

APPENDIX H2

MEMO: WILSON CREEK EXCLUSION
FROM SHORELINE JURISDICTION

MEMO: WILSON CREEK FLOODWAY
DEFINITION FOR SHORELINE
JURISDICTION

MEMORANDUM

To: Damien Hooper, Grant County Planning Manager; Mayor Kathy Bohnet, Town of Wilson Creek
Date: May 30, 2012

From: Ben Floyd and John Small, Anchor QEA
Project: 110827-01.01

cc: Jaime Short and Jeremy Sikes, Ecology

Re: Wilson Creek Exclusion from Shoreline Jurisdiction

INTRODUCTION

Anchor QEA prepared a preliminary shoreline jurisdiction memorandum dated February 27, 2012. Wilson Creek was included as a shoreline jurisdiction in this memorandum. Since then, Anchor QEA has become aware of additional gage data indicating that Wilson Creek does not meet the Shoreline jurisdiction criteria of having a mean annual flow of more than twenty cubic feet per second (RCW 90.58.030). Attachment 1 includes the gage data relied on to make this determination.

Accordingly, the Anchor QEA February 27, 2012 Preliminary Shoreline Jurisdiction memorandum findings are amended to exclude Wilson Creek as a shoreline jurisdiction water body.

Attachment 1

Wilson Creek is located in northeastern Grant County. It enters Grant County at the Grant County/Lincoln County boundary and continues south until it reaches its confluence with Crab Creek near the town of Wilson Creek.

Two USGS gages located on Wilson Creek have daily average flow data available. The upstream gage (USGS gage #12465400, Wilson Creek below Corbett Draw near Almira, WA) is located in Lincoln County approximately 6 miles upstream of the Grant County/Lincoln County boundary. Wilson Creek has a drainage area of 327 square miles at the upstream gage. The gage has a period of record of March 1969-June 1971, April 1991-September 1994, and October 2002-September 2011. Table 1 presents monthly flow statistics for the upstream gage.

The downstream gage (USGS gage #12465500, Wilson Creek at Wilson Creek, WA) is located approximately 1 mile upstream of Wilson Creek's confluence with Crab Creek. Wilson Creek has a drainage area of 427 square miles at the downstream gage. The gage has a period of record of February 1951-September 1957, October 1958-September 1971, and October 1972-September 1973. Table 2 presents monthly flow statistics for the upstream gage.

Findings

The monthly flow statistics from Tables 1 and 2 appear to show that Wilson Creek is a losing reach with little to no surface water typically flowing. Aerial photos of Wilson Creek show little to no vegetation along the creek channel, which may indicate a lack of surface water. Additionally, some cropland circles run directly over the creek channel, which may also imply a lack of surface water within the creek.

Given this information, it would seem prudent to remove Wilson Creek from consideration in the revision of the Grant County Shoreline Master Program. Within the Shoreline Management Act there are criteria to provide for reasonable access to water and water-related uses. Within Wilson Creek there are little to no water-related uses as data suggests that no water continuously exists within the creek for these uses to occur.

Table 1
Monthly Flow Statistics (cfs) – USGS Gage #12465400 – Wilson Creek below Corbett Draw near Almira

MONTH	AVE	MAX	MIN	90%	50%	10%
October	1.0	4.0	0.0	0.1	0.7	2.3
November	1.2	4.9	0.1	0.1	0.8	3.3
December	1.5	44.0	0.0	0.1	0.7	4.8
January	11.9	600.0	0.2	0.3	1.0	17.0
February	21.6	1,400.0	0.1	0.4	1.4	24.0
March	36.1	845.0	0.3	0.6	5.5	87.2
April	15.0	326.0	0.1	0.6	7.6	37.0
May	7.0	44.0	0.0	0.3	5.2	17.5
June	3.9	17.0	0.0	0.3	2.7	8.1
July	5.9	262.0	0.0	0.1	1.1	6.6
August	1.2	9.6	0.0	0.0	0.9	2.5
September	0.9	6.5	0.0	0.1	0.8	2.0

From the statistics presented in Table 1, the median flow is at or below 1 cfs for 6 months out of the year, and the median monthly flow for the highest flow month is less than 8 cfs (in April).

Table 2
Monthly Flow Statistics (cfs) – USGS Gage #12465500 – Wilson Creek at Wilson Creek, WA

MONTH	AVE	MAX	MIN	90%	50%	10%
October	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0
December	3.0	500.0	0.0	0.0	0.0	0.0
January	38.8	3,090.0	0.0	0.0	0.0	27.0
February	70.1	4,920.0	0.0	0.0	0.0	137.4
March	47.9	1,130.0	0.0	0.0	0.0	97.0
April	12.4	422.0	0.0	0.0	0.0	37.0
May	1.5	30.0	0.0	0.0	0.0	3.2
June	0.0	5.7	0.0	0.0	0.0	0.0
July	0.0	14.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.0	0.0	0.0	0.0

From the statistics presented in Table 2, the 10 percent exceedance flow is at or below 0.1 cfs for 7 months out of the year, and there is no flow in 4 months out of the year for the full period of record. The median monthly flow is below 0.1 cfs for all months.

MEMORANDUM

To: Damien Hooper, Grant County Planning Manager; Mayor Kathy Bohnet, Town of Wilson Creek
Date: October 1, 2012

From: Ben Floyd and John Small, Anchor QEA
Project: 110827-01.01

cc: Jaime Short and Jeremy Sikes, Ecology

Re: FINAL DRAFT Town of Wilson Creek Floodway Definition for Shoreline Jurisdiction

INTRODUCTION

Anchor QEA prepared a preliminary shoreline jurisdiction memorandum dated February 27, 2012. This memorandum relied on the use of Federal Emergency Management Agency (FEMA) definition of Floodway in developing the extent of the shoreline jurisdiction for all mapped floodways in the County. The Crab Creek floodway was included as a shoreline jurisdiction based on the boundaries established by the FEMA Flood Insurance Survey (FIS) (FEMA 2009), and based on the FEMA definition of a Regulatory Floodway.

“A ‘Regulatory Floodway’ means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations.” (FEMA 2012)

The Washington State Administrative Code (WAC) offers two definitions for Floodway (WAC 173-26-030(18)) for use in determining the extent of jurisdiction under the Shoreline Management Act (SMA).

"Floodway" means the area, as identified in a master program, that either:

- (a) Has been established in federal emergency management agency flood insurance rate maps or floodway maps; or
- (b) Consists of those portions of a river valley lying streamward from the outer limits of a watercourse upon which flood waters are carried during periods of flooding that occur with reasonable regularity, although not necessarily annually, said floodway being identified, under normal condition, by changes in surface soil conditions or changes in types or quality of vegetative ground

cover condition, topography, or other indicators of flooding that occurs with reasonable regularity, although not necessarily annually. Regardless of the method used to identify the floodway, the floodway shall not include those lands that can reasonably be expected to be protected from flood waters by flood control devices maintained by or maintained under license from the federal government, the state, or a political subdivision of the state.

Anchor QEA proposes to amend the originally proposed extent of shoreline jurisdiction based on definition (b) above and after reviewing:

- An on-site review of indicators of flow and hydrology in the vicinity of the FEMA Floodway
- An on-site review of vegetation in the vicinity of the FEMA Floodway
- An on-site review of in the vicinity of the FEMA Floodway
- An office review of the topography and geomorphology of the vicinity
- An office review of the period of record for nearby stream gages.

It is our opinion that definition (b) above provides a more reasonable and appropriate SMA jurisdiction determination approach for the Town of Wilson Creek.

REVIEW OF ON-SITE FINDINGS

A field reconnaissance was conducted on September 13, 2012 by John Small and Betsy Bermingham of Anchor QEA and Jeremy Sikes of the Shorelands and Environmental Assistance Program (Washington State Department of Ecology). Access was provided after making inquiries with Town officials. The field reconnaissance focused on the right bank (north side) of the creek, which is the only portion that is within the town limits of Wilson Creek. The floodplain of the left bank is naturally confined by an outcrop of Columbia River Basalt with a steep talus slope below vertical columnar basalt.

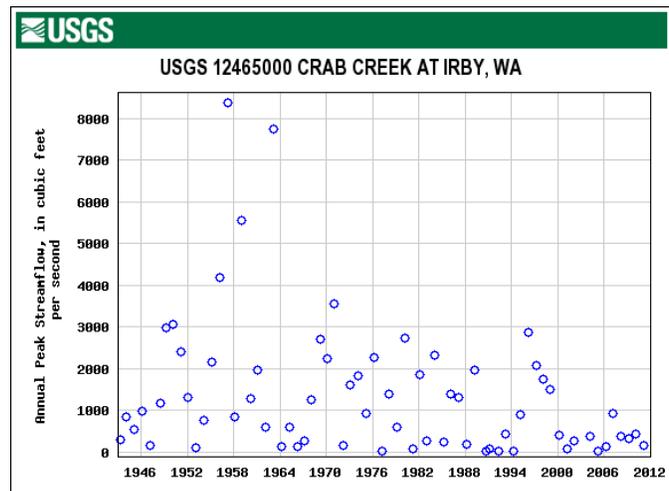
Within the FEMA floodway between the top of bank and the railway there was no evidence of flooding, wetland hydrology or standing water. Wetland hydrology indicators (USACE 2008) were not present. The topography did not show evidence of flooding, fluvial scour, or fluvial deposition. Much of the topography appears to be the result of casual earth movement and material stock piling. No visual evidence was observed to indicate that the stock-piled material has been carried away by flood flows or that this material has caused debris jams.

Vegetation along the lower bank (below the ordinary high water mark [OHWM]) of Crab Creek and Wilson Creek was dominated by *Typha latifolia* (WET) while the upper bank was dominated by Roses (*Rosa nutkana* and/or *Rosa woodsii* (FACU) with some willow (*Salix* sp.) (FAC, FACW, OBL typ.). Landward of the top of bank these shrubs quickly give way to rabbitbrush (*Chrysothamnus* sp.) (NI) and sage (*Artemisia* sp.) (FACU, UPL). The herbaceous species found landward of top-of-bank were primarily Great Basin wild rye (*Leymus cinereus* AKA *Elymus cinereus*)(FAC), and common herbaceous weeds including curly dock (*Rumex* sp.) (FAC) and pepperweed (*Lepidium* sp.) (FAC, FACU, UPL).

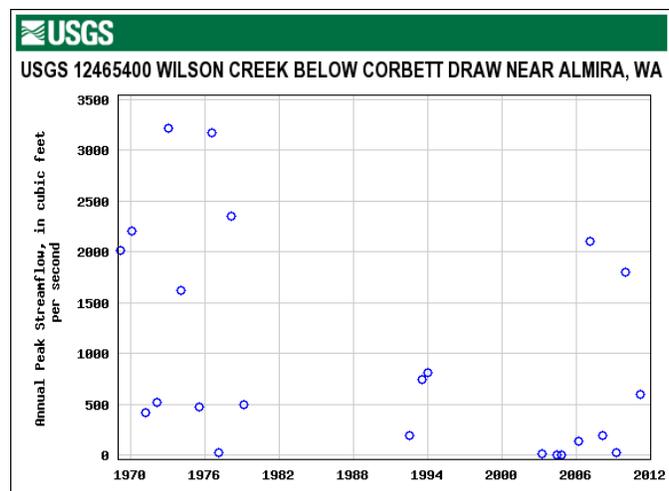
HIGH-FLOW HISTORY

Note: This memorandum was developed based on available gage data. FEMA FIS results were also considered for Wilson Creek although no supplemental analysis using the FEMA model was conducted (FEMA 2009). Accordingly, no additional stage discharge relationships were developed beyond what was provided in the FEMA results to supplement this analysis. Instead this review is based on the range of high flows in the system combined with a qualitative assessment of the range of probable bankfull capacity of the channels.

There is an active gage at Irby, Washington (USGS 12465000), approximately 15 miles upstream on Crab Creek. That gage has been in operation for approximately 70 years. During this time flows of greater than 1,000 cubic feet per second (cfs) have occurred 30 times. It also shows that peak flows were higher prior to 2000. Since 1998, there have been no flows greater than 1,000 cfs at the gage.



There is an inactive gage on Wilson Creek near Almira (USGS 12465400) that operated from March 1969 until September 2011. This gage is approximately 20 miles upstream of the Town of Wilson Creek. Data from this gage indicate that flows greater than 500



cfs have occurred only 11 times in the period of record (42 years).

The peak flows recorded at both gages in the past 18 years show a low incidence of synchronicity. Only twice in that period of time were high flows in both systems coincident (February 11 to 12, 2007 and January 4 to 5, 2010). While both of these events were likely large enough to trigger overbank flooding, no other high flows have been recorded since 2000 in either system or in the two systems cumulatively that are likely to have caused overbank flooding. There was no visible impact related to these flows observed during the site visit.

METHODS

The floodway of Crab Creek was mapped using the definition from WAC 173-26-030(18)(b) based on the extent of, “changes in surface soil conditions or changes in types or quality of vegetative ground cover condition, topography, or other indicators of flooding that occurs with reasonable regularity, although not necessarily annually. ” This was done using: information collected in the field and described above; gage data described above; and aerial imagery from 1990 to present. Backwater effects in Wilson Creek resulting from synchronous or asynchronous flows were also considered. This may have resulted in areas between the creeks, near the confluence being included in the floodway despite not meeting the definition above.

RESULTS

Figure 1 shows the results of this effort and the proposed extent of the floodway for the purposes of the Town of Wilson Creek Shoreline Master Program update. The shoreline jurisdiction for the Town of Wilson Creek would extend 200 feet landward from this line (it is wider than the OHWM in all cases) as shown in the figure.

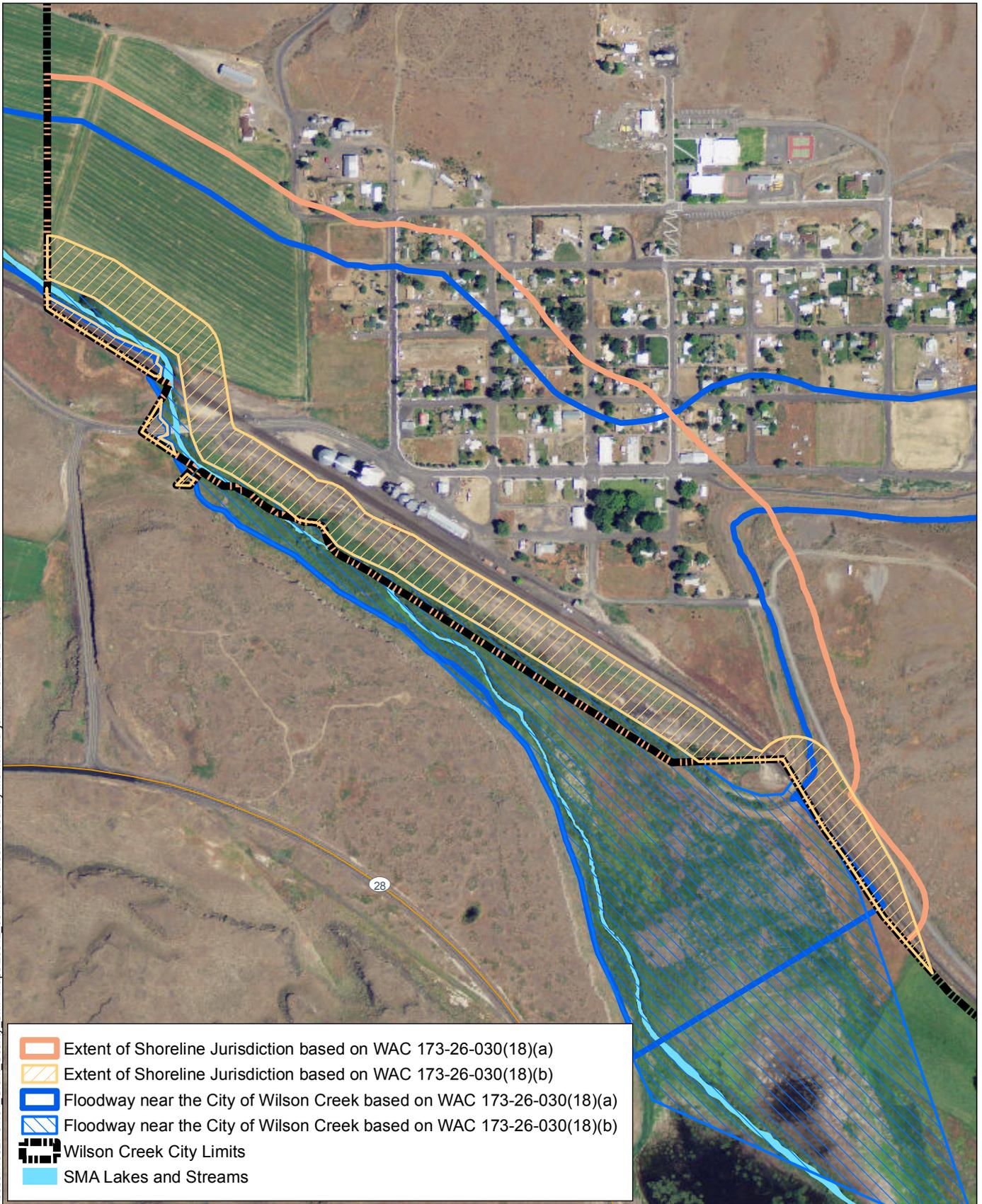
REFERENCES

FEMA 2009. Federal Emergency Management Agency (FEMA), 2009. Flood Insurance Study, Grant County, Washington, and Incorporated Areas. Flood Insurance Study Number 53025CV000A. Effective February 18, 2009.

FEMA 2012. Federal Emergency Management Agency (FEMA). 2012. Online. Accessed at <http://www.fema.gov/national-flood-insurance-program-2/floodway> on September 24, 2012.

USACE 2008. U S Army Corps of Engineers (USACE). Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ERDC/EL TR-08-28. September 2008.

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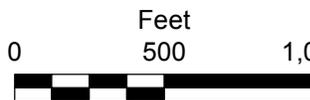


Figure 1
Wilson Creek Land Use and Zoning
Grant County Shoreline Master Program
Grant County, WA