries such as streams and formation contacts, can be checked with local water levels, and can incorporate spatial variations in aquifer properties.

Hydrogeologic Mapping: This delineation method involves identifying the hydrogeologic boundaries of the aquifer and is most often used in conjunction with the analytical, analytic element, and/or numerical delineation methods. Hydrogeologic boundaries include constant head boundaries (i.e. streams and/or reservoirs) and no-flow boundaries which occur when an aquifer comes in direct contact with a relatively impermeable material. Hydrogeologic mapping may be used as a stand alone delineation technique when identifying DWPA's for springs and/or wells where there are no means available for determining aquifer properties.

Population	Interfering Wells?	Complex Hydrogeology?	Delineation Method	Parameters Needed ¹
25-500	N	N	CFR	Q, n, b
25-500	N	Y	Enhanced CFR	Q, b, n, K
25-500	Y	Y/N	Enhanced CFR	Q, b, n, K
501-3,300	Y/N	N	Analytical	Q, b, n, K, i
501-3,300	Y/N	Y	Analytic or Numerical	Q, b, n, K, i, h
3,301-50,000	Y/N	N	Analytical	Q, b, n, K, i, h
3,301-50,000	Y/N	Y	Analytic or Numerical	Q, b, n, K, i, h
50,000+	Y/N	Y/N	Numerical	Q, b, n, K, i, h
Spring	NA	Y/N	Hydrogeologic Mapping	Local Geology

1. Q = pump rate; n = aquifer porosity; b = aquifer thickness; K = hydraulic conductivity (permeability); i = gradient (slope of the water table); h = hydraulic head (elevation of the water table).

3.2 Results

The Kilchis Regional Water District Drinking Water Protection Area was delineated in 2001 by Mike Hayes of the Oregon Association of Water Utilities. Based on the conceptual

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hydrogeologic model developed for the area, Numerical Modeling was determined to be the best method for identifying the DWPA. The hydrogeologic conceptual model and mapping indicated that the entire watershed upriver of the wellfield (including all tributaries) is the source for the local groundwater resources (see Appendix B, Figure 5), however much of the surface water in this drainage is likely to seasonally flow through the basin without contributing significant amounts of water to the valley-fill aquifer (Appendix B, Figure 1). Much of the watershed consists of state forest land where potential chemical contaminations sources were expected to be minimal compared to more developed areas. Due to the large expanse of the watershed it is recommended that Kilchis Regional Water Dist contact the Oregon Department of Forestry and inquire about the forest practices that are expected to take place within the watershed in the near future. Specific information regarding the parameters used in the delineation process including; the delineation method, estimated pump rate of each well, and aquifer characteristics can be found in Appendix E.

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4. Sensitivity Analysis

After the Drinking Water Protection Area (DWPA) has been identified, aquifer susceptibility to potential contaminate sources inside the DWPA can be evaluated. Aquifer susceptibility is dependent on two factors, the natural environment's characteristics that permit migration of a contaminate into the aquifer (i.e., aquifer sensitivity) and the presence, distribution, and nature of the potential contaminate sources within the DWPA. It should be understood that the public water system's drinking water source cannot be susceptible to contamination, even if the aquifer is sensitive, unless potential contaminate sources are present within the DWPA. Therefore, the intent of the sensitivity analysis is to identify those areas within the DWPA where the aquifer is most sensitive to contamination. The analysis is based on data collected or generated during the DWPA delineation process and is designed to meet the needs of other existing or developing programs such as Monitoring Waivers and the Groundwater Rule.

4.1 Sensitivity Analysis Methodology

Aquifer sensitivity refers to those factors characteristic of the aquifer and overlying materials, in addition to those that are imposed upon the aquifer, such as well construction, that increase the potential for both surface and subsurface contaminants to gain access to the aquifer. The aquifer sensitivity analysis depends on a number of factors that can collectively or individually allow the aquifer to become contaminated. Factors considered during the sensitivity analysis are described below and are summarized in Appendix F, Sensitivity Summary. Characteristic factors pertaining to sensitivity are categorized as highly or moderately sensitive. **Those factors related to the public water supply well, wellfield, and/or springbox are conditions that can be corrected by the water system, thus potentially lowering the overall sensitivity.** However, those factors related to the aquifer tend to be a direct result of natural conditions and in most cases can not be modified.

4.1.1 Depth to first water-bearing zone below casing seal

The depth to the first water-bearing zone below the casing seal is important in controlling the aquifer's sensitivity because it relates to the time of travel from the surface to groundwater. The greater the distance and estimated travel time, the greater the potential for the contaminant to be degraded to insignificant levels. Although not specifically evaluated on the sensitivity summary form in Appendix F, the depth to the first water-bearing zone below the casing seal is used in the Traverse Potential and Infiltration Potential calculations described later.

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4.1.2 Aquifer Characteristics and Hydraulic Nature

Aquifer characteristics refer to the geologic material (lithology) that groundwater is moving through and how the lithology controls groundwater movement. Aquifer characteristics that contribute to sensitivity include materials that provide large open pore spaces and/or short pathways for contaminants to travel through the aquifer. Therefore, we consider aquifer materials such as gravels, boulders, and fractured bedrock to contribute to overall aquifer sensitivity. These types of materials do not provide for natural filtration of contaminants as water can move with relative ease through the larger diameter pore spaces and/or fractures. The presence of fractured bedrock at the surface inside the DWPA is also an indication that contaminants could move quickly from the surface into the local aquifer system. Therefore, our concern is raised if the characteristics and hydraulic nature of the aquifer cannot be determined.

For the purpose of the source water assessment, the hydraulic nature of the water inside the aquifer is described as either unconfined, confined, semi-confined, and/or fractured confined. Unconfined aquifers are often shallow and are not separated from the surface by a protective low-permeability layer. Confined aquifers are often deeper and are overlain by a protective low-permeability layer. As a result, unconfined aquifers have minimal protection from downward percolating contaminants and are considered sensitive to potential contaminate sources. However, the overall protective nature of the overlying low-permeability (confining) layer for a confined aquifer may be limited if it is thinner than 15 feet. Under such conditions the aquifer may be considered semi-confined, raising concern that the confining layer may be absent or ineffective within large portions of the DWPA. Likewise, concern is raised if a well or spring is drawing water from a fractured aquifer exhibiting confined characteristics which lies within 50 feet of the surface. At shallow depths, the potential for fractures to intercept the surface or near surface increases. Any fracture reaching the shallow subsurface can provide a pathway for contaminated shallow groundwater to enter the aquifer, effectively raising aquifer sensitivity.

4.1.3 Overburden Thickness and Characteristics

The material resting between the surface and the aquifer can have a significant impact on the aquifer sensitivity analysis. Overburden thickness can be related to the time of travel from the surface to the aquifer. The greater the distance and time, the greater the potential for contaminants to be degraded to insignificant levels. In addition, laterally persistent materials of low permeability (such as silt, clay, and unfractured bedrock) will restrict the downward movement of contaminants. Therefore, the presence of a thick (greater than 15 feet) confining unit resting on top of the aquifer offers the greatest amount of natural protection to a drinking water supply. Confining units consisting of plastic clay and/or unfractured bedrock are much more protective than those consisting of silt.

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4.1.4 Soil Types

Although soils usually compose a very small portion of the overburden above the aquifer, they are the first natural barrier between the surface and the water-table. Therefore, the amount of time it takes for water to pass through the soil zone can be used as a factor in determining overall aquifer sensitivity. Even over short distances, the permeability and thickness of different soil types can be highly variable as some soils are thinner and/or have a higher permeability than others. Therefore, for the purposes of the source water assessment, we identify soils with high, moderate and low sensitivity based on the amount of time it takes for water to pass through a specific soil under saturated conditions. Highly sensitive soils are those soils for which it has been estimated to take less than 65 hours for water to pass through their profile under saturated conditions. This means that there is little opportunity for degradation of a contaminant, such as nitrate, within the soil zone. In addition, the travel time through the soil indicates the amount of response time available before an accidental spill becomes significantly more difficult to clean up.

Moderately sensitive soils are those for which it has been estimated to take between 65 and 256 hours (approximately 2.7 to 10.7 days) for water to pass through their profile and low sensitivity soils are those which it has been estimated to take more than 256 hours for water to pass through. Recognition of these soil types and their occurrence within the Drinking Water Protection Area can indicate those parts of the protection area where contamination may pose a greater risk to the water system, therefore it is useful to compare the distribution of these soil types with respect to potential contaminate sources. The distribution and relative sensitivity of soils within the Drinking Water Protection Area is shown on the Sensitivity Map (Appendix B, Figure 3) and the distribution of potential contaminate sources with respect to soils is shown on the Susceptibility Map (Appendix B, Figure 4).

4.1.5 Infiltration Potential

The Infiltration Potential (IP) is an estimate of the ability of water to infiltrate from the surface to the aquifer. It is based on (1) the depth to the aquifer, (2) an estimate of the weighted permeability of the material between the surface and the aquifer, a parameter referred to as the Traverse Potential (TP), and (3) the hydraulic surplus, or amount of water available from precipitation and/or irrigation at the surface that is able to infiltrate into the aquifer. Both IP and TP values are determined for each drinking water source and are used as factors for determining overall aquifer sensitivity near the wellhead and/or springhead (i.e., within the 100 foot sanitary setback or 2-year Time-of-Travel Zone). If enough well log data is available for the surrounding area, DWPA sensitivity and susceptibility maps (Appendix B, Figures 3 and 4) can be produced based on TP and IP data rather than soil sensitivity for those water systems serving more than 500 people.

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In our analysis, both IP and TP scoring varies from 1 to 10. A low TP value of 1 indicates that the materials above the aquifer are of very low permeability and/or are of great thickness. Conversely, a high TP value of 10 indicates materials above the aquifer have a very high permeability and/or are very thin. Therefore, we interpret TP values greater than 5 as an indication of areas where the potential for movement of water (and/or contaminants contained in the water) from the surface to the aquifer is greatest and we classify the Drinking Water Protection Area (or portions thereof, if TP is mapped) as highly sensitive to contamination.

IP values are determined using TP values and an estimate of the available water at the surface for aquifer recharge. Our estimate of available water at the surface assumes that rainfall, evaporation, plant uptake, and runoff remain constant throughout the DWPA, however we do recognize that irrigation practices can vary with regard to land use and/or crop type. Therefore, for those water systems where TP and IP have been mapped, IP values can vary even if TP values are constant throughout the DWPA. A low IP value of 1 indicates that as a result of water availability (hydraulic surplus) and geologic conditions (Traverse Potential) there is a low probability that water from the surface, at that location, will reach the aquifer. Conversely, a high IP value of 10 suggests that, due to local hydraulic surplus and geologic conditions, there is a high probability that water occurring at the surface will recharge the aquifer and therefore has the potential to transport large quantities of contaminants into the aquifer with little or no reduction in concentration. We classify the DWPA (or portions thereof, if IP is mapped) as having a high, moderate, or low sensitivity to contamination with respect to the calculated IP value as follows:

<u>Sensitivity</u>	<u>Infiltration Potential</u>
High	> 7
Moderate	4 to ≤ 7
Low	< 4

4.1.6 Water Intake Construction

A groundwater based public water system's sensitivity to contamination is dependent not only on aquifer characteristics but also the integrity of the well(s) and/or spring boxes used to extract or collect water for distribution. If improperly constructed, these structures can also serve as conduits for contamination to move from the surface or near-surface environment and into the well and/or spring. We have evaluated the sensitivity of the water system's intakes to potential contamination by reviewing: (1) construction deficiencies reported on recent sanitary surveys; (2) the construction and depth of casing seal for the public water supply well(s); and (3) the age of the constructed intake.

When a well is drilled in soft or loose materials, a casing (steel or plastic pipe) is inserted to hold the hole open during and after drilling. The casing does not in itself provide adequate protection

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from contaminated shallow water gaining access to the well. Contaminated shallow groundwater can migrate to the casing and follow the casing directly down to the well intake. The real protection from potentially contaminated shallow water is the casing seal. This seal is put in place by drilling a hole that is at least four inches greater in diameter than the final casing. After the larger hole is drilled, the casing is installed and the annular space between the casing and the bore hole wall is filled with a sealant, either bentonite (an expanding clay), cement, or a combination of the two materials. The casing seal must, by law, be placed a minimum of 18 feet below the surface, however, it should be placed to a depth that is controlled by the local geology, e.g., for a confined aquifer, the casing seal should extend a minimum of five feet into the confining layer. Having a well drilled by a licensed well constructor greatly reduces the risk that the well will be improperly constructed.

4.1.7 Other Wells

Other wells that fall in close proximity to the public water supply well and/or spring may provide a conduit for contaminants to reach the local aquifer if their construction is inadequate or has been compromised. We assume that the risk of encountering an improperly constructed or compromised well increases as the density of wells in the vicinity of the public water supply well and/or spring increases. Even a properly constructed well has a given life-time, after which the casing seal may begin to deteriorate and eventually fail, allowing shallow water to gain access to the aquifer. Therefore, overall risk becomes significantly greater when older wells are present, in part due to age and also due to the less stringent construction standards that were in effect prior to 1979.

We evaluate aquifer sensitivity to contamination posed by other wells in the Drinking Water Protection Area (DWPA) by totaling the number of well reports on file at the Oregon Water Resources Department that are within the same section containing the public water system's well(s) and/or spring(s) and develop a score based on the number of wells and their age. The equation for determining the Other Wells Score is as follows:

$$\text{Other Well Score} = (\text{No. of wells drilled after 1978}) + 4 \times (\text{No. of wells drilled before 1979})$$

The above expression assumes that wells drilled before 1979 are four times more likely to lead to water quality problems than those wells drilled after 1978. An Other Wells Score greater than 400 is assumed to represent a high density of wells and a moderate risk to local groundwater resources. In addition, a score that falls between 225 and 400 indicates a moderate density of wells, which is not an immediate cause for concern, unless a large number of wells are observed inside the DWPA or routine water quality monitoring suggests an ongoing degradation of source water quality. In either case, local well owners can obtain useful information regarding private wells over the internet at www.wellowner.org or at <http://wellwater.orst.edu>. It might also be useful to provide Home-A-Syst assessment packets, available through the OSU Extension Service, to local well owners who are interested in protecting their private wells (and in turn,

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local groundwater resources) from contamination. For more information regarding the Home-A-Syst program contact:

Gail Glick Andrews
Oregon Home-A-Syst Coordinator
Bioresource Engineering
116 Gilmore Hall
Corvallis, OR 97331-3906
Phone: (541) 737-6294

4.1.8 Monitoring History

Most groundwater contamination originates at the surface (accidental/deliberate spills, chemical applications, roadway/parking lot runoff, etc...) or in the shallow subsurface (underground storage tanks, septic systems, shallow injection wells, etc...) therefore, a review of water quality monitoring results for each water system can provide valuable information regarding aquifer sensitivity. Clearly, if a contaminant has been detected in the water source, a pathway from the surface to the aquifer must exist. As a means of protecting public health, public water systems in Oregon are required to routinely monitor drinking water quality for contaminants identified by the U.S. Environmental Protection Agency as hazardous to human health. However, it is important to understand that the results from a given sample only provide information regarding water quality at the time that the sample was collected. Water quality within an aquifer can change with time for a number of reasons, including contamination and seasonal recharge. **The fact that a water sample, or series of water samples, is free of contaminants is no guarantee that contamination of the aquifer can not happen in the future.** Therefore, if a water system is determined to have a moderate or low sensitivity with respect to monitoring history, it still may in fact be highly sensitive to contamination with respect to one or more other sensitivity analysis criteria.

Our review of water quality monitoring history included all Volatile Organic Compounds (VOCs), Synthetic Organic Compounds (SOCs), Inorganic Compounds (IOCs), nitrate, and coliform monitoring results available in the DHS Drinking Water Program SDWIS on-line database. Required routine monitoring for nitrate and coliform occurs more frequently than that for VOCs, SOCs, and IOCs, therefore both nitrate and coliform are particularly useful as indicators of contaminate pathways into the aquifer. Coliform bacteria are ubiquitous in the environment and their presence in source water (i.e., the aquifer) may indicate a microbial source nearby. Likewise nitrate provides similar information and is highly mobile compared to most contaminants and in some cases will act as a precursor to other contaminants entering the aquifer. Therefore, we consider an aquifer yielding water that meets any of the following criteria to be highly sensitive to contamination:

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- Any VOC or SOC detections,
- IOC detections greater than 50% of the EPA established MCL,
- Source-related coliform detections, and/or
- Nitrate concentrations of 5 mg/L or greater.

4.2 Sensitivity Analysis Results

According to the well logs the aquifer supplying drinking water to the Kilchis Regional Water Districts Wellfield consists of a relatively thin alluvial aquifer composed of sandy gravel to gravelly cobbles. The alluvial deposits that make up the Kilchis Regional Water Dist. wellfield are primarily made up of unconsolidated clay, silt, sand and gravel alluvium deposited along the Kilchis River. (Wells, Snavely, Macleod, 1994) The well logs for the Kilchis Regional Water Dist. Wellfield indicate that water is drawn primarily from the sand and gravel layers. The well driller reported first encountering water at a depth of 15 feet at the Well #1 and 17 feet at well #2. The well driller also reported that the static water level (water level in the well when it is at rest, i.e. not being pumped) rests at a depth of 15 for well #1 and 17 feet for well #2.

Traverse Potential (TP) and Infiltration Potential (IP) values for the Kilchis Regional Water Dist Wellfield DWPA are based entirely on the geologic description included on the well driller's reports for Wells #1 & #2. Data collected for this assessment did not reveal enough other wells inside the DWPA which could be used to conduct additional calculations. However, since the DWPA is confined to a narrow alluvial valley where the aquifer characteristics are expected to act in a uniform manner, it is reasonable to assume that overburden characteristics, and thus TP and IP values, are also uniform throughout the DWPA. On this basis, the calculated TP value for the DWPA is 7.0. Using climate data collected by NOAA, we estimated an annual recharge rate to the aquifer of 55.0 inches which combined with the TP values, yield an IP of 9.

Soils information for the DWPA were collected from the Soil Survey Tillamook Area Oregon (Bowlsby and Swanson, 1964). Based on sensitivity analysis results, most of the soils present in the groundwater DWPA are moderately permeable with a calculated time of travel of 66 hours. The moderate soil encompasses the entire DWPA and is shown in Appendix B, Figure 2.

Well #1 was drilled in the 1975 by Zent Drilling Inc. and is fitted with a 12-inch casing from ground level to 26 feet and a 10-inch casing from 40 feet to 46.5 feet. Well #1 is screened on the interval of 26 to 40 feet. The annulus outside the well casing of well #1 is sealed with cement to a depth of 25 feet and prevents surface water and shallow groundwater from entering the bore hole. Well #2 was constructed in 1980 by Zent Drilling Inc. and is fitted with a 12-inch casing that extends from the surface to 21 feet. Water enters well #2 through the well screen that runs from 20 feet to 40 feet. The annulus outside the well casing of well #2 is sealed with cement to a

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depth of 20 feet and prevents surface water and shallow groundwater from gaining access to the well bore. A sanitary hazards inspection conducted by DHS Drinking Water Program staff on 03/17/1988 did not reveal any deficiencies pertaining to source water protection. A copy of the well report for Well #1 and #2 is included in Appendix D.

Well report records indicate that there are approximately 5 other wells within the section containing the Kilchis Regional Water District Wellfield. Of these, 3 were drilled before 1979. The remaining wells were drilled after 1978. This leads to an Other Well Score of 8, far below the significant risk indicator threshold of 225. Thus, other wells in the area are not believed to represent a significant risk to the water system. However, it should be understood that the above numbers only represent wells on record at the Water Resources Department. Prior to 1960, there were no requirements regarding the filing of well reports. In addition, unauthorized wells are not uncommon in many areas. Therefore, the Other Well Score should be considered a minimum assessment of risk.

DHS Drinking Water Program records indicate that nitrate concentrations at the combined entry point for the wells are 0.90 mg/L, far below the current EPA nitrate MCL of 10 mg/L. Records also indicate that there haven't been any positive detections for total coliform. However, we recommend that the water system operator continue to track nitrate testing results so that corrective action through the implementation of Best Management Practices can be taken if nitrate concentrations are observed to rise with time.

Inorganic chemicals testing for the Kilchis Regional Water Dist indicated that barium (0.0003 mg/L, conducted in 2002) is present in the drinking water at concentrations far below the current EPA MCLs of 2.0000 mg/L for barium. It is not uncommon to find trace amounts of barium in a drinking water source as it can be leached from the geologic material that groundwater is moving through. Required testing for VOCs and SOCs, also conducted in 2002, did not indicate the presence of either chemical type in the source water at concentrations great enough to be detected using current testing procedures. This means that VOC, SOC, and most IOC concentrations within the water drawn from the Kilchis Regional Water District Wellfield are far below the current EPA MCLs.

The aquifer sensitivity for the system is summarized on the sensitivity summary sheet in Appendix F. If a criterion on the form is checked "No", it implies that, based on our evaluation, that criterion does not contribute significantly to the aquifer's sensitivity. If neither box is checked for a criterion and/or "N/A" is written beside a criterion, it implies that there is either no information available for that specific criterion or that the criterion does not apply to the water system. We have identified the following criteria which we believe increases the aquifer's sensitivity to contamination from the surface.

4.2.1 Highly Sensitive Criteria

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Based on our assessment of the well reports for Wells #1 & #2, most recent sanitary survey, and monitoring history for the Kilchis Regional Water District. The aquifer that the Wellfield draws water from is considered highly sensitive to contamination due to the shallow unconfined nature of the aquifer, Infiltration Potential score that is greater than 7 and the traverse potential score greater the 5. Wells#1 and #2 are not considered highly sensitive to contamination.

An Infiltration Potential score that exceeds 7 suggests that the combined availability of water and geologic conditions present near the Kilchis Regional Water District Wellfield will likely allow water and water-transported contaminants from the surface to easily reach the aquifer with little opportunity for a reduction in concentration.

4.2.2 Moderately Sensitive Criteria

Water quality within the aquifer is deemed to be moderately sensitive due to the presence of naturally occurring inorganic chemicals, presence of moderately permeable soils throughout the DWPA, and the close proximity of surface water to the wellfield.

Although probably naturally occurring, small concentrations of barium have been found in the source water for Kilchis Regional Water District. The presence of this chemical in the water supply could indicate aquifer sensitivity if there is a potential contaminant source that uses or produces such inorganic chemicals located within the DWPA. The following detections are far below current EPA MCLs and are considered safe concentrations for both short- and long-term exposure. Associated exposure symptoms and health risks are included here as general information and **are not** intended to raise an immediate concern.

- **Barium.** Present in the source water at a concentration of 0.0003 mg/L, the EPA MCL is 2.0000 mg/L. Ingesting high levels of barium over the short-term can result in difficulties in breathing, increased blood pressure, changes in heart rhythm, stomach irritation, brain swelling, muscle weakness, and damage to the liver, kidney, heart, and spleen. However, the long-term effects of people ingesting low levels of barium are unknown.

The Kilchis River is within 500 feet of both wells. Surface water can be a source of micro-organisms, including Giardia and Cryptosporidium in addition to bacteria and viruses and therefore contributes to aquifer sensitivity. If the water system's wellfield is in hydraulic connection with either surface water body, surface water may be moving directly into the wells. Kilchis Regional Water District initiated a field investigation that indicated surface water and groundwater near the wellfield were likely to be hydraulically connected. Subsequent Microscopic Particulate Analysis (MPA) testing resulted in two low scores, suggesting that local surface water bodies do not represent a threat to drinking water quality in terms of Giardia and/or Cryptosporidium contamination. However, MPA testing alone does not rule out the potential

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for bacteria and viruses, originating in local surface water sources, to impact local groundwater quality near the wellfield. In addition to the potential threat of bacterial and viral contamination, any accidental chemical spill within the Kilchis River, either within the DWPA or upstream from the DWPA, could also impact water quality.

Kilchis Regional Water District Well #1 was drilled in the 1975 before the Oregon Water Resources Department (OWRD) significantly raised their well construction standards in 1979. This suggests that even if the well had been built to meet the current construction standards, enough time has passed for the original casing and casing seal to begin deteriorating under normal conditions.

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5. Inventory of Potential Contaminant Sources

5.1 Methodology

The primary intent of an inventory is to identify and locate potential contaminate sources of concern within the drinking water protection area. Significant sources of contamination can be defined as any facility or activity that stores, uses, or produces contaminants of concern and has a sufficient likelihood of releasing such contaminants to the environment at levels that could contribute significantly to the concentration of these contaminants in the source waters of the public water supply. The inventory is a very valuable tool for the local community in that it:

- Provides information on the locations of potential contaminant sources, especially those that present the greatest risks to the water supply,
- Provides an effective means of educating the local public about potential problems, and
- Provides a reliable basis for developing a local management plan to reduce the risks to the water supply.

Inventories were focused primarily on the potential contaminate sources regulated under the federal Safe Drinking Water Act (SDWA). This includes contaminants with a maximum contaminant level (MCL), contaminants regulated under the Surface Water Treatment Rule, and the microorganism *Cryptosporidium*. The inventory was designed to identify several categories of potential contaminate sources including micro-organisms (i.e., viruses, *Giardia lamblia*, *Cryptosporidium*, and bacteria); inorganic compounds (i.e., nitrates and metals); and organic compounds (i.e., solvents, petroleum compounds and pesticides). Contaminants can reach a water body (groundwater, rivers, lakes, etc.) from activities occurring on the land surface or below it. Contaminant releases to water bodies can also occur on an area-wide basis or from a single point source.

It is advantageous to identify as many potential risks as possible within the drinking water protection area during the inventory. It is important to remember the sites and areas identified in this section are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly. Not all of these inventoried activities pose actual high risks to your public water supply. The day-to-day operating practices and environmental (contamination) awareness varies considerably from one facility or land use activity to another.

When identifying potential risks to a public water supply, it is necessary to make "worst-case" assumptions. This is important because it is the potential risk that we are attempting to

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determine. The worst-case assumption that has to be made when considering potential risks to water bodies is that the facility or activity is not employing good management practices or pollution prevention. Also, assumptions are made about what sources are included in particular types of land use. For example, it is assumed that rural residences associated with farming operations have specific potential contamination sources such as fuel storage, chemical storage and mixing areas, and machinery repair shops. Any errors in these assumptions can be easily corrected as the community moves beyond the assessment to develop a protection plan.

Past, current, and possible future potential contaminate sources were identified through a variety of methods and resources. In completing this inventory, DEQ used readily available information including a review of DEQ and other agencies' databases of currently listed sites, interviews with the public water system operator, and field observation as discussed below. In-depth analysis or research was not completed to assess each specific facility's compliance status with local, state and/or federal programs or laws. Further, the inventory process did not include an attempt to identify unique contamination risks at individual sites such as facilities (permitted or not) that do not safely store potentially hazardous materials.

The process for completing the inventory for the alluvial aquifer portion of Kilchis Regional Water District's drinking water protection area included several steps, which are summarized as follows:

1. Relevant information as of August 2001 were collected from applicable state and federal regulatory databases including the following lists:
 - DEQ Environmental Cleanup Site Information System (ECSI) which includes the U.S. EPA National Priorities List (NPL) and the U.S. EPA Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLA) list;
 - DEQ leaking underground storage tank (LUST) list;
 - DEQ registered underground storage tank (UST) list;
 - DEQ Source Information System (for water discharge permit sites including National Pollutant Discharge Elimination System (NPDES) permits, Water Pollution Control Facility (WPCF) permits, storm water discharge permits, and on-site sewage (septic) system permits);
 - DEQ Active Solid Waste Disposal Permits list;
 - DEQ Dry Cleaners list;

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- State Fire Marshall Hazardous Material Handlers (HAZMAT) site list (information on materials in a gas-form was not used since gaseous compounds rarely pose a threat to surface water or groundwater);
- DEQ Underground Injection Control (UIC) list of facilities with registered underground injection control systems; and
- DEQ Hazardous Waste Management Information System (HWIMSY) list which includes U.S. EPA Resource Conservation Recovery Act (RCRA) generators or notifiers and U.S. EPA RCRA Treatment, Storage, and Disposal Facility (TSDF) Permits.

Because of the way various state and federal databases are set up, the specific location of listed sites is not always given or accurate within the database. DEQ verified the presence and approximate location of potential contaminant sources within the drinking water protection area by consulting with local community members and/or by driving through the area (windshield survey) as discussed below in subsequent inventory steps.

2. A windshield survey was conducted by driving through the alluvial aquifer portion of the drinking water protection area to field locate and verify as many as possible of the potential contaminant source activities. We looked for potential contaminant sources within four general categories of land use: residential/municipal, commercial/industrial, agricultural/forest, and other land uses (see Appendix C, Table 1).
3. Relative risk levels of higher-, moderate-, or lower-risk were assigned to each potential contaminant source based on the Oregon Source Water Assessment Plan (1999). A summary of the types of potential contaminant sources and level of assigned risk is presented in Appendix C, Table 1 (Summary of Potential Contaminant Sources by Land Use). The comments section of Appendix C, Table 2 (Inventory Results- List of Potential Contaminant Sources) provides justification for any modifications to the risk rating that may have resulted from field observations that were different from what is typically expected for the specific facility. For example, a "random dumpsite" is typically considered a moderate risk to groundwater. However, if disposal of hazardous or toxic substances was observed during the field visit, the risk rating may be modified to "higher". Relative risk ratings are considered an effective way for the water supply officials and community to prioritize management efforts for the drinking water protection area. When the local water supply officials and community "team" enhance the inventory for use in developing management options, further analysis may need to be conducted to more closely evaluate the actual level of risk.
4. A final summary of the inventoried sources and the GIS base map were prepared and included in this report.

Oregon Health Division (OHD) had determined that the Kilchis Regional Water District's wells are "in hydraulic connection" with the Kilchis River. This inventory addresses only the

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groundwater portion of the delineation. Completing a detailed evaluation of potential contaminant sources within the Kilchis River watershed upstream of the public water system's wells is outside the scope of this Source Water Assessment.

5.2 Results

The results of the inventory were analyzed in terms of current, past, and future land uses; their time of travel (TOT) relationship to the well site; and their associated risk to the public water system. In general, land uses that are closest to the well and those with the highest risk pose the greatest threat to your drinking water supply. Inventory results are summarized in Appendix C, Tables 1 and 2 and are shown on Figure 2. There were no facilities or sites identified within the Drinking Water Protection Area on the regulatory databases that were searched (see Step 1 in the previous section).

5.2.1 Within The Alluvial Aquifer Boundary

Two potential contaminant sources (Reference Number 6 on Figure 2 and Appendix C, Table 2) were identified within the alluvial aquifer boundary. The potential contaminant sources within the alluvial aquifer boundary pose a moderate risk to the drinking water supply. The moderate risk site within the DWPA is a transportation corridor. With the exception of a transportation-stream crossing-perennial which represents a low risk.

5.2.2 Overview of Inventory Results for the Surface Water Protection Area

As discussed above, potential contaminant sources within the Kilchis River watershed upstream of the public water system's wells is outside the scope of this Source Water Assessment. We recommend the water system and community "enhance" the inventory of the alluvial aquifer area by identifying potential contaminant sources within the Kilchis River watershed upstream of the wells. A list of potential contaminant sources to a surface water supply that are most likely to affect groundwater is provided in Table 3 (Attachment C). This short-list of potential contaminant sources includes primarily sources that present a high risk of transmitting toxics and micro-organisms. At a minimum, these sources should be considered for their potential risk to the water supply.

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6. Susceptibility of the Drinking Water Source

Drinking water susceptibility can be defined as the potential for contamination within the Drinking Water Protection Area (DWPA) to reach the well(s) and/or spring(s) being used by a Public Water System. The overall purpose of the susceptibility analysis is to identify the potential threats to drinking water quality and help prioritize community efforts for minimizing the contamination risk associated with those threats. Therefore, the susceptibility analysis is dependent on four factors; (1) identifying the location of the DWPA, (2) the sensitivity of the constructed intake (i.e. well or spring), (3) the sensitivity of the aquifer to contamination, and (4) the occurrence and distribution of high- and moderate-risk potential contaminate sources within the DWPA. These four steps were accomplished during the delineation, sensitivity analysis, and potential contaminate source inventory phases of this assessment.

The susceptibility analysis is a management guidance tool that should be used to recognize and identify environmental conditions that are favorable for contamination of the drinking water supply. For example, if a contaminate is released to soils or groundwater in an area of high sensitivity, it is likely that contamination of the aquifer will occur if remedial action is not taken. However, the susceptibility analysis should not be used to predict when or if contamination will actually occur.

The susceptibility analysis is completed by overlaying the potential contaminate source inventory results onto a map of the highly and moderately sensitive aquifer areas inside the DWPA (Appendix B, Figure 4) which were identified using an overlay of either soil sensitivity, traverse potential (TP), or infiltration potential (IP) in Appendix B, Figure 3. These are areas within the DWPA where rapid infiltration of water from the surface is most likely to occur. Potential contaminate source inventory results are analyzed in terms of current, past, and future land uses; their time of travel relationship or proximity to the well and/or spring location(s); and their associated risk rating (Appendix B, Figure 2). High- and moderate-risk contaminate sources have been identified using a "worst-case" assumption (See Chapter 5, Inventory of Potential Contaminate Sources) and are defined as any facility or activity that stores, uses, or produces a contaminate of concern in large enough quantities that if released, could be detectable in the public water supply.

In general, land use activities which pose the greatest threat to the drinking water supply are those which are closest to the well(s) and/or spring(s) and have the highest associated risk rating. Therefore, the DEQ and DHS Drinking Water Program strongly recommend that the community address all high- and moderate-risk potential contaminate sources that occur within their DWPA in order to reduce the risk of their drinking water supply becoming contaminated. How the potential contaminate sources are prioritized and the level of management strategies that are appropriate depend on the proximity of the potential contaminate source to the well and/or spring and whether the sensitivity of the aquifer at the PCS site is high, moderate, or low.

If a public water system's drinking water source is considered susceptible to contamination, it is

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recommended that the system identify those condition(s) that lead to the susceptibility and take steps to protect the resource (i.e., work directly with the public and facility operators to implement sound management practices, etc...). Public water systems that are not considered susceptible should identify factors that could lead to future susceptibility and are encouraged to take action to preserve future water quality by developing a management strategy that will ensure on-going resource protection.

6.1 Intake Susceptibility

Well #1 is moderately sensitive due to the age of the well and its commingling. Well #2 is not sensitive and therefore can not be susceptible.

6.2 Aquifer Susceptibility

We consider the aquifer that the wellfield is drawing water from to be highly sensitive to contamination due to shallow unconfined nature of the aquifer and the Infiltration Potential score that is greater than 7 near the wellfield. We also consider the aquifer to be moderately sensitive due to trace amounts of naturally occurring inorganic chemicals, and the close proximity of surface water to the wellfield. **Therefore, it is reasonable to assume that the aquifer is highly susceptible to contaminate sources located within the Drinking Water Protection Area.**

6.2.1 Potential Contaminant Sources and Time-of-Travel Zones

In general, PCSs within the shorter time-of-travel zones pose greater risk than those in the longer time-of-travel zones. Also of concern is the location and distribution of these sources with respect to high and moderately sensitive areas. Overlaying the PCS location map and the sensitivity map for the Water System provides a tool to determine the susceptibility of the community's drinking water supply to contamination from each PCS (see Appendix B, Figure 4). The table below indicates the relationship between potential contaminate source risk, aquifer sensitivity, and estimated contaminate arrival time at the well, wellfield, and/or spring. The community can use the PCS location numbers on the inventory map in conjunction with the displayed aquifer sensitivity and relative risk rankings for each PCS from Table 2 (Appendix C) to identify the susceptibility of the drinking water source to contamination from each PCS and take steps to reduce the risk accordingly.

We have attempted to quantify the relative susceptibility of the water system with regard to the PCSs present in the DWPA using the table below. Across the top of the table, the groundwater protection area is subdivided to account for areas of high, moderate, and low sensitivity. Potential contaminate source risk categories (high, moderate, and low) are listed down the left hand side of the table. The relative aquifer susceptibility to each PCS is demonstrated by the

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shading of each cell in the table. Cells that are shaded dark grey indicate a highly-susceptible condition, light grey shaded cells indicate a moderately-susceptible condition, and white cells indicate conditions of low susceptibility. The numbers in each cell correspond to the potential contaminate source reference numbers shown in Appendix C, Table 2 and shown on Figure 4, Appendix B. It should be noted that there are multiple sources for most the reference numbers indicated in Table 2. The Table below takes into account the existence of these multiple contaminate sources with multiple reference number entries. Cells that do not contain a number indicate that there are no known potential contaminate sources that meet the conditions for the cell. Potential contaminate sources that meet the specific criteria for a cell in the table can be identified by reviewing Figure 4 in Appendix B and Table 2 in Appendix C. The number of potential contaminate sources are totaled across the bottom of the table.

Table. Kilchis Regional Water District Wellfield Susceptibility as a Function of PCS Risk, and Aquifer Sensitivity.			
	Groundwater Protection Area		
	High	Mod	Low
High Risk PCSs			0
Moderate Risk PCSs		6	0
Low Risk PCSs	0	6	0
Total PCSs	0	2	0

The distribution of high, moderate, and low sensitivity areas inside the Drinking Water Protection Area can be determined using either soil sensitivity or the mapped distribution of Traverse Potential (TP) or Infiltration Potential (IP). In the case of the Kilchis Regional Water District Wellfield, we have decided to rely upon the distribution of sensitive soils throughout the DWPA. In this case, our decision to use soil sensitivity is driven by a lack of available TP and IP scores throughout the Kilchis River Valley. Therefore, it is reasonable to assume that the natural aquifer sensitivity to contamination throughout the DWPA is dependent on water travel time through the local soils.

A total of 2 potential contaminate sources were identified(one Moderate and one low risk) inside the Kilchis Regional Water District Wellfield Drinking Water Protection Area. Based on the analysis results shown in the relative susceptibility table, we consider the Kilchis Regional Water District Emergency Well to be moderately susceptible to this potential contaminate source inside the Groundwater DWPA. There are 6 other inventoried potential contaminate source locations

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that appear outside the DWPA the should be addressed in the Drinking Water Protection Plan. As a result of this analysis we recommend that the water system develop a Drinking Water Protection Plan that addresses all high and moderate risk potential contaminate sources in and around the DWPA, beginning with those sources which represent the greatest susceptibility risk. At a minimum, the water system should work with representatives from those PCSs posing a moderate to high susceptibility risk within the DWPA to (1) determine the level of environmental protection employed in the day-to-day operations of the facility and (2) identify any reasonable Best Management Practices that will lead to an additional reduction of contamination risk.

6.2.2 Susceptibility to Microbial Contaminate Sources

The U.S. EPA is authorized under the Safe Drinking Water Act to develop disinfection requirements for all public water systems. The EPA has already established such requirements for drinking water sources identified as surface water and groundwater under the direct influence of surface water through the Surface Water Treatment Rule. Currently the EPA is in the process of developing a National Primary Drinking Water Regulation that will address disinfection requirements for drinking water sources identified as groundwater. The purpose of the Groundwater Rule will be to protect the public from microbial (i.e., fecal) pathogens in groundwater and to prevent other waterborne disease outbreaks.

Under the Groundwater Rule, groundwater-based public water systems will have to disinfect their drinking water unless they can demonstrate that their source is not susceptible to fecal contamination. This demonstration will likely comprise four different elements: (1) enhanced sanitary surveys, (2) source water monitoring, (3) correction of source water intake defects, and (4) hydrogeologic assessments. The hydrogeologic assessment is based on determining the groundwater (aquifer) sensitivity with respect to microbial contamination. **If a sensitive aquifer exists in conjunction with a source of fecal contamination, the drinking water source is considered to be susceptible to microbial contamination.** In addition, it is also recognized that the source water intake construction may be significant in contributing to the susceptibility of a groundwater source to microbial contamination. **Specifically, if the current construction or condition of the source water intake (well or spring box) allows for the migration of shallow water into the aquifer and/or the distribution system, the drinking water source should be considered susceptible.**

The susceptibility analysis used in the Source Water Assessment was developed with the pending Groundwater Rule in mind. The Source Water Assessment specifically includes an evaluation of aquifer characteristics, well construction, and estimated time for recharging surface water to reach the aquifer within the Drinking Water Protection Area, which are the critical factors in determining aquifer susceptibility to microbial contamination. In addition, the delineation effort usually includes the identification of the 2-year Time-of-Travel boundary where potential microbial sources of contamination (identified in the potential contaminate source inventory)

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may present an acute (immediate) risk to public health. However, in the case of Kilchis Regional Water District, a 2-year Time-of-Travel boundary was not identified. The entire groundwater DWPA for Kilchis Regional Water District is encompassed within the one year time of travel.

The two-year time frame is used as a conservative estimate of the survival time for some viruses. Based on the assessment results, the aquifer is considered sensitive to viral contamination due to an Infiltration Potential score that is greater than 7 and a Traverse Potential score greater than 5, which suggests a short travel time to the aquifer. Since viral contaminate sources have been identified within close proximity to the wellfield, we consider the aquifer to be susceptible to viral contamination. Therefore, it is in the water system's best interest to reduce the potential for future viral contamination by complying with all Oregon Department of Human Services setback standards related to public drinking water supply sources.

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7. Recommended Use of the Source Water Assessment Report

The process for developing a Drinking Water Protection Plan can be summarized as follows:

Assessment Phase (Source Water Assessment provided by DHS and DEQ)

- Delineate the area that serves as the source of the public water supply (Drinking Water Protection Area (DWPA))
- Inventory the potential risks or sources of contamination within the DWPA
- Determine the areas most susceptible to contamination

Protection Phase (performed by the water system or community)

- Assemble a local Drinking Water Protection Team
- Enhance the Source Water Assessment if necessary
- Develop a plan to reduce the risk of contamination (protect the resource)
- Develop a contingency plan to address the potential loss of the drinking water supply
- Certify (optional) and implement the Drinking Water Protection Plan

The assessment phase was funded by the federal Safe Drinking Water Act. Its purpose is to supply the water system with the information necessary to develop a Drinking Water Protection Plan. In Oregon, development of a protection plan is voluntary.

Prior to moving into the protection phase, DEQ recommends the inventory presented in this document be reviewed in detail to clarify the presence, location, operational practices, actual risks, etc. of the identified facilities and land use activities. The SWA inventory should be regarded as a preliminary review of potential sources of contamination within the drinking water protection area. Resources within the community should be used to do an "enhanced inventory" to refine this preliminary list of potential sources of contamination.

It is also important to remember that not all of the inventoried activities will need to be addressed if you choose to develop a Drinking Water Protection Plan. When developing a protection plan, sources which pose little or no threat to your drinking water source can be screened out. For example, if any of the land use activities are conducted in a manner that already significantly reduces the risk of a contamination release, the facility would not need to re-evaluate their practices based on drinking water protection "management". One of the goals of developing a plan based on the inventory results is to address those land use activities that do pose high or moderate risks to your public water supply. The system should target these facilities with greater levels of education and technical assistance to minimize the risk of contamination.

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Limited technical assistance is available through the DEQ and Drinking Water Program at DHS for water systems that choose to move beyond the assessments and voluntarily develop a Drinking Water Protection Plan. Using the results of the assessment, the water system/community can form a Drinking Water Protection Team of individuals that have a stake in the plans implementation.

Forming a local team to help with the development of a protection plan is very important. Oregon's drinking water protection approach relies upon the concept of "community based protection", as are many other water quality programs. This simply refers to the concept of allowing local control and decision-making to implement the water quality protection effort. Community-based protection is successful only with significant local citizen stakeholder involvement. Community-based protection can draw on the knowledge and successful adaptive practices within the area. Landowners generally know best how to achieve water resource restoration and protection as long as a thorough explanation of the problem is provided, the objectives to solve the problem are clearly defined and technical assistance is available.

In community-based protection, citizens have more control and are therefore more likely to participate in the program and be more willing to assist with the educational and outreach effort which will make the plan successful. We recommend that the protection plan be developed so as to minimize any burdens on individual property owners, but maximize the equity in responsibility for reducing the risks of future contamination.

Protecting the drinking water supply in a community can also be a very effective way to encourage all citizens to participate in an issue which directly affects everyone in that community. This often leads to more public involvement in other significant local decisions concerning future livability issues, e.g., land use planning. In communities already developing and implementing Drinking Water Protection Plans, the process has served to bring many diverse interests together on a common goal and strengthen the local rural and urban relationships through communication and increased understanding. The risks and sources of water quality problems are not only from industries, farmers and managed forests, but every individual living, commuting, and working in that area.

Communities/water systems interested in developing Drinking Water Protection Plans may contact the Department of Environmental Quality (503-229-5413) or the DHS Drinking Water Program (541-726-2587) for further information.

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